

**America's
Agent Orange**

MAIL AT HION: TOXIC TIME BOMB



Foreward by

SAMUEL EPSTEIN, M.D.

THE POISONING OF OUR PEOPLE

Compiled and edited by

Betsy Russell-Manning

**MALATHION
TOXIC
TIME
BOMB**

**COMPILED
AND EDITED BY
BETSY RUSSELL-MANNING**

BY THE SAME EDITOR:

Wheatgrass Juice—Gift of Nature
1979 (Rev. 1988, 1991)

How Safe Are Silver (mercury) Fillings?
Hidden Health Facts 1984

How Silver Mercury Fillings Affects Your
Energy System 1984

Candida, Silver (mercury) Fillings and
The Immune System 1986, 1987, 1990.

Mercury, A Poison In Your Mouth
(A Political Overview) 1986

Home Remedies for Candida
1987 (Rev. 1988)

Self-Treatment for A.I.D.S.,
Oxygen Therapies, Etc. 1988

The Microwave Deception
1989

MALATHION: THE TOXIC TIME BOMB

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Cesar Chavez and Ralph Nader

and to all those who have put up a gallant fight
against the use and mis-use of pesticides across
this nation.



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Foreword

The public has long been misled by federal, state and local government, into believing that Malathion is safe or virtually non-toxic. This claim is misleadingly based on short-term acute toxicity tests with purified formulations.

Technical Malathion contains a wide range of 'unlabeled' highly toxic thioate impurities, besides other toxic inert ingredients. Additionally, Malathion induces a wide range of delayed effects, including disturbances in learning, genetic abnormalities and cancer. These considerations are all the more important in view of the extremely widespread (nation-wide) use of Malathion in urban mosquito abatement programs, household uses, as well as for eradication of the 'alleged' Medfly infestation in California and elsewhere.

Betsy Manning assembles all this information, and much more, in her most readable, well organized and up-to-date anthology on Malathion.

Her monograph could not be anymore useful and timely. Manning's monograph should provide citizens' groups with the very necessary information to mount aggressive action to block recklessly irresponsible spraying programs so enthusiastically pushed by regulating authorities in connivance with powerful agri-chemical interests.

SAMUEL S. EPSTEIN, M.D.



Message to the Reader from the Editor

DOES MALATHION=AGENT ORANGE?

Could Malathion present the same effects (cancer, birth defects, neurological problems) to us and our children, as Agent Orange did to Vietnam Veterans and their children?

One of the bumper stickers in Los Angeles against aerial spraying reads, **"MALATHION-FROM THE SAME PEOPLE WHO GAVE YOU AGENT ORANGE!"**

A Vietnam Vet was interviewed on the **TODAY** Show and he shocked the audience by stating, "I am here to-day but I died in Vietnam"...meaning, I believe, that although he returned physically from Vietnam, he felt he had lost the very essence of his own being- his humanity.. after being sprayed with such a deadly pesticide.

Never before in the history of mankind has any government poisoned its own army as our government did, by the use of spraying such a caustic poison as Agent Orange on its own troops. One of the Vietnam Veterans interviewed for a book on Agent Orange, **WAITING FOR AN ARMY TO DIE** stated, "If it happened here (Vietnam) it will happen there, (America)." According to the Federal Registrar, June 22, 1990 the U.S. Government plans to spray the entire United States with Malathion to rid itself of the Medfly...

According to John Judge who worked with the Vietnam Vets in Washington, D.C., 10,000 vets have thus far committed suicide. A pamphlet published by the U.S. Government lists one of the chemicals used in Vietnam as "Malathion."

Organophosphates are known to cause depression. In fact, our schools are sprayed with organophosphates during the school week, or during the weekend (when all windows and doors are closed thus Monday morning finds the toxic fumes still present. There are extremely high statistics of teen suicides in this country. You may want to ask, 'Could the spraying of organophosphates have something to do with this statistic?'

Because of lack of trust in the state and Federal government by people in southern California regarding the way the spray program has been conducted; a committee of scientific experts was recently formed. Already one member (physician) has resigned because of complacent-like policy within the committee.

When the Vietnam Veterans hollered loud enough and long enough the government finally decided to do a study regarding Agent Orange. However, one more fly in the ointment... one more Catch-22... one more stone-walled attempt by the Veterans Administration to keep information under wraps—this was to disqualify any scientist who had ever written a paper about Agent Orange or who had a prior position regarding the effects of Agent Orange on human health. So those scientists who were the leading experts on Agent Orange were disqualified. It did not, however, prevent industry scientists from making a bid for the job.

The comparison is made between the way the contract for the study on Agent Orange was handled and the studies and scientists who came out against the aerial spraying of malathion over a large population in southern California. Those scientists who testified against aerial spraying of Malathion offering documented evidence from the medical journals in their testimony, were brazenly ignored in favor of two small studies held up by the California

Department of Food and Agriculture to be "The" studies. One study was done on birth defects (in its own summary it stated that there were deficits in the study) and the other study has never been published to date, and according to leading scientists can never be published as it stands.

When the VA did award a contract for the study of Agent Orange it was to an epidemiologist at U.C.L.A by the name of Spivy. Dr. Spivy stated, **"The frenzy over Agent Orange is worse than Agent Orange!"**

According to the New York Times, Dr. Spivey was quoted as saying, "Agent Orange was used primarily in areas where few or no troops were located and therefore the likelihood of substantial exposure to ground troops in Vietnam was not great."

Similar types of comments were again made about the "harmlessness" of Malathion and Agent Orange by two health professionals: First, Dr. Spivey is quoted as saying, "There is to date little evidence of any specific human health effect as a result of the powerful herbicide. **The fear which is generated by current publicity is very likely to be the most serious consequence of the use of Agent Orange.**" Second, Beverlee Myers, Director of the California Health Department Services (1981) stated, **"These people would be sick if they were sprayed with water."**

Spivey completed the study two years later (after Congress had ordered the VA to begin an epidemiological study on the Vietnam Veterans). However, the study was rejected by scientists and returned to the author as flawed. This was May 1981, and now 9 years later, May 1990 Congress has finally **declared Agent Orange hazardous to human health!**

Many people will state that comparing Agent Orange to Malathion is like comparing apples to oranges, because these two chemicals are not in the same class of compounds. Malathion is an organophosphate and Agent Orange is an organochlorine. (See Chapter No. 3 whereby articles claim there is a link between chemicals and A.I.D.S.)

The comparison I am trying to draw, or the parallel I am trying to make is the stonewalling, the cover-up of the hazardous nature of Malathion. Will we as citizens of the United States have to wait another ten or twenty years before the government recognizes the existing studies which declare Malathion as causing cancer, birth defects, neurological defects, eye defects, depression, as well as headaches, nausea, diarrhea, vomiting and other adverse effects.

People were asked to call the Los Angeles County Health Department after the spraying of Malathion if they had symptoms of headaches, nausea, diarrhea, vomiting, etc. Yet when they called the Health Department they were told their symptoms must be from other 'causes' and the party calling was then referred to his doctor in the spray area.

Unbeknownst to the citizen the doctor in the spray areas had been given a "DEAR DOCTOR" Letter by the Los Angeles County Health Department stating that he was to find 'other' causes for flu-like symptoms, rather than document symptoms of Malathion poisoning. Thus the Los Angeles County Health Department recorded very few calls who claimed to be ill because of Malathion.

In an article by Walt Murray of the Long Beach Press Telegram, Toxicologist, Dr. Brian Dolan, M.D., is quoted as saying, "If you're a physician who thinks a patient's symptoms are from the spraying, and the county health department belittles you, who wants that? In fact, there is virtually no way a doctor can prove that symptoms were from the sprayings. It would require some highly sophisticated testing."

During the aerial spraying of Malathion in 1981 in northern California, Maurice Rappaport, M.D., President of the Santa Clara Medical Society also circulated a letter to members of the society which said, "Many of the symptoms of acute anxiety reactions mimic those of Malathion intoxication."

To again make a comparison, the VA Hospital employees were 'primed' to always state to the veteran (when he came in with symptoms of Agent Orange poisoning) that he must be suffering from post-war stress, psychiatric disorders, a drug or alcohol problem and he was given either tranquilizers and/or a stay at the psychiatric ward! ...As one veteran so succinctly stated, "How do you relate liver cancer to post-war stress?"

And so-the Los Angeles resident was also left "holding the bag." In other words, there was no help forthcoming or test(s) available to him (until just recently, and only after many complaints from the citizens) because every step he made towards opening a door to determine if he had been overly exposed to Malathion... was shut in his face..

According to Paul Papenak, M.D. of the L.A. County Health Department, only 700 telephone calls came into his office by citizens relating symptoms of Malathion poisoning. Yet over 10,000 calls were received by independent groups taking calls from residents who had symptoms of Malathion poisoning after the spraying.

Dr. Papenak also stated in Walt Murray's article in the Long Beach Press Telegram, (7-3-90) "There aren't many things we know how to do to test for an illness related to malathion." As the Editor of this book and after interviewing many health professionals I have learned there are tests to determine if the nervous system has been injured by malathion. One of these tests are very inexpensive and non-invasive and only it only takes about 15 minutes to complete. It would tell if a child's fine motor skills had been injured by the spraying of this pesticide. Also there is a test Pacific Laboratory is developing which can test for exposure level of malathion. The state has had access to developing this test in its own laboratory, but has failed to develop it.

So, again the comparison is made between what happened to Vietnam Veterans and the victims of Malathion spraying...both were stone-walled!

THE DEPARTMENT OF DEFENSE wanted to make sure that whatever was used for a defoliant would be "perfectly innocuous to man and animals and at the same time will do the job." We are told by the State and Federal Government that Malathion is of low toxicity. In 1964 a press release by Dow Chemical Company stated that 2,4,5-T was absolutely nontoxic to humans and animals, but by 1965 the Company confirmed that 2,4,5-T was contaminated with TCDD-Dioxin.

Will we as U.S. citizens (in 1990) have to wait until the year 2010 to be told that "Yes, malathion does cause eye damage, cancer, birth defects and neurological deficits?"

There were scientists around the world (back in the 60's) who knew Agent Orange was a carcinogenic, yet our government chose to use this poison. Today there are world-wide scientists speaking out against the aerial spraying of malathion and yet our state and federal government continues to spray; California, Florida and Texas is the latest on their list.

One of the leading epidemiologists in the world who spoke out against Agent Orange also speaks out against Malathion. In fact, Dr. S. Epstein, M.D. (formerly of Harvard Medical School) just recently gave Expert Witness Testimony before a judge in El Cajon, California. This is the first time Live Witness Testimony was allowed into a court of law on the Malathion issue.

Why are we not listening to leading scientists and foraging ahead on a path of health and freedom rather than on a path of lies, illness and destruction? Our constitution tells us we have rights-but have the rights been stripped and are we to see more and more of the same?

That old saying, "What goes around, comes around," is really true. Remember Chernobyl, and how the radiation emissions came across America only a short time later? This toxic fall-out or any chemical spill/spray will migrate through the air and can actually dip down

into a city, town or village, when the weather pattern becomes erratic, thus poisoning unsuspecting areas far from the point of origin of the released toxin.

Michael Brown in his book, **THE TOXIC CLOUD** tells how the prevailing winds are westerly so our weather patterns start in California and blow across all the agriculture, down the Mississippi, swirl around the Mississippi, the Gulf of Mexico and up the Eastern seaboard. And what you have are all the previous pesticide exposures in this nation.

From the jacket of Mr. Brown's book it states, "Winds sweep across America, carrying thousands of different toxins from Los Angeles to Utah; from Washington State to Chicago; from Louisiana to Minnesota; from Ohio to Maine. Yet no one has investigated these chemicals, no one knows how concentrated they are or their long-range effects on health."

One of the executives from a plant that formulates Malathion stated to me, "You know your own government is definitely prepared to use it (Malathion) on the Russians or anybody else. Under the Regan administration we produced millions of tons of these nerve gases in the U.S. You should remember that the Pentagon has developed more of these than anybody else, and we are hoping they won't use them either!"

And so the government must re-think what it is doing by the aerial spraying of a pesticide over entire cities. Some of these toxins are like World War II nerve gases, and these same gases are what caused the tragedy in Bhopal.

We' must not give up... just like the veterans did not give up until Congress finally listened and declared Agent Orange hazardous to human health.

Some people who fought the battle of Agent Orange believe there was a conspiracy. I leave it up to you the reader to decide if you think there is a conspiracy to suppress the truth about Malathion?

Article 1, SECTION 1, of the CONSTITUTION OF THE STATE OF CALIFORNIA STATES:
"All people are by nature free and independent and have inalienable rights, among these are enjoying and defending life, and liberty, acquiring possessions, and protecting property, and pursuing and obtaining safety, happiness, and privacy.

Under the title **"THE PURPOSE OF GOVERNMENT: "ARTICLE 1., SECTION 26 STATES:**
"All political power is inherent in the people. Government is instituted for their protection, security and benefit, and they have the right to alter or reform it when the public good may require."



No. Not until they

Suits take pesticide battle to the courts

Medfly: Sterile insect lab behind schedule

Despite efforts to speed construction on a \$6.5 million lab to produce sterile Medflies in Waimanalo, Hawaii, it still isn't ready to produce the flies.

30 communities are due visit by malathion copters



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No, I'm against it.



I should think not.



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Preface

In the literature it states Malathion is a neurotoxin causing neurological and behavioral disorders as well as depression. The literature also states that Malathion can even cause cancer and birth defects.

If merely one or two journals stated the above, one would not take the literature too seriously. However, many medical journals in the United States along with European and Asian Journals reiterate these same facts over and over again.

We are told by the professionals from the California Department of Food and Agriculture, the Los Angeles County Health Department, the Governor of California and other state authorities that children, pregnant women, the elderly, those who are ill and those who are chemically sensitive need not worry about the aerial spraying of Malathion, because it poses no threat to anyone in the amount being sprayed over Los Angeles and surrounding areas.

Yet we hear of reports of spontaneous abortions; of entire neighborhoods becoming ill after a spraying. We are given the Los Angeles County Health Department number to call if we feel ill after a spraying. The health department in turn states our symptoms must be from other causes and refers us to our doctor.

The doctors (in the spray areas) have been given a 'DEAR DOCTOR LETTER' by the Los Angeles County Health Department stating that when a patient presents symptoms of pesticide poisoning, he is to "find causes other than 'Malathion poisoning'."

We are told by reputable health professionals and from reading the literature in medical journals that Malathion should not be sprayed on urban populations. Yet our own California Department of Food and Agriculture along with the Los Angeles County Health Department states that these professionals are not "mainstream" scientists and therefore should not be taken seriously.

We are told the long-term effects of Malathion spraying (cancer, birth defects and neurological deficits) may be more serious than the short-term effects. Again the Los Angeles Health Department merely states that those scientists purporting these ideas are not of the "mainstream," and that they are speaking out as a minority in the scientific community; yet senior scientists from the EPA and the world's leading toxicologist claim Malathion can be cancer causing. In fact, the January 1st, 1988 EPA Report states there are data gaps in delayed neurotoxicity, inhalation, chronic feeding and metabolism.

When the aerial spraying of Malathion first began in southern California an expert witness for pesticides and toxic chemicals was contacted by someone from the state regarding a study on the population at risk. Needless to say this was the first and last contact made to this professional, leaving one to question the state's motives by neglecting to follow-up with a study on the citizens.

The Insecticide, Fungicide and Rodenticide Act clearly states that a pesticide can only be used on a population after the testing of this particular pesticide has been proven safe. Malathion has never been proven safe to spray over an urban population. It is being used because it came in by way of the back-door through an 'emergency' state.

A report instigated by California State Senator N. Petris on pesticide regulations tells how the state toxicologists are being used as 'window dressing' only, and are not allowed

to actually participate in many of the most serious decisions on regulatory matters concerning pesticides.

A report signed by Beverlee Myers in 1981 (California Health & Safety Worker) stated Malathion was safe to spray over urban populations. Looking up the journals from the reference section of this particular report confirmed what I had thought- many of these journals stated there were adverse affects on living beings.

The changing of Marc Lappe's (Ph.D) figures regarding the safety of Malathion (1981) has led me to cast an even more suspicious eye on the state and the Los Angeles County Health Department (1990) regarding the mass spraying (poisoning) of an urban area.

In World War II the Germans spoke of chemical warfare. A chapter in this book also addresses chemical and biological warfare. Could this type of warfare possibly be happening to America? You must understand that the United States is the largest manufacturer of nerve gases today. I leave it up to you the reader to decide for yourself after reading this chapter.

A report on the safety of Malathion in relation to birth defects has been held up by the state repeatedly as a report showing that Malathion is safe to use on an urban population. Yet this report has never been published, and according to a highly qualified scientist the study will never be published in the form it is now in because of its lack of validity. The author of this unpublished study sits on the Los Angeles Health Advisory Panel Committee.

The book lists tests completed by Eldon Savage, Ph.D. showing how large doses of Malathion affects the neurological system. The book also lists a non-invasive test for fine motor skill deficits due to low dose exposure to Malathion, lead, nickel etc. Although the 'EPA' and 'WHO' have used this instrument successfully for ten years the State of California has yet to use this non-invasive, fifteen minute test which is also a low cost test and could be used in the schools to test for fine motor skill deficits due to the spraying of Malathion and other toxins.

An analytic chemist states that the cholinesterase test is not the proper test for low dose Malathion (which is what is being sprayed on the population). He states that there are other tests more appropriate (sensitive) which he hopes to get the state to use. It is interesting to note that this more sensitive type test has been in the scientific literature for some time and yet the state has not developed this test during the one year spraying of Los Angeles, although they have had the ability to develop this test within their own laboratory.

A double blind study was done by a certified environmental physician on the aerial spraying of Malathion near a school in Georgia and the tests showed there were definite effects on behavior and academic skills of these children.

The government first sprayed Florida in 1955, 1956 and the Bay Area in 1981 and Los Angeles and surrounding cities in 1984 and again in 1989 and 1990. When they sprayed the Bay Area in 1981 over protests and law suits by each and every town who was being sprayed, the then Governor, Jerry Brown, listened to the people and refused to give the state permission to spray. However, the federal government stepped in and said they would ban all fruits and produce being shipped across the United States by California, unless they were allowed to spray. It was only then Jerry Brown relented and gave the government permission to spray.

In the 1981 aerial spraying of northern California there were helicopter accidents, maimed citizens, and pilot deaths. There were 'accidental' dumpings of Malathion on individuals which left their life in shambles. There were over a dozen childrens' deaths related to the spraying.

Now Los Angeles and surrounding areas are being sprayed and some health professionals tried to get the California Medical Association (CMA) to take a stand against the spraying, but the final say of how the CMA delegates vote is left up to the CMA- and the members must 'spew' the party line, and so no stand was taken by the delegates to ban the spraying.

Yet Dr. Alan Levin, M.D. and allergist of San Francisco gave his testimony at the Los Angeles City Council stated, if you give a physician immunity he will tell you that to spray Malathion on an urban population is unsafe.

What is so interesting is that during the Los Angeles hearing on Malathion spraying, the Los Angeles County Health Department and the California Department of Food and Agriculture were asked over and over again if there were any studies done showing the aerial spraying of Malathion over an urban population to be safe. They all stated there were no such studies.

As the Editor of this book I did find a study in the University of California San Francisco Library, dated 1955 and published by the AMA and printed in the Industrial Archives of Health. It stated aerial spraying of Malathion was used as a test over an urban area in Planada, California (San Joaquin Valley). The conclusion of the study was that it was safe to spray over an urban population. This study was funded by a manufacturer of Malathion.

There are many entomologists today who state the Medfly has become endemic to the United States, and these same scientists also state they have actually found ways to control the Medfly biologically, rather than through the spraying of Malathion along with other toxic ingredients which not only destroys the Medfly (temporarily) but also the beneficial insects (bees, lady bugs, spiders, etc) as well as the soil. Many of the residents of Los Angeles are stating that not only are the bees and lady bugs and spiders dying but the fish and birds as well.

You, the reader, may want to ask is there a cover-up going on within the State of California regarding the aerially spraying of Malathion. And my answer to you would be, "I don't know." I do know several of the health professionals I interviewed for this book were all of a sudden not allowed to participate in the book. I also know of one scientist at a large university who has been quietly threatened and the same time told to back-off from the controversy. I leave it up to you the reader to decide for yourself, if in fact, you think there is a cover-up within the county, state and federal government.

One of the world's leading toxicologists, Samuel Epstein, was an expert witness in a court trial in the Malathion issue. His credentials are impeccable. He has held posts at many of the leading universities. His findings were that Malathion not only interferes with learning, but can cause birth defects and cancer as well. Dr. Epstein also stated in the court trial that the 'inert' ingredients are highly toxic to man, and that Malathion changes into 'malaoxon' which is much much more toxic to humans than Malathion. In the court trial this physician came out in no uncertain terms and stated that the state was behaving in a reckless and irresponsible way by allowing the aerial spraying of a toxic pesticide over an urban area.

It seems that the helicopter company spraying the Los Angeles area is owned by a man who sits on the California pesticide board. Just recently the FAA has learned that the helicopters that have been spraying in formation over these urban areas have a maximum speed of 78 miles per hour. The minimum speed limit according to FAA regulations is 150 miles per hour. Thus the flying of helicopters over urban areas at the low speed of 78 miles per hour is illegal and it seems the bi-plane people have brought this bit of information to the attention of the FAA.

Victims of the Malathion aerial spraying are finally allowed for the first time (in this book) to describe to the state what happened to them after they were sprayed. Heretofore the state has refused to listen!

One dedicated citizen, Jean Hinsley, found there were no surveys being taken by the state of people who were being aerielly sprayed with Malathion. As a concerned citizen, Jean began a search on her own time to find out exactly what was happening to the people, only to realize that many had become ill after the spraying. Before it was over Jean had surveyed three Pony League teams who were directly sprayed, plus many spectators, as well as other neighborhood groups. Please find a chart of Jean's surveys in Chapter 5.

It is also interesting to note when the state found Ms. Hinsley had taken her own surveys they became quite 'frantic' and at the same time quite interested in her surveys and even called her home to discuss how they may get hold of a copy. It seems they were willing to go to any length to get hold of her survey. Months later the Los Angeles County Health Department has yet to conduct their own survey.

As the Editor I conducted numerous interviews with politicians, lawyers, and health professionals, as well as victims of the spraying. It was also interesting to note that many scientists were willing to be interviewed, but were later intimidated and refused to participate in the book.

As this book goes to press I found that the Federal Registrar, dated June 22, 1990 under the Department of Agriculture -Animal and Plant Health Inspection Service (Docket 90-108) has not only found 'outbreaks' of the Medfly in California and Florida, but has also concluded the fly has the potential to establish itself in the States of Alabama, Arizona, Georgia, Louisiana, Mississippi, South Carolina, and Texas. The Department proposes to not only spray these states, but the entire United States Mainland! Just recently the state of California not only sprayed Los Angeles and surrounding areas, but San Diego, Riverside and San Bernadino County as well as the State of Florida.

According to USDA we have an extended time, November 9th, 1990, to give our input on why we believe it is harmful to aerial spray urban areas. The USDA will also consider input on intergrated control, sterile insect technique, etc.

You may write your views to the following: (Be sure to include the Docket Number of 90-108 on outside envelope). Michael T. Werner, Deputy Director, Environmental Documentation, Biotechnology, Biologics, and Environmental Protection, APHIS, USDA, Room 828, Federal Building, 6505, Belcrest Road, Hyattsville, Maryland 20782. Telephone No. (301)-436 8565.

According to Cesar Chavez, Malathion will only be used until it is found that it actually does not eradicate the Medfly, and then something much more toxic will be used on the population.

Cesar's suggestion to stop this flagrant injustice of aerielly spraying is by boycotting the manufacturers products: i.e.; they spray dangerous pesticides on grapes- so, Cesar's message is, "Don't buy the grapes!"

Another way for states to regain their constitutional freedoms are through the courts and just this past June (1990) a land-mark case was held in a court of law on Malathion in El Cajon, California. This was the very first time live witness testimony was allowed into a court of law regarding Malathion. Dr. Samuel Epstein, the world's leading toxicologist, gave live-witness testimony which will now be used as the classic format for not only California but the entire United States to stop this irresponsible spraying of pesticides over urban areas.

And yet another avenue to stop the spraying is through the Initiative Referendum Process. According to Eleanor Gillardi, "There is only one route to follow when all else fails, (when it boils down to the bottom line), and that is the State Initiative Referendum Process. Through this process the citizen can take matters into his own hands by writing his own law(s); thus one can bypass the elected official(s) who has done nothing over the years to

protect the citizen. In many cases the elected official is so owing to the vested interests, (who have given money to his campaign)...that this politician will do nothing to risk losing his campaign financing... thus the only way to win is through the State Initiative Referendum Process."

The states that have this process are: Alaska, Arizona, Arkansas, California, Colorado, Florida, Idaho, Illinois, Maine, Massachusetts, Michigan, Missouri, Montana, Nebraska, Nevada, North Dakota, Ohio, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming.

A NOTICE HAS BEEN SENT OUT STATING THE UNITED STATES GOVERNMENT IS CONSIDERING SPRAYING CHEMICALS ACROSS THIS NATION TO ERADICATE THE MEDITERRIAN FRUIT FLY

NOTICE OF INTENT (SUMMARY)

FEDERAL REGISTRAR NOTICE VOLUME 55, No. 121, FRIDAY, JUNE 22, 1990

We are advising the public that the animal and plant health inspection service intends to prepare an Environmental Impact Statement (EIS) for the medical cooperative eradication program. The Environmental Impact Statement will analyze potential environmental effects of a program to eradicate the Meditterian Fruitfly from the United States mainland.

We are also requesting comments from public government agencies and private industry concerning this issue that should be addressed in the environmental impact statement.

Consideration will be given only to comments received on or before August 21st, 1990. Scoping Process: The initial step and process of EIS development is scoping. Scoping includes solicitation of public involvement in the form of either written or oral comments and evaluation of these comments. We are therefore asking for written comments that identify significant environmental issues that should be analyzed by the EIS. The major issues: The following are some of the major issues that will be discussed in the EIS (1) Program control and alternatives. (2) Use of chemically applied chemical pesticides. (3) Potential impacts of the alternatives on the physical environment, non-target organisms including endangered and threatened species, and the human environment regarding health and safety. (4) For potential cumulative effects and impact. (5) Monitoring.

What you need to do is send your written comments including the original and three copies by registered mail to Michael T. Werner, Deputy Director Environmental Documentation Bio-technology, Biologics and Environmental Protection. APHIS, USDA, Room 828, Federal Building, 6505 Belcrest Rd., Hyattsville, Maryland 20782, Reference Docket No. 90-108. Or send your originals to National Coalition Against Pesticide Abuse, P.O. Box 63302, Los Angeles, California 90063. For further information or assistance please (818) 784-5107.

**ORGANIZATIONS FIGHTING THE AERIAL SPRAYING
OF MALATHION IN LOS ANGELES, CALIFORNIA**

S.A.F.E.

P.O. box 63302
Los Angeles , Ca. 90036
(818) 359-2491

ACTION NOW

2219 W. Olive Ave., Suite 254
Burbank, Ca. 91506
(818) 567 0904 or (213) 452 9605

NCAPA

18034 Ventura Blvd., Suite 173
Encino, Ca. 91316
(818) 784-5107

**Pasadena Area Coalition
Against Malathion**

115 W. California Blvd., Suite 419
Pasadena, Ca. 91105
(818) 449-4566

Remedy Our Laws

c/o Oscar Singer
P.O. Box 63302
Los Angeles, Ca. 90063
(818) 359-2491

Learn how to fight against the aerial spraying of pesticides in your own area by calling one of the above named organizations.

EDITOR'S NOTE: Financial aid is urgently needed by the above named organizations in order to continue the fight against aerial spraying!

Contact Oscar Singer in order to learn how to place an initiative on the ballot in your state. The initiative is the power of the electors to propose statutes and amendments to the constitution. About 21 states have this initiative. Oscar Singer's telephone number is area code (213) 263-2640.



Adelaide Nimitz and friend getting ready for a Malathion Rally!

Introduction

For 10 months, from August 10, 1989 to May 30, 1990, residents of Los Angeles were sprayed with 47,000 gallons of technical grade malathion in a campaign that covered a maximum area of 536 square miles, included the release of 3.6 billion sterile Medflies and reached a cost of over \$36 million dollars. The aerial spraying of malathion over urban areas has been a central piece in the campaigns the California Department of Food and Agriculture has waged since 1975 to prevent the Mediterranean Fruit Fly from establishing itself in California. For the last ten years, CDFA has assured the public that aerial spraying over urban areas poses no risk and malathion is a "safe" substance. After more than ten years, the Medfly "eradication" campaign has proven unsuccessful in preventing the insect from reappearing in California and a growing number of independent entomologists believe that the Medfly is established in the state. Meanwhile, Californians have become aware of the risks to human health posed by the aerial spraying of malathion.

Gradually, residents of sprayed areas in California became concerned as many of them experienced illnesses they believe were caused by exposure to the malathion solution. Their concerns grew as they learned from scientists and physicians that there were risks of acute and chronic adverse effects that were not being acknowledged by the state officials. Concern turned into organized political action when they ran into evasive, arrogant or adversarial attitudes from officials of the CDFA or the Department of Health Services. Scientists found it difficult not to get involved when they heard misleading statements being made publicly on matters in which they had expertise. Attempts to exchange views with state officials were met with attitudes that these scientists found foreign to the scientific tradition and professional standards of conduct. Slowly, a group of community activists, residents of sprayed areas, scientists and health professionals, environmentalists and elected public officials have created a serious opposition movement. This book is a comprehensive selection of the most relevant documents, data, opinions, and testimonies on the medical, scientific, ethical and political issues raised during this debate.

The reader may find the information in this book disturbing. You will learn that thousands of residents of the sprayed areas have reported classical symptoms of malathion poisoning consistently after the pesticides are sprayed over their neighborhoods. That the solution sprayed contains technical grade malathion, 5 percent of which consists of 16 "impurities", some of which are more toxic than malathion. That state officials have consistently claimed that there are no significant risks for human health, but fail to present scientific studies to back up their assertion, while scientists affiliated to prestigious institutions have offered expert testimony, based on numerous published scientific studies, that point to serious risks of acute and chronic adverse effects. That the larger the population exposed, the higher the number of people that are especially susceptible to the actions of malathion. (Any statement about a particular dose causing a given effect, is based on an average, and in any calculation of an average, there are people at both ends of the curve. In a population larger than a million and a half, even just the 1 percent on the high end of the curve, representing people that are very sensitive, amounts to 15,000 people). That the objections of city governments in Southern California have been overridden under a "state of emergency" declared by Governor Deukejian. That the CDFA has justified its actions claiming that the establishment of the Medfly would spell disaster for California's agriculture. Yet, official estimates place the costs to agriculture at \$194 to 205 million annually. This figure, which several entomologists consider grossly exaggerated, represents only 1.2% of the estimated 16.5 to 17 billion dollars annual value of California crops.

What is abundantly clear is that, whether or not there is a serious risk to the health of Californians or an impending crisis for California's agriculture, there is a crisis of *confidence in the institutions* entrusted with protecting the health and economic well-being of the state's residents. This loss of credibility is the direct result of the attitude and behavior of state officials.

State health officials claim that the "doses" applied are too low to pose any risks (curiously, they use the word "dose", which refers to the amount to which a person is actually exposed, to refer to the amounts deposited on the ground.

Given the magnitude of the urban spraying operation, only the state and county Departments of Health Services have the resources and personnel to adequately monitor the population in the sprayed areas. Such efforts can at best be described as inadequate. They have been more concerned with exonerating malathion as the cause of thousands of reports of adverse reactions and supporting the CDFR than in responding compassionately and professionally to the concerns of residents....There is no serious effort by health officials to monitor the exposure levels of the population and to conclusively establish whether there is a correlation between exposure to malathion and the symptoms reported by thousands of residents. At best, an experiment is being carried out on the population of Los Angeles, and no one is collecting the data.

After examining the scientific literature, I and many independent scientists have found no evidence to back up the state's assertion that applying technical grade malathion on the amounts mentioned before, over a densely populated urban area, is safe for human health. At best, this should be considered an experimental situation, and this raises the issue of informed consent. Even when a substance is used experimentally for the benefit of a terminally ill patient, he must give his consent after receiving all the relevant information. In this case, not only have those affected not been asked for their informed consent, but their objections and those of their elected representatives have been ignored under the existing state of emergency. Informed consent is not an issue in a totalitarian society. It certainly should be in a democracy.

Much of the concern of residents was prompted by their suffering from acute health effects. But far more serious are the possible long-term delayed neurotoxic effects of malathion. In April 1990, the Office of Technology Assessment of the U.S. Congress issued a very timely report on Neurotoxicity prepared by a Neuroscience Advisory panel consisting of 12 of the most authoritative neuroscientists and 6 of the foremost experts on neurotoxicity. Under the heading of "neurotoxic pesticides" the report states that carbamates and organophosphates, the class of pesticides that malathion belongs to, "are the most neurotoxic classes of pesticides used in the United States and are the most common causes of agricultural poisoning: In California, malathion is the 3rd most frequently cited cause of agricultural poisoning amongst the organophosphates. The report notes that "a number of researchers have observed persistent alteration of brain function" after exposure to organophosphates which "can produce delayed and persistent neuropathy by damaging certain neurons in the spinal cord and peripheral nervous system." It discusses case reports after poisoning with parathion, mevinphos and malathion, which "indicated that 4 to 9 percent of the acutely poisoned individuals experienced delayed or persistent neurological and psychiatric effects' (such as) "...agitation, insomnia, weakness, nervousness, irritability, forgetfulness and confusion, and depression; persistent mental disturbances, reported as delirium, combativeness, hallucinations, or psychosis.

I must emphasize that just as the OTA report points out about neurotoxic agents in general, I believe that we do not know with certainty what is the full extent of the risk of neurotoxic effects posed by spraying of a substance with neurotoxic potential like malathion, over an urban area. The risk, however, has simply been ignored by state officials. But there is a body of evidence documenting neurotoxic effects, including, but not exclusive to, the studies by Dr. Satoshi Ishikawa in the Saku region of Japan. The state has attempted to discredit his work, which has been published in international peer-reviewed journals, by having an alleged "panel of experts" pass judgment on Dr. Ishikawa's work, a procedure which is unprecedented in scientific circles and amounts to no more than a public relations ploy.

State officials claim that most scientists agree that what they are doing poses no risk and dismisses scientists voicing concerns as scientists outside the mainstream. On occasion they will claim that there is a disagreement between scientists. But what I have seen

throughout this debate is, on one side, independent scientists, active in research, members of scientific societies, affiliated to prestigious institutions, voicing concerns about the behavior of the CDFA and the risks to the health of the population of California, and on the other, highly paid appointed public officials, who I have never seen or heard present their credentials as scientists, and whose publications (the measure of the caliber of a scientist) I have yet to find in any prestigious scientific journal, making claims that are unsupported by the scientific literature. It is very telling that in no public forum that I am aware of, has the CDFA or CDHS presented the public testimony of scientists who have presumably authored those studies which they claim prove that their malathion spraying campaign poses no risks. But while scientific data and opinion plays an important role in this debate, it is clear that public policy is being based on other considerations. Only effective political and legal action will force the reversal of a policy that, as the sub-title of this book indicates, has lead to "the poisoning of our people."

Jorge Mancillas, PH.D., Neurobiologist, UCLA

VICTIMS TELL THEIR STORY



Adelaide Nimtz, a leader in the campaign to stop Malathion spraying, at her home office in Burbank.

Malathion Protest

Students at the Oak Wood School in North Hollywood carry signs protesting the aerial spraying of the pesticide malathion in the effort to control the Mediterranean fruit fly. During the noontime rally, the school building was "tented" with huge banners, including one on the roof made from a parachute. Wearing paper "radiation suits" at the school's front entrance are, from left, Mandie Fox, Molly Rose-Kuperman and Marissa Katz.

Photos by BORIS YARO / Los Angeles Times



MEDFLY: Controversy Over Malathion

What's more important? Is our health or the health of our children, the safety of our water and vegetation more important and vital than the eradication of the Mediterranean fruit fly? Not to the protection of our well-being. In fact receive plenty for poison. In a country where we have protection from illegal right of privacy in our does the state of California to violate us by parks and child and personal privacy remain. Our people who nurses, police, contact with people also spread over the area. RUTH's will...

Mad MOMS

Sick kids prompt mothers to protest Medfly spraying

By STEVE SCAUZILLO
Staff Writer

Kathy Cuddy was at a Pasadena elementary school attending a lecture on malathion last weekend, searching for an answer to why her kids have been sick on and off since Jan. 3, the day after her home was sprayed. Just then, her 8-year-old son, Shawn, who had been playing in the grass courtyard, showed her his arms. Red welts covered his skin from the hands to the elbows, where he had touched the grass.

The next day, Shawn's hives disappeared. Later, she learned that Pasadena had been sprayed with malathion four days earlier.

Motivated by fear of the effects of malathion on their children, Cuddy and a group of Alhambra, Monrovia and Pasadena mothers have formed Mothers Opposed to Malathion Spraying, or MOMS. The group will meet at the airport on Monday afternoon. About 15 adults from the group stood in the break wind.

MOMS members and their children protest at El Monte Airport against spraying waving placards that read "Hook If You're Against Malathion". Just a couple of days earlier, Cuddy had out a pattern of family illnesses seemingly tied to aerial spraying. To Dr. Paul Papanek, chief of the county's toxics and epidemiology program. He told her the only way to ensure the safety of her children was to leave town for 36 hours. "It is a horrible feeling having to leave your home," she said, undecided about what to do. She said she cannot afford the cost of a motel.



Please see MOMS Page...

Introduction to Chapter 1



In an article by John Schneider, 'Millionth Child,' a 5 year old girl dies of cancer. This family's backyard was directly next to the airport. The helicopters, used for aerial spraying of malathion, could be seen by the girl's mother on many occasions, 'sloshing' malathion out of their tanks with a 'mist' forming, and coming down directly into their backyard.

Molecular Biologist Paul McClain, Ph.D. is interviewed on a Los Angeles (KPFA) radio show. Victims of the spray area call in sharing their stories with the audience; relating how malathion has affected their lives.

A citizen in the Monrovia area, who wishes to remain anonymous, was interviewed and she tells of becoming acutely ill within an hour after gardening in her back yard (*days after* the spraying). According to Dr. Samuel Epstein, once the sun causes these other impurities sprayed to rise in the air, these particular impurities can become even more toxic to humans than the malathion.

A chemically sensitive young woman who was sprayed has now become even more sensitized since she has been sprayed with malathion.

A woman tells of being aerially sprayed in 1981 in the Bay Area and then moving to Los Angeles. She now has two children and tells how she herself has become ill after each spraying and she relates how frightened and angry she is over fear of her children's health.

A professor at California State University-Los Angeles tells her own story of not only having 'flu-like' symptoms after the aerial spraying of malathion but central nervous system symptoms as well, (lack of concentration, memory loss (vocabulary loss) with a slurring of speech, and a jaw that was unresponsive). She suffered deep depression with vague thinking patterns and was unable to prepare lectures for her classes. After suffering for sometime she then discovered a homeopathic remedy for malathion poisoning and tells us how this remedy has helped turn her life around for the better.

Another mother in the 1984 Los Angeles spray campaign, gives her affidavit regarding the spraying at that time. A notice was sent by the county which stated aerial spraying was perfectly safe for children. Believing the notice, the mother stood on the porch with her young daughter watching the helicopters spray malathion only to realize too late...her daughter had become critically ill by the next day.

Note: For further testimonies of people from the Los Angeles area regarding the effects of malathion spraying on them, plus discoveries they have made during this time, please write to Sacramento and ask for **Report on Hearing of The State Rules Committee**, dated February 21, 1990, State Capital, Box 942849, Sacramento, California 94249-0001. Price: \$6.00, plus 6 3/4% sales tax. Make check payable to the State of California.

MILLIONTH CHILD

By John Schneider

As Narrated by Gloria Martinez

First Appeared Rio Hondo College (La Cima Magazine, Whittier)

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The little girl laughed as her small furry companion chased her across the lawn of their back yard. As the dog pulled an evasive maneuver the girl tried to turn quickly, but tripped and went sprawling on the dewy grass. The dog's consoling presence greeted her instantly as he whined and lapped at her grass stained cheek, urging her back into the chase. She rose and, with a loud giggle, pursued Pepper again. They continued their frolic in their little piece of heaven, upon God's earth and under His sky, surrounded with each other's friendship, in El Monte, on July, 1981.

The happy routine of the Martinez family was interrupted on January 12, 1984, when Leticia's first symptoms appeared. She was stricken with a high fever and vomiting. At Kaiser Permanente, she was diagnosed as having a bronchial infection, and was given antibiotics.

In February, the family had settled in for dinner when David, Leticia's father, remarked that Leticia's eyes were crossing. Gloria, her mother, saw the problem plainly the next morning as she combed out her daughter's beautiful waist length hair.

A nurse-practitioner at Kaiser referred her to an ophthalmologist, who said she had strobisimus, an eye problem that could be corrected, but also referred her to a neurologist.

After many tests, primarily for balance and coordination, David and Gloria were told that their child was alright. In the beginning of March, Leticia was hard at play in the park, enjoying the firm, centrifugal thrill of the swing set. Then she made a little girl choice to move to the slide, as her mother watched. Gloria felt her heart go into her stomach as she saw her child walking, lean off balance to the left.

Leticia had never fully recovered from her previous illness, and the next day in Kaiser's emergency room the Martinez family was told their daughter was alright, but had better see a neurologist, "just in case." As the emergency room doctor ruled out the "possibility of a tumor," Gloria was taken aback. She had never before considered this horrific possibility. Later, a CATscan was set up, where the brain is pictured in a three-dimensional pattern with numerous x-rays.

The medication that was to sedate her enough to get a good picture wasn't working. Another administered dose failed to get any results, and she left without getting the examination.

Soon after the aborted CATscan, Leticia attempted a simple dance step that she had earlier mastered. She was loosing her excellent sense of balance though, and kept falling down on the polished wood floors of the studio. She could no longer dance.

On April 4, another CATscan was attempted. The results brought the most crushing possible news to the Martinez's. The x-rays detected a large, inoperable brain tumor, very centrally located on the base of Leticia's brain stem. The young child was given three months to live.

...Friday, on the second week of her stay in Children's Hospital, was not a good day for Leticia. She was wracked by muscle spasms, clenching her jaw and biting her tongue. In intensive care she just worsened. She had to be put on an air respirator.

On July 1984, it was decided that they should try to remove the respirator. Afterward, she wasn't breathing properly, so the devise was re-inserted, in itself a painful and traumatic procedure. The Martinez family was told that the next time they took her off the devise,

THE POISONING OF OUR PEOPLE

it could not be reinserted because they had already torn her esophagus. Her heart rate was much too high and she was suffering too much. The doctors recommended and the family earnestly conferred and resolved. Leticia would be taken off the respirator and put into God's hands.

The doctors in charge of Leticia had no easy client in David Martinez. While Gloria's approach was just to deal with the "here and now," David's state of mind kept asking "what, how, and why?" as he watched his beautiful young daughter struggle with her life. It was David, to Gloria's disbelief, who kept trying to make a connection to his daughter's illness and the Malathion aerial treatment program, whose helicopters filled and refilled, landed and departed just a few hundred yards away from their own back yard, separated from the El Monte Airport runway by a 5 foot ivy covered fence, during 1980 and part of '81.

...At one point, David asked the doctor overseeing the procedures, "Could the Malathion have caused Leticia's tumor?"

"Yes, it could have been responsible," the doctor replied. "Would you sign a statement to this effect?" asked David. "No." replied the doctor.

...Gloria recalled during the 1981 treatments how she could see the helicopters silhouetted against the far runway lights. As they rose, tanks brimming with the Malathion in bait cargo, she saw several slosh out a liquid substance, which quickly dissipated in the heavy rotor down drafts, which shook the branches on their small fruit tree.

After calling the airport the following morning, she was told not to worry, the liquid they said was a "small amount of bait overflow, and did not pose any harm to local residents." Pepper, their dog, died after exhibiting unusual behavior, including heavy salivation and spasm, one month later. When a reporter asked how much her little girl played in the back yard, she replied, wistfully, "Leticia and Pepper were back there constantly..."

On January 18, 1985, dangerous symptoms of lethargy afflicted Leticia. The doctors suggested she had only about seven days left. They could only offer, at this point, to put the girl on a new, experimental form of chemo (chemical) therapy. Gloria and David's many hours logged within the walls of local medical institutions had revealed the grim, sometimes torturous goings on there. Watching children bleed and die from the chemotherapy itself, and getting to know those agonizing parents convinced them...

...A herbal practitioner in Tijuana had good references and testimonies to his credit, and, while he made no promises, he assured them Leticia would be comfortable. The treatments began on January 21 and lasted until March 15.

During the drive to Tijuana for another scheduled treatment, Leticia became very ill and started vomiting. After they cleaned her up they decided to continue on to a small, Catholic hospital in that city, staffed with gentle, compassionate nuns. At 2:00, March 23, 1985, within the sunny, whitewashed walls of the Hospital Del Carmen, Leticia Martinez passed away, up and out of her parents arms and her own wilted body, to a place many of us believe is better....

From November 1989 to May of '90, the Martinez's have had to live with the large, insect like craft and their questionable cargo. They lived again with the booming fliers, and worst, possible contamination of their house and yard. Their neighborhood, to add possible injury to inconvenience, is also in a spray zone, and so they got a direct dousing with Malathion in bait about every two weeks..

They fear for their remaining child...Mando, who suffers from asthma and many allergies. He is always suffering more ill symptoms after a direct spraying, Gloria informed the writer. She has arrived at the same presumption as her husband; that Malathion may very well have been the cause of their daughters' cancer.



**EDITOR INTERVIEWS PROFESSOR WITH
MEMORY LOSS, DEPRESSION, DUE TO
REPEATED SPRAYING OF MALATHION**

LUANE: I teach at California State University, Los Angeles. I became very ill early on with 'flu-like' symptoms (sore throats, headaches, malaise, aching and muscle spasms in arms and legs) following the first spraying. By the 2nd and 3rd spraying I was experiencing serious central nervous system symptoms.

I began having extreme memory loss along with the inability to concentrate. I had a slurring of speech and my jaw became very unresponsive. I had a vocabulary loss where I simply couldn't find words, and even very simple ones. For instance, if I started to say..."I am going to close the door," by the time I got to the end of the sentence, 'door' wouldn't be there. I came to the point where I literally could not lecture. I had to start substituting other activities in my classes. I was also extremely depressed.

EDITOR: Were you depressed because of your memory deficits and lack of concentration or was it a different kind of depression?

LUANE: I was clinically depressed. I was chemically depressed; a great deal of crying, and vague thinking patterns. I couldn't focus my thoughts. I couldn't plan my classes. I have never gone into a class unplanned. You just don't go into a 4 hour class unplanned. I would just wander into the class and feel guilty I hadn't done any preparation. It was really awful.

First I went to a physician and he said I just had the 'flu.' I was about six weeks into this when I talked to some people in our area who understood the harm malathion can do and then I took a homeopathic remedy for malathion. A mild form of the only known antidote, which is Atropine. It is something you don't fool around with either; but I thought about it for a long time and then I did take the homeopathic form. It is not like taking Atropine in a hospital. Within 2½ days the symptoms were greatly improved. It was astounding. This simply reinforced my own feelings that my symptoms were due to organophosphate poisoning, because you don't respond to an antidote unless you have been poisoned.

I work in one spray area, and I live in another spray area. So I would be sprayed one day at home and go to school the next day and be sprayed again. It would be a double exposure for me. There was really no way to escape it. Until finally I decided to leave home and stay in a motel or with relatives during the spraying times, plus take my homeopathic remedy.

I am better then I was. I still don't have quite the same drive, but I am getting better.

Luane Oberholtzer, M.A.
Pasadena, California

KPFK RADIO—"THE WIZARD SHOW"

(GUEST) PAUL MCCLAIN, MOLECULAR BIOLOGIST

INTERVIEWED BY

(HOST) BOB NEILSON

AND TELEPHONE CALLERS

VICTIMS SHARE THEIR STORIES WITH RADIO AUDIENCE

BOB NEILSON: Hello, you are on the air.

CALLER: I subscribe on your show, by the way. I have just been diagnosed as having a full blown classic, (was the doctor's term) seizure disorder, which I believe, is the current euphemism for epilepsy,...and the interesting thing is I am 59 years old. I can trace the symptomatology in a sub-clinical fashion back in my life, but, the overt symptomatology definitely coincided with the acid spraying. I live at Boyle Heights in Los Angeles, I have been very heavily sprayed from the earliest times. I thought that might be interesting.

PAUL MCCLAIN: Yes. A seizure disorder per se besides my kind of orthodox training, I also have extensive training in herbals, and botanicals and acupuncture and homeopathy, and a number of other areas, and seizure disorders, in my mind, are probably, in many, many cases, due to environmental insult, and we've been fairly successful in using a number of these so called, "alternative" or wholistic things, to deal with a number of those, and as you point out, you're nervous system is much more sensitive, for whatever reason, kind of like the straw that breaks the camel's back... The environmental insult may be just all it needs to trigger you off, and this again why we question the competency of the medical officials, by saying, "Absolutely nobody could be affected by these doses, because they are too small." Well you are an example of someone, who can be- obviously.

BOB NEILSON: Hello you are on the air:

CALLER: Hello.. I have been having eye problems too, and also sinus problems. So I am one of the people that is getting affected. I would like to know, first of all...do you have a number, for people that you treat as far as a phone number for an office or something?

PAUL MCCLAIN: I personally do not. I do know that doctor Dr. Sadun, at the Doheney eye Institute, USC is developing a program, he is an ophthalmologist, and has been spent time with Dr. Ishikawa in Japan and looking at the destruction at the optic nerve, so I would say he would be your best bet.

BOB NEILSON: Dr. Sadun was a guest on our show (by phone) in February, and also presented a very interesting commentary regarding malathion and the optic nerve.

PAUL MCCLAIN: And again, here is one of those arguments...about dose, and systemic, if you have to take enough in, to elevate the level in your entire blood stream, to cause effects in large muscles, versus the amount that you could get in your eye, which is absorbed there, or even systemically how large the optic nerve, is and how susceptible and how large the muscles in the eye are, and susceptible they are, can certainly have affects, when you are not going to see any effects in other parts of the body. So these are the arguments that the state won't even think about getting into when we talk about adverse affects. So you are a good example.

BOB NEILSON: Hello you are on the air...

CALLER: I have Parkinson's disease, and my brain cells are already deteriorated down to a fairly low level. Parkinson's is probably caused by chemical damage, environmental chemicals, at least that is what is thought to be a leading factor in it. I don't want to be sprayed with malathion because it is going to push me over the line, I don't have very far to go. I spend \$3,000 a year on medication for my Parkinson's disease, and I want the government to reimburse me for this. I think that there may be 50,000 Parkinson's patients in the L.A. area. and I think we have the basis for a class action suit. We don't have very far to go. We can't tolerate much of this. I think..

**EDITOR INTERVIEWS RESIDENT OF MONROVIA
RESIDENT TELLS WHAT HAPPENED TO A BABY,
SOME SCHOOLCHILDREN AND HERSELF
AFTER THE SPRAYING OF MALATHION**

EDITOR: I understand you have information concerning a baby who became very ill after she was sprayed with malathion in the town of Monrovia?

RESIDENT: Yes. It was December 7th or December 8th, and the reason I know about this incident is the child's baby sitter is my mother's best friend. Both parents of the child are teachers. They had put the baby to bed on this particular night in the middle of the house where there were no windows (thinking it would be more safe). Unfortunately, there was a fireplace in this room and they forgot to close the vent, (the baby was 10 months old at the time, completely robust and healthy); at 6:30AM the next morning they found the baby unconscious. They could not wake the baby. They rushed her to the Arcadia Methodist Hospital, and she was there for 3 or 4 days.

The doctors at the hospital didn't make the connection between the malathion and the baby's sickness, and neither did the parents. But, the day after they were sprayed, along with the baby, I realized I had been displaying malathion symptoms.

I called and talked with the baby sitter and said here is what I have learned over the last two days, and I think there is a connection between what happened to the baby and what happened to me during the malathion spraying. I said I had just talked to the department of health (Papenak's Office) and mentioned you, and they asked that you call them immediately.

She hung up and called Papenak's office; she talked to both Jacobs and Papanek. After they finished the conversation, an hour or so later, I called the baby sitter back, and I said well, "What happened?" Where before the baby sitter had also been excited and alarmed, ...now that she had talked to Papenak she was... I am going to use the phrase, "spewing"... the party line..meaning, "O.K. something has happened... the baby is not dead." This woman is a health worker; she teaches public health at a junior college level. Papernak had told her not to say anything to the press, etc. about the incident because it would cause hysteria...and that is what she told me. She said they weren't going to say anything about it publicly because being a health worker (she has a masters in public health), she understands about mass hysteria and how things spread. This was just another story they clamped down on.

For the next 3 or 4 sprayings, after this incident, the parents took the baby out of town. I guess there were so many complaints, (my assumption); after this baby almost died, or at least was made unconscious. The next time they sprayed I went out of town. The 3rd time they called it off, and the 4th time they sprayed, I stayed to see what would happen. I listened to the helicopters. The 1st time they sprayed the helicopters were right overhead and it seemed like no more then 300 feet off the ground. It was like apocalypse now; it was just terribly loud. The next time I stayed home...three or four times later, they went overhead, but I could barely hear them. One of my friends, (who knew my story) was watching them. She said evidently because they sprayed our area so heavily the first few times, they avoided this area when spraying now. So, for a couple of times I know, they didn't spray directly over my house. Probably not over this baby's house either. They can't afford to lose a year old baby.

Later, when I again spoke to the baby sitter she agreed with me that the first time they had sprayed they must have dumped all of it, or a large amount...more then they had intended to on this area, because so many people had become ill.

I have talked to 4 or 5 other people about this story, and I think someone might have been connected with the anti-malathion movement....they tried to get information on the files at the Health Department to see if there were indeed any records about this baby, concerning the malathion incident...I don't think the county ever went back to the records, and/or amended the records to say, "We think the probable cause of this child's unconsciousness was exposure to or breathing in of malathion"...but I know the day after I had called the Poison Control Center, (also connected with Papenak's office)...all of my records disappeared.

I don't know if the county (Papenak) included this "baby" and myself as one of the so called '100 people' who were made sick through the malathion spraying. Weeks after...two months after the initial spraying..the child was still lathergic, slowed down, wouldn't row over, was having to be shaken awake, to suckle the bottle; was slow and would just drift off, according to the baby sitter (my mother's best friend).

When I again spoke to the baby sitter at a later date, she said the parents had taken the baby out of town 3 or 4 times after the initial spraying in December and that the last few sprayings they had covered everything up...taped the windows, etc. and she said the baby is now doing fine.

I think the explanation for all of these very serious health problems were not enough safeguards on the spraying apparatus on the helicopters; and they just dumped gallons or whatever quantity; just dumped too much of this stuff..and it was probably impure, also there was a really distinctive odor the morning after they sprayed.

When I talked to this scientist at American Cyanamid..I talked with his staff first, before I spoke to him ..I talked about the smell and they said, every time you have malathion with a distinctive..(it smells like death) chemical, metal sort of smell.. that means that the malathion is very impure and probably very old. When that happens things start to break down and it becomes very toxic.

RESIDENT: After the first spraying, I was sick, and after the second spraying I went out to the super market right in my area, "Ralphs" and "Von's" and I stood out there for a couple of days, and I talked to every woman who had children.

I especially talked to a lot of Spanish women, and every one..100% of the people I talked to... all the women with children who had been sprayed, had a child who was ill or going through to emergency room of the hospital,

EDITOR: How many were there you spoke with?

RESIDENT: 15 to 25.

EDITOR: I wish you had done a survey that morning.

RESIDENT: I know. I didn't...well, I was so sick the morning after.

Either the kids were sick the next morning, vomiting, and just very sick and/or they had a child who was taken to the emergency room or to the doctor the next day because they were so sick.

Later in talking to women who deal with Latino people, they told me a lot of Latino people won't report sickness because they are maybe not legal...and they won't say anything, so obviously these people did not complain.

I also talked to people in their seventies who had been sprayed and they were telling me how they felt the next morning.. They said they felt bad. They had sore throats, they

also said they were old ..and we don't know whether it is the spray or what..but you know everybody I talked to had talked to their whole half block or so, and everyone noticed they were sick, especially after the first spraying; this is just from people in this area I assume.

I haven't gone out since then and talked to anybody. And since then I know they have avoided spraying me twice;they have not sprayed overhead, because I have a friend who lives 4 blocks kitty cornered from me, and when they would go over his house, he would say it sounded like apocalypse now...they were low when spraying, but they didn't go over my house this particular time, obviously they can control it...but that first night they didn't.

EDITOR: Is your area still being sprayed?

RESIDENT: They are going to spray this evening, and I am going to stay home, and just see what happens, and if I smell it in the morning, what I will do is load my dog in the car and run up to the monastery in Sierra Madre foothills and stay all day, and then when I return I will stay inside the house.

Something happened last week...I have a lot of green trees around my house, but there is one area in the back yard, that gets full sun, has no trees to shelter it. I had some guys dig up the lawn to prepare for a garden, and I was out there putting little plants in. I was out there all day, (5 hours) on my hands and knees, getting exposed to whatever..I took a shower and walked a block and a half to a restaurant, and I almost collapsed. I was thinking... "I am feeling so weak, (I had felt weak a week and a half ago after exposure to the back yard) I thought I had better write my name and address on a piece of paper in case I faint." I had to sit in the restarant for about two hours before I could get enough strength to walk a block and a half. Now when I tried to get more information about ...the people I talked to said..that this is probably the maloxin that is in the soil...that was stirred up when the people turned the garden over. I just can't believe it...it just drains the energy out of me. I have not been the same since they sprayed in December. If I do any digging or planting, I notice the effect within three hours. I have no energy. I can walk a block and a half, that was it...I almost faint. So I am sure that the people digging in the soil who have been sprayed...are going to keep running into this symptom.

EDITOR: This is horrible. This is reminiscent of a bomb being dropped.

RESIDENT: Yes it is. I called the Poison Control Center last week. I told them what had happened. I said, Could you look up maloxin." They looked through the books and couldn't find it. They said, "What is maloxin?" I said, "It is a by product when malathion changes...and as soon as I said malathion, she shut up, and I said, "Are you there, are you there?" She said, "We can't handle anything about malathion. This is the Poison Control Center." I also found out a week and a half ago they had added about 20 people to work at the Poison Control Center. They will not even talk to you when you say malathion. They say, "Call L.A. County Department of Health." Then they dismiss you one way or another. Once I mentioned the word malathion it was like...silence. and then she said, "We can't handle any complaints about malathion." So, I don't know what's going on. Papeanak's controlling the Poison Control Center. The Department of Health is Controlling the Poison Control Center.

EDITOR: Is Poison Control Center part of the Department of Health?

RESIDENT: It would have to be. I found out from the supervisor of the Poison Control Center that Papeanak's office is on the same floor as the L.A. County Health Department. Poison Control didn't take my address. I said I wanted to be put into the computer, and I said wanted her to back-date a call that I put in in December 7th or 8th. I don't know if she did it or not. I assume she didn't. So, I don't know what's going on. They are trying to keep everything very quiet. Obviously people are being made sick, but they can't

acknowledge it publicly. Knowing how weak I was a week and a half ago makes me concerned about the well being of other people in similar circumstances.

About four weeks into the spraying all the news stations, Channel 4,2, 7 and 9, for three or four days concentrated all of the sudden on the increase of sick babies going to the pediatricians' office.

EDITOR: Did they say that on the news?

RESIDENT: It had to be the malathion. That was the only thing that had changed. The only variable...they said they didn't understand the reason for it. They were saying the children had upper respiratory infections, and upper respiratory problems, breathing problems...which is one of the main symptoms...the first symptom of malathion poisoning is sore throat, (which is the breathing in of malathin)...and it was obvious to us who had been privileged to read all the research from the doctors, that this is what it was. The pediatricians all over L.A. County were frantic; they couldn't get the kids to the office fast enough to treat them, and there was indeed, no treatment for them. All of sudden there were like tens of thousands infants, 2,3 and 4 years old and older children being brought in with flu...saying 'flu,' but it wasn't the flu.

EDITOR: This was after the first spraying?

RESIDENT: This was after the first few weeks. After they sprayed everybody and probably, and (my guess would be) before they got the spray techniques under control, and my guess is that they were heavily over-dosing everybody by..who knows...X amount times more then they should have been.

EDITOR: So this was that in the news?

RESIDENT: Oh, yes, for one whole week this information was bombarded on all the news. 2,4, 7 and 9 basically had interviews with the pediatricians. The pediatricians were overwhelmed. The complaints were all the same...upper respiratory, sore throat, lethargy; all of these complaints...and the school teachers called in..a lot of the teachers took a survey in their classrooms, and had the kids write their names, dates, addresses and write a little story, of how they felt the day after the spraying, versus the day before.

I went through all of these letters myself, 85% percent of the kids were vomiting, had diarrhea, sick at their stomachs, sore throats, nausea, on and on and on. All sorts of symptoms..4, 5 and 6 grade levels of children who were saying that the day before, they sprayed they weren't sick. And all of a sudden these were the symptoms.

RESIDENT: When I went into the hospital after the first spraying, I said I had malathion poisoning. First of all they said we don't have the tests, second of all, we don't test, and third, we don't accept the fact that malathion is making you sick.

Did you read the letter that Papenak sent to all the doctors in the spray areas?

EDITOR: yes.

RESIDENT: You read what he said? He told the doctors in the spray areas not to put malathion down as a cause. The doctors are under orders to find another cause.

Rex McGee is under Henry Voss. When I talked to Rex McGee and the people in Sacramento, I was yelling at them, Rex McGee laughed in my face..he said, "We have enough studies, there is no way anybody could be made sick." This was after I was made terribly sick...He laughed in my face and he said we have enough studies, we are not going to go and measure, and I said, "Come and measure in my bedroom." He said, "We are not going to do that, we have finished all of our studies and you can't be made sick, so forget it. And then when

I talked to somebody else that is equal to Rex McGee, in the department, and I told him my story, he was more sympathetic, and I said what is going on with Papenak, and the people down here..Spoughy...He said "Papenak and Spougy ...are only designated spokesmen for us. He said they have no control, and no say over what we do..he said, (I am going to use my words)...when you are talking to them, you might as well be talking to a stone wall...because they can't do anything...they have to do exactly what we say..and what we tell them to do..and they have to give the answers we tell them to give....(this was Bill Kallison....He was in Dr. Siddikki's office. He said, he knew about the cholinesterase test, but he just couldn't believe it would be hurting anybody.

RESIDENT: When I was talking to one of the scientists at American Cyanamid Company where they make malathion; and he said,...that things which you smell are the impurities in malathion, and the heavier the smell, the more the impurities..and then 'mercaptins'.. that is what you smell.

We were doused so heavily that you could hardly breathe, it was so bad. You could smell the impurities at 3 parts per billion, and he said they are highly volatile and that means, it has something to do with very high toxicity...the more you can smell it...the more toxic. The first time they dropped it over us..it was like a stench of death...you wouldn't believe..and that is why there were so many people sick in this area...and all the 10,000 kids in L.A. were taken to pediatricians..

The reason this scientist talks so openly is that evidently he has checked and has found that their company (American Cyanamid) did not make the malathion that is being sprayed..in Southern California, He said it was brought in from Holland.

EDITOR: That doesn't make sense.

RESIDENT: I guess when the chemical starts getting old, they start selling it to other countries, and in a round about way, it can come back here...or, you know we bought it..maybe Deukmejian and Henry Voss bought it along time ago..and have been storing it....but I did found out, that everytime you can smell it strongly...it means it is impure and it means it heightens the toxicity of it...we were drenched with it..

This scientist at American Cyanamid Company said if you have a colinesterase depression, severe enough, it will cause coma; it will cause convulsions, and it will be life threatening. He said it takes three months for the red blood cells to get back to normal again. He said it is in all the nerve cells. He also said that..aged, poisoned malathion..yields penumonia...if you are sensitive...you get a whiff of this stuff, a big whiff...coma, convulsions, life threatening.

He also talked a lot about the risk calculations of your weight and the percentage of formula....he said the state should be monitoring...the strength of it and taking air samples..which they are not...He said they should be monitoring the weight to percentage ratio. He also said they should be monitoring the ground, monitoring the air samples after spraying, every spray. (and I said they weren't). He was very surprised.....

Dan Bender has at least 15 or 20 tapes of people calling in telling him how sick they are...and he has all the written letters from the teachers of the children telling....he has a lot of information,

Here are a couple of tidbits to end on...(1) Someone called in on a radio talk show and said, they had used malathion routinely as crowd control in some foreign country. It just makes sense...it slows everybody down..you can't breathe too well. You are just slowed down. Everybody becomes apathetic...and you can't respond...you can't fight anymore after you have been sprayed to many times...that is basically the feeling. We don't have as much

air, we don't have as much stamina...everybody is like in slow motion. Also that was the comment from the teachers. They said the day after the spraying the kids came to school from the sprayed area, and went to school into another sprayed area... It was as though they were in slow motion...they were completely controllable...everybody was quiet...there was a marked difference.

(2) A government brochure for the Vietnam Veterans has a list of chemicals used in Vietnam. One of the chemicals on the list was malathion.

EDITOR: Thank you so very much for the wealth of information you have provided us with. I appreciate your time and your willingness to share with the reader this tragic event in your life.



Reprinted from National Fluoridation News

**EDITOR INTERVIEWS ENVIRONMENTALLY SENSITIVE PERSON
AND THE EFFECT MALATHION AERIAL SPRAYING HAS HAD ON HER.**

EDITOR: I understand you have environmental and/or chemical sensitivity?

GIGI: Yes. As a child I was environmentally sensitive.

Lately I worked with chemicals in a hair salon and I was exposed to them through perms, and hair coloring, plus I was a make-up artist and facialist and worked with chemicals in the make-up which aggravated the problem.

In 1986 I was diagnosed as having Epstein-Barr virus and allergies to chemicals such as ethenol, phenol, and formaldehyde whereby it adversely effected my immune system. The 'straw that broke the camels back' was the painting of the inside of my home (the paint contained formaldehyde and phenol). The carpeting as well as the 'leather' in the new furniture contained formaldehyde. I think people are beginning to understand how dangerous formaldehyde and other chemicls are to the immune system of human beings.

January of 1989 I went to the Environmental Health Center in Dallas, Texas where Dr. William Rea treats the chemically sensitive. I was diagnosed as having a chemical overlod and was placed on a treatment plan for six months. In order for the treatment to be effective, I was told to remove all gas appliances from my home because of the chemicals; gas dryer, gas stove and gas heater. After my six month treatment I was showing improvement in the way that I felt.

In December of 1989 malathion spraying got under way in Norwalk where I live. I was concerned and called the health center in Dallas and was told to leave the area for two weeks. I stayed with my sister in Riverside. After returning home for a few hours to get more clothes, I experienced my chemical sensitivities once again. I continued to go to Riverside each time Norwalk was sprayed.

My sister sold her home in Riverside, so I had nowhere else to go when they sprayed. I stayed indoors for one week after each spraying using my purifier 24 hours a day. I feel like a prisoner in my own home.

In April I attended a birthday party for my nephew in the park: my sister wiped down the tables and covered them with paper and also covered the barbeque with plastic the night of the aerial spraying which was four days prior to the party. I became very ill by the end of the day.

All my sensitivities came back. Just being around the malathion brought my immune system down. Since then I have experienced dryness in my throat, cough, headaches, dizziness, a drugged-like feeling, vomiting, and diarrhea.

EDITOR: Involuntary vomiting?

GIGI: Yes, plus dizziness and light-headedness

EDITOR: What about depression...have you been depressed?

GIGI: Yes. A little depression did set in. I became so frustrated because I spent all this money to get treated, and now it seems like it has been wasted because of the malathion spraying.

Since the spraying I have suffered severe sinus infections and I'm having the same symptoms as I had when I was chemically overloaded. The immuno therapy for my allergies is no longer effective since I've been exposed to malathion.

EDITOR: It must have been very costly to go to the clinic in Texas.

GIGI: Yes.

EDITOR: What are you doing to alleviate your present set of symptoms?

GIGI: I'm receiving IV therapy and staying indoors as much as possible.

EDITOR: Are you able to work at all, Gigi?

GIGI: I go to work once a week, and see how I feel. It is hard for me because the photographers I work with...work out of their home which has gas appliances.

EDITOR: Are you a photographer's model?

GIGI: I am a make-up artist.

EDITOR: Do you think the chemicals in the make-up could have contributed to your illness?

GIGI: It could have. A long time ago when I was working in the hair salon, I always used to become very irritable. I knew there were chemicals in the products, but I never knew what these chemicals were...in perms, hair dyes, etc.

EDITOR: You were a facialist?

GIGI: Yes.

EDITOR: Just being around these chemicals made you sensitive?

GIGI: Yes. I quit that job and started working with photographers; free-lancing with photographers, and I was O.K., but then the chemical over-load started happening when we painted the house, and then I would go to work and become worse...so, Dr. Ray suggested I quit completely because of the chemicals in the make-up.

I cannot work every day, because of the chemicals, maybe one day a week I will go to the photographers studio. I switched my makeup around to find which ones don't have as many

THE POISONING OF OUR PEOPLE

chemicals as the ones I was using...so chemicals do have a lot to do with chemical overload in effecting the immune system; whereby when some pesticide (malathion) is then sprayed. the body is once again overstressed I then become ill, because the immune system will not and cannot carry the toxic overload.

I know I'm not the only one with chemical sensitivities and am experiencing adverse effects of malathion, so I hope an alternative solution will be made soon.

Gigi Genesta
14507 LeFloss Ave.
Norwalk, California 90650

**EDITOR INTERVIEWS MOTHER SPRAYED IN SAN JOSE IN 1981
AND NOW IN LOS ANGELES AREA 1990**

EDITOR: What happened to you when you were sprayed in San Jose and since?

PAM: In San Jose I was young and working full time and really had no need or requirement to cover lawn furniture before the malathion aerial sprayings. We lived in an apartment and had no small children, so I just went to work, came home and stayed inside when we were being sprayed.

This time though, (Los Angeles spraying) I have two small children, and the first time we were sprayed, I just followed the directions (as they told us), covered all the lawn furniture, stayed inside and the next morning went out and, (actually I didn't even do it the next morning, because I took my kids down to San Diego for two days [so I left for two days] and I came back [this was the first time we were sprayed] and I was taking the covers off the lawn furniture and within an hour I had this horrendous sinus-like burning headache, it started in the front of my head and went back, and my son was also playing in the yard with me at this time (this is now back in January, that is when we were first sprayed) and he said his stomach was hurting and we went inside, and he had diarrhea, and I had this headache that went on for two days, and it hindered my ability to work at work and so on and so forth. I thought, this is weird, it just has got to be the malathion, but maybe not. Then the 2nd month we were sprayed (going into the last part of January) and same thing... took the covers off the lawn furniture and within an hour I had this same headache which went on for two days. (We have been sprayed 9 times) I am still taking the plastic off, (my husband is always at work or somewhere else) and I am the one that gets to do it..because I cover this one garden and I get this darn headache everytime.

I have called the health department and they say, "It just has to be something else it must be your imagination." The first couple of times they were fairly polite, and now they are just real rude and they say, "Go to your doctor." I said, "I have a \$500 deductible." I also said, "This is an economic hardship for me to take my child and myself to the doctor every time we are sprayed...why should the burdon of proof be put on me?"

I am 34 years old and I have never had a history of sinus problems, and every single time we are sprayed now I get this burning type of headache.....last time, I got it again...Everytime I call the health department, they just say, "Well, you have to go to the doctor..it.certainly is not the malathion, because malathion wouldn't do that; it is perfectly safe." So anyway...this last announcement stated they were going to start spraying us once a week: I was just outraged. I called all of my assembly people and they say, "There is really nothing we can do." I just can't believe it, because my whole backyard now is just..I can't let my kids run around in it. because organophosphates are absorbed through the skin...and

now we are going to start getting it once a week ...and I am really angry about the whole thing..in addition to this the spray is making me sick everytime...I am an urban planner. and one time I was so deathly ill, I had to stay home; I was throwing up. etc. Since then I have been really extremely careful. I wear gloves and I wear a mask when I take the covers off. but I still get the headache, but I can't concentrate as well at work. and I have the headache for two days after I have been sprayed. We have been sprayed 9 times and every time it is the same: except for the really two bad times when I got very sick.

Then of course I really try and protect my son and daughter. My daughter hasn't really shown any reactions. I try to take both of them out of the area; even by taking them out of the area and coming back a day or two later, each time we are sprayed. I still get the reaction...and I also may have a sensitivity to chemicals, because I know that I do tend to get nauseous when there is perfume around and I clean the bathroom, etc. I think I may be borderline chemically sensitive...anyway..which is what makes me angry, because the state doesn't take into consideration people that aren't the norm...Another example. when I was growing up my Mom used a lot of chemicals in the house...she was always cleaning, everytime there were spiders or whatever she would "bomb" the house. and used 'Raid,' and that was the time during DDT and so it could indeed be that I just may have really gotten an over-exposure as a young child....but you know...you even try and explain this to the health department and they never call you back..they never record anything, they never do follow up, they just tell you to go the doctor...

The other thing I am thinking is...we get malathion in our food and I was sprayed in 1981 in San Jose... Your body's tolerance to pesticides is broken down after awhile. and I am just wondering to...they are not taking that into consideration...whose been previously sprayed...how much malathiondo we get in our food and how much have we gotten all along in our lives...for our ability to actually take what we are getting now. I am outraged..

We were sprayed 30 times in San Jose.

When we were in San Jose, we were younger, didn't have kids so we didn't worry too much. But we always covered our car and this one time(we got sprayed one night)...we were on a four day treatment...and they said you won't be sprayed for another 4 days. We uncovered the car, went away for the week-end and that next evening they accidentally sprayed us again, it ruined the entire paint job on our car that had just been newly painted. and that kind of stuff is what went on up there.....

Pam Gehrts
4149 Lomina
Lakewood, 90713.

AFFIDAVIT OF TWILA NIBLACK

I, Twila Niblack, declare as follows:

1. I am 20 years of age and mother of Jenisee Niblack Oxner, who is three years of age.
2. On November 6th, my daughter and I resided at 3717 1/2 Bell Avenue, in the City of Bell, in the State of California. My home and my sister's home across the street, were within the area of Los Angeles County, which was being aerielly sprayed with the insecticide Malathion.
3. On Sunday, November 6, 1983, at approximately 7 p.m., my daughter, Jenisee, and I, while at my sister's home, observed three helicopters engaged in the aerial spraying of Malathion directly over our neighborhood. The children I was babysitting wanted to watch the helicopters, so I stood on the front porch of my sister's home with them and watched.
4. For about ten minutes we stood on the front porch and watched the helicopters spray. At the time I had no apprehensions about our doing so because of the "Notice of Aerial Treatment" distributed by the Los Angeles County Agriculture Commissioner's office which I had read a few days before. This notice announced the spraying (although it said the spraying would begin at 9 p.m., not 7 p.m.) and gave express assurances that there was "no known hazard to humans." The notice also stated that children were "not at a greater risk than the general population." Finally, it said that the greatest risk from aerial spraying was "unnecessary anxiety among the residents of the area." This notice lulled me into believing the aerial spraying of Malathion over our homes was absolutely safe. My belief to this effect was mistaken. The "Notice of Aerial Treatment" was fundamentally misleading in light of my experience, described below.
5. The day after the spraying, Monday, November 7, 1983, my daughter played in our front yard for approximately 1/2 hour. That night she acted unusual, in that she didn't eat dinner and then went to sleep around 7 p.m. Jenisee usually has a good appetite and won't go to sleep until around 10 p.m.
6. The next day, Tuesday, November 8, 1983, my daughter didn't wake up until approximately noon. Usually she's up by 8 a.m. She also still felt tired and didn't want to go out and play - both behaviors are unusual. My sister also remarked to me several times that Jenisee didn't "look right."
7. Jenisee's eyelids were blinking rapidly and she was shaking and swaying as if drunk. Even though she is toilet trained, she had lost control of her bladder and bowel function.
8. Under these circumstances I decided to take Jenisee to the Emergency Room at Mission Hospital in Huntington Park. We arrived there sometime after 7 p.m. and saw a doctor by the name of Tran.
9. By this time Jenisee was also heavily drooling and her tongue was hanging out of her mouth. Dr. Tran asked how long she had been this way and then contacted my pediatrician, Dr. Shanaria Malek, whom I had tried to reach but had been unavailable. One of the first things he asked my pediatrician was "How long has she been retarded?" When Jenisee's condition worsened we were referred to Martin Luther King Hospital, which, I was told, was better equipped to administer tests in possible poisoning cases.
10. I took her again to the emergency room, this time at Martin Luther King Hospital, a little after 10 p.m. I spent some time there answering the questions of four doctors concerning my daughter's medical history, drugs and dangerous products around our home. One doctor asked specifically about possible insecticides around the house. I then told them about the aerial spraying of Malathion going on in the area where we live.
11. Sometime before midnight Jenisee was admitted to intensive care at Martin Luther King. Jenisee's bladder and bowels were still out of control and she was going in and out of sleep.
12. A Dr. Santiago, at Martin Luther King Hospital, diagnosed possible organophosphate poisoning and the antidote for organophosphate poisoning, Atropine, was administered. After the Atropine was administered Jenisee showed improvement (her tongue went into her mouth and her color improved).
13. On Friday morning, November 11, 1983, Jenisee was moved out of the intensive care unit, and was released from the hospital that afternoon.
14. Under these circumstances, it is clear that my daughter was poisoned by Malathion aerielly sprayed by contractors working for Federal, State and Local Agriculture officials. The Notice of the Spraying was extremely misleading. Contrary to that notice the Mexican Fruit Eradication Project in Los Angeles County, insofar as it entails the aerial broadcast spraying of Malathion, poses a host of known and unknown health dangers to the residents of the treatment area. Said spraying should be immediately halted.



S.A.F.E.
Safe Alternatives for Fruit Fly Eradication
P.O. Box 63302
Los Angeles, CA 90063
(818) 359-2491

From a sworn statement by Twila Niblack, dated March 1984

We need your help! Your donations can stop the spraying. Volunteers are welcome.

Introduction to Chapter 2



A 'FACT SHEET' was sent to all citizens of Los Angeles (in the spray area) by the County Health Department. The notice stated malathion is one of the least hazardous insecticides in use today. It also stated that doctors use malathion to treat patients (including children) with malathion shampoo. (See Fact Sheet in this Chapter).

A short time later a letter was sent out by the Department of Health Services in Sacramento, signed by Kenneth W. Kizer, M.D., M.P.H. The second paragraph of the letter states malathion shampoo is used by both adults and children for head lice. The letter goes on to state that this malathion shampoo is used in much higher concentrations than the malathion used in the spray program. (See 'Dear Californian' Letter this Chapter).

To digress a moment from the safety of malathion shampoo...at the end of Kizer's letter he states, "...we are concerned that having Medfly maggots in fruits and vegetables would discourage people from eating these products. This is worrisome since we know Californians currently do not eat enough fruits and vegetables, and many types of cancer, heart disease and other conditions could be prevented if people ate more fruits and vegetables."

As the Editor, I would like to say to you the reader, that spraying malathion on fruits and vegetables may or may not stop certain pests, but it certainly will not make our fruits and vegetables healthier (or ourselves) to have a poison sprayed on them; yet many agricultural areas routinely spray malathion on crops.

Returning once again to the question of malathion shampoo...there is a journal titled TERATOLOGY 36:7-9 (1987). This particular issue reports a mother who used malathion shampoo while pregnant and the baby was born malformed. (See excerpts from this Journal in this Chapter).

Mr. Edwin F. Tinsworth, Director of the Special Review and Reregistration Division of the Environmental Protection Agency, wrote a letter to Mr. Jim Wells of the California Department of Food and Agriculture on malathion on November 18, 1989. The letter, excerpted and shown in part only, states that developmental and maternal toxicity were noted in a rabbit study. Also a rat teratology study demonstrated no evidence of maternal or fetal toxicity was judged to be inadequate and must be repeated. A 3-generation rat reproduction study was also found to be unacceptable. ...Oncogenicity studies using malathion in the mouse and malaoxon in the rat were not acceptable and are being repeated. (See this chapter for a page on this EPA study)

The California Department of Food and Agriculture Medical Toxicology Branch in a summary of Toxicology Data on Malathion, dated July 30, 1986 and Revised May 3, 1988 lists Data Gap Status, and in so doing showed Data gaps and or inadequate study on the following: Onco mouse, Repro rat; Terato rat and in Chromosome and Neurotox.

Last but not least a notice was sent to ALL COUNTY AGRICULTURAL COMMISSIONERS, dated, December 2, 1989. (It states something which was never told to the citizen or the doctor in the spray areas). On page No. 3 it refers to WORKER SAFETY REENTRY INTERVAL, and it states, "Do not enter treated areas until spray residues have dried." (See All County Agricultural Commissioners Notice in this Chapter).

My question to you the reader is... are we as citizens of the State of California exempt from precautions regarding the spraying of malathion over state workers?

You will also notice on the 'FACT SHEET' to the citizen and the "DEAR DOCTOR" letter the above is never stated.

(Continued next page)

This same Agricultural Commissioners Notice also states, "Only ground applications shall be made in environmentally sensitive areas, such as water." Yet Silver Lake Reservoir and Bolsa Chica were aerially sprayed like any other area, or within such close proximity the malathion drifted over the water.

Another guideline also states, "Individual property owners should be contacted and advised of the treatment and appropriate precautions." My question to you the reader is why has the State not followed through with this rule? They have again broken their own directives!

No. 10 guideline states, "This pesticide is toxic to fish aquatic invertebrates, and aquatic life stages of amphibians. Do not apply directly to water or wetlands." Going back two paragraphs, you again see how the State has broken its own directives!

The California Medical Association held its delegate meeting at the Disneyland Hotel in March of this year (1990). As an Investigative Reporter I went to the Disneyland Hotel to interview Dr. Green. He was one of a small number of doctors who was opposed to the aerial spraying of malathion.

While waiting to speak with Dr. Green, I became engaged in conversation with a young man who was an aide to the CMA Delegate Meeting. He stated that he nor his wife personally liked the idea of being sprayed in 1981, (they were living in northern California at the time). "But," he said, "The policy of the CMA is that aerial spraying of malathion is not dangerous to the population at large." In other words, being elected a (voting member) delegate, one must then put aside all personal feelings or judgements, and think in terms of CMA policy. The delegate must "spew" the party line.

Inadvertantly, the aide also told me there are actual training sessions for the delegates...these training sessions it seems, teach the doctor the policy or "stance" of the California Medical Association so that the CMA policy will always be given precedence over individual or personal conviction(s) when it comes time to vote.

As the Editor I was very impressed with Dr. Green for his stand against the spraying of malathion, although the CMA (of course) voted him and his small core group down.

One of the statements Dr. Green (an Oncologist) made to me, was, "I just hope none of my patients will wish to have babies within the next five years." It seems he is concerned about birth defects after this latest series of aerial spraying of malathion.

Dr. Alan Levin, M.D. who gave testimony before L.A. City Council stated, that if one were to offer an M.D. immunity, he would privately tell you that the aerial spraying of malathion is not in the best interest of people.



The Experts

MALATHION FACT SHEET

Q. How dangerous is malathion?

A. Malathion is one of the least hazardous insecticides in use today. It is used by home gardeners and farmers to grow food crops. In European countries, doctors use malathion to treat head and body lice on patients, including children.

Q. How much malathion will be applied?

A. Only 2.4 ounces of malathion mixed with 9.6 ounces of a fly bait are applied per surface acre. Tiny droplets of this mixture fall directly to surfaces where they are eaten by the Mediterranean fruit flies.

Q. What should people do when the material is being applied?

A. 1. There is no need to leave the area.

2. Because the bait droplets will soil articles they land on, it is suggested that anything that might be stained should be covered or washed off afterwards.

3. If convenient, stay indoors at the moment of application in your area to avoid spotting of personal apparel.

4. SPECIAL NOTICE: CERTAIN TYPES OF VEHICLE PAINT MAY BE DAMAGED BY THE BAIT DROPLETS. VEHICLES SHOULD BE PUT IN A GARAGE OR COVERED TO PREVENT CONTACT WITH THE BAIT DROPLETS. Vehicles that do get droplets on them must be thoroughly washed by no later than the following morning to avoid risk of damage.

Q. What if the bait mixture gets on my skin or clothes?

A. Normal washing with soap and water is all that is necessary.

Q. Are there any other special precautions I should take?

A. Some plastic skylights and awnings may be spotted by the spray mixture. Rinse with fresh water after the treatment is completed to avoid spotting.

Q. What about infants, children, pregnant women, those with chronic illness and the elderly?

A. These populations are not at special risk from malathion bait applications. The amount of material applied is not toxicologically significant for humans and malathion is not associated with any measurable increase in risk of reproductive or chronic disease abnormalities.

Q. What about fruits and vegetables growing in our yard?

A. Fruits and vegetables can be eaten after the bait applications. All that is recommended is that they be rinsed before eating, just as is done with produce from the grocery store. Please do not move backyard fruit out of the quarantine area.

Q. What effect will the malathion bait applications have on animals?

A. Malathion is used on domestic animals for flea treatment. There is no special hazard since the concentration applied in the bait is less than is used to treat fleas. **FISH ARE VERY SUSCEPTIBLE TO ANY CHANGE IN THE CHEMICAL MAKE-UP OF THEIR ENVIRONMENT.** Covering of outdoor fish ponds is recommended, especially for those less than three feet deep. It is also necessary to uncover the pond shortly after the application in order to avoid oxygen starvation under the cover.

DEPARTMENT OF HEALTH SERVICES

714/744 P STREET
SACRAMENTO, CA 95814



Dear Fellow Californian:

There has been considerable recent public concern expressed about the health effects of the malathion-bait being used to eradicate the Mediterranean fruit fly (Medfly) in southern California. I am writing this letter to tell you that these outdoor, nighttime applications present no significant health hazard to persons living in the sprayed areas.

Malathion has been widely used throughout the world for decades. More is known about the health effects of malathion than any other similar pesticide. Malathion is among the safest insecticides in use, being commonly used around the home, in gardens and in orchards. It is used at much higher concentrations than used in the spray program for the treatment of head lice in both children and adults. It is used in numerous veterinary products, and it has been used (at significantly higher concentrations) in mosquito abatement programs throughout the world (including southern California) for many years.



The malathion-bait is being applied to the sprayed areas in very small doses. Each acre sprayed will receive 2.8 ounces (about 1/3 of a cup) of malathion. In such small doses, malathion is not dangerous to people or animals. Also, it is important to emphasize that in this program the malathion is not being sprayed such as is done in mosquito abatement programs. Instead, the malathion is contained in a corn syrup bait, and this bait is what is being sprayed. There is essentially no evaporation of malathion from the bait.

To help address the public health concerns that have been expressed about the current malathion program, the Department has established a Public Health Effects Advisory Committee, similar to what has been done to address previous malathion spray programs in California and many other issues. This committee will provide an open scientific and medical forum to address public health concerns about the Medfly Project. About twenty five physicians and scientists with relevant expertise (e.g., toxicology) make up the committee.

Although the current eradication effort may be inconvenient or even unpleasant for some persons, allowing the Medfly to become established in southern California would be much worse from a public health perspective. For example, if the Medfly becomes established in California, we fear that home gardeners and farmers would make much greater use of pesticides that are far more dangerous than malathion in attempts to control the pest. Also, the fumigation process that would be required to prepare agricultural products for export from the Medfly area, would expose workers to highly toxic fumigant pesticides. Similarly, we are concerned that having Medfly maggots in fruits and vegetables would discourage people from eating these products. This is worrisome since we know Californians currently do not eat enough fruits and vegetables, and many types of cancer, heart disease and other conditions could be prevented if people ate more fruits and vegetables.

Sincerely,

Kenneth W. Kizer, M.D., M.P.H.
Director

Amyoplasia Congenita-Like Condition and Maternal Malathion Exposure

TERATOLOGY 36:7-9 (1987)

D. LINDHOUT AND G. HAGEMAN

*Department of Clinical Genetics, Erasmus University, 3000 DR Rotterdam**D.L.: Institute of Human Genetics, Free University, 1007 MC Amsterdam**D.L.: Department of Child Neurology, University Hospital AZU, Utrecht**G.H.: Department of Neurology, Hospital Ziekenzorg, Enschede,**The Netherlands (G.H.)*

ABSTRACT This report concerns an amyoplasia-like condition in a case with maternal exposure to malathion during the 11th to 12th week of pregnancy. Malathion is an agent acting on the neuromuscular system. The possibility of a causal association is discussed.



Fig. 1. Amyoplasia congenita with typical malpositioning of limbs and trunk and dimpling of skin.

broad with apparent hypertelorism and severe micrognathia. Cytogenetic analysis of peripheral lymphocytes was normal (46, XX, G-banding). At postmortem examination, the muscles of the extremities, and thoracic and abdominal wall were almost completely replaced by fatty tissue. The thymus was enlarged. The heart showed right atrial dilatation and right ventricular hypertrophy. Macroscopically, there was no obvious lung hypoplasia, but there were minor microscopic signs of pulmonary tissue hypoplasia. The spinal cord was remarkably thin on gross examination; for microscopic examination, only the medulla oblongata and cervical spinal cord were available and they showed normal histology with an apparently normal number of anterior horn cells. A specimen of skeletal muscle could be obtained only from the diaphragm and the intercostal muscles, and these were described as "cell-rich with scattered atrophy." On gross examination the brain appeared normal.

Family history

The parents were healthy and not consanguineous. They had two previous children, a healthy son and daughter. A paternal cousin had reportedly a unilateral facial flammoid nevus. The mother's mother had had six pregnancies, of which three had ended in a spontaneous abortion.

DISCUSSION

The present case has the clinical characteristics of amyoplasia. Also in this case, there is no evidence of a genetic etiology. However, the estimated number of anterior horn cells of the cervical spinal cord was normal. When we asked the mother about drug use or ex-

posure to chemicals and other environmental agents, she told us only about her use of a malathion-containing lotion during the 11th and 12th weeks after conception. This might have been a chance occurrence. However, malathion is an inhibitor of acetylcholinesterase. When administered to adult animals, malathion and related thiophosphonates stimulate, and subsequently inhibit, the nicotinic sites in skeletal muscle, resulting in muscle weakness and paralysis. These compounds require biotransformation into active "oxon" metabolites, catalyzed by the cytochrome P-450 system. Neonatal animals are far more sensitive to these agents than adults, mainly because of a slower rate of detoxification of the active metabolite (Brodeur and Dubois, '63). In animal teratogenicity studies (pregnant rats: 240 mg/kg) some increase in neonatal mortality of treated mothers was noticed—however, without further specification of the cause (Kalow and Marton, '61).

Since a similar discrepancy between metabolism of neonates and that of adults has been found in humans (Karlsen et al., '81), and since, in general, drug metabolizing systems are less well active or developed in the fetus than in the neonate, the human fetus is presumably much more sensitive to exposure to malathion than the adult. Therefore, the repeated lavage with excessive amounts of a malathion-containing hair lotion with longstanding wetness of the skin may have resulted in a maternal uptake of an amount of malathion that was, though not sufficient to cause maternal side effects, adequate for placental transport and fetal exposure in an early period of embryonic neuromuscular development, and this might have resulted in amyoplasia of skeletal muscles.

Our case shows remarkable similarities with the case following treatment of maternal tetanus with muscle relaxants (Jago, '70). Not only are the positioning of the limbs and the pathogenetic mechanism similar: the administration of the drug (d-tubocurarine) also was in the 11th to 12th week of gestation, as in our case. This may indicate a specific teratogenic period for amyoplasia congenita.

We thought it wise to report on this association, since malathion, although well known as a neuromuscular agent, is not recognized as such when routine questions about environmental agents do not include specific question about malathion-containing preparations for external use.



COUNTY OF LOS ANGELES • DEPARTMENT OF HEALTH SERVICES

313 NORTH FIGUEROA STREET • LOS ANGELES, CALIFORNIA 90012 • (213) 974-

TOXICS EPIDEMIOLOGY PROGRAM
2615 S. Grand Ave., Room 607, Los Angeles, CA 90007
(213) 744-3235

Information About Pesticide Application, Medfly/Fruit Fly Eradication Program

(PLEASE KEEP THIS INFORMATION FOR FUTURE REFERENCE)

January 3, 1990

Dear Doctor:

The following information may be of help to you in managing and counseling patients potentially exposed to pesticides used in the current Mediterranean fruit fly eradication program. Because of the medfly infestation discovered in late 1989, agricultural officials plan to conduct repeated aerial sprayings of malathion in certain areas of Los Angeles and surrounding counties throughout the winter and spring of 1990. Overall, we do not anticipate that residents in the involved areas will be exposed to enough malathion to cause any serious health problems. However, we know that many people are concerned about the safety of malathion in this setting, particularly about the possibility of allergic reactions or other non-specific symptoms in "sensitive" individuals.

The Department of Health Services is not directly involved in the medfly eradication campaign, but nonetheless has an important role in determining that no adverse health effects in the population are occurring or are likely as a result of these eradication efforts. Despite extensive outreach over the past decade to individual physicians, hospitals, schools, day care centers, emergency responders, and the general public, we have seen no cases of pesticide poisoning and no pattern of systemic illness which could be attributed to the spraying. However, we continue to be interested in receiving case reports of illnesses which appear to be associated with the eradication campaign.

Background: Medfly infestations in Los Angeles County and elsewhere in California have occurred several times in the past decade, and on each occasion have been successfully eradicated. Infestations are probably caused by introduction of contraband or other medfly-infested fruit from areas where the medfly is endemic, such as Central America, Hawaii, or Southeast Asia, rather than by a recrudescence of a previous infestation. Current eradication strategy relies on one or more aerial applications of a mixture containing malathion and a corn syrup protein bait, localized ground spraying of pesticides combined with fruit stripping in yards with medfly-infested fruit trees, and regional quarantines on the movement of certain kinds of produce. In two previous fruit fly eradication campaigns in Los Angeles County, in 1981 and 1984, aerial spraying of malathion was repeated 32 times in the involved areas at approximately weekly intervals.

Application Dose and Risk for Exposure: For the aerial sprayings, 2.8 ounces of malathion, mixed with 9.6 ounces of a corn syrup protein bait, are applied per acre, equivalent to approximately 2 mg of malathion per square foot. Spraying is done at night, after 9:00 p.m., by helicopter. The uniformity of the spraying is quite good. The sticky viscous droplets are not respirable, averaging 300 to 700 microns in diameter. Very few droplets are as small as 50 microns. The droplets fall to the ground within 15 to 30 minutes of being released, with little lateral "drift," and with very little subsequent evaporation into ambient air. Few persons in the spray areas notice an odor after the spraying. Once on the ground, the malathion degrades in the environment within 2 to 7 days.

Given these methods of application, the principal route of exposure to the sprayed malathion would be through ingestion. Outdoor air concentrations of malathion following aerial spraying are typically a small fraction of a microgram per cubic meter; indoor levels are an order of magnitude lower. Skin absorption of malathion through direct contact with the spray droplets is very low. Since the reported single-dose no-effect level for malathion in humans is 0.2 to 0.5 mg/kg, it is difficult to imagine that anyone could absorb enough malathion after the spraying to produce systemic poisoning, with a sizable margin of safety. This would apply as well to small children who might have extensive contact with sprayed surfaces or ingest sprayed soil or foliage. Since malathion does not persist in the environment or in biological tissues, repeated aerial applications of malathion do not appear to cause an increase in human health risk.

Additionally, ground spraying of malathion and soil drenching with diazinon are being carried out in yards with medfly-infested fruit trees. Diazinon is drenched into soil around such trees at a rate of 60 mg per square foot. The single-dose no-effect level for diazinon is 0.05 mg/kg.

Health Effects of Malathion and Diazinon: Careful surveillance in Los Angeles County over the past few years during aerial applications of malathion for medfly infestations has revealed very few health problems in area residents as a result of the spraying. Both malathion and diazinon, like other organophosphate insecticides, cause poisoning through cholinesterase inhibition. Human cholinesterase is approximately a thousandfold less susceptible to inhibition by malathion than is insect cholinesterase, a difference which explains the efficacy of malathion as an insecticide at doses which pose little risk to human health.

Poisoning with organophosphates requires a dose sufficient to inhibit at least 10% to 30% of cholinesterase activity in the plasma or red blood cells. Classic symptoms of organophosphate poisoning, following a dose much larger than could be achieved in the current spraying, include anxiety, headache, dizziness, blurred vision, salivation, nausea, diarrhea, and urinary incontinence. At even higher doses, a victim can develop respiratory distress, with wheezing and pulmonary edema, muscle fasciculations and paralysis, progressing to collapse and death.

Although some organophosphates can cause delayed onset peripheral neuropathy following an acute poisoning, neither malathion nor diazinon has been clearly linked with this outcome. Malathion has not been shown to produce delayed onset peripheral neuropathy in animal studies. In any case, damage to peripheral nerves by organophosphate insecticides typically requires an initial dose high enough to produce a significant systemic poisoning. There is no evidence linking chronic low level exposures to neurological disease.

January 3, 1990

MEDFLY/FRUIT FLY INFORMATION

Page 3 of 4

The National Cancer Institute, the National Toxicology Program, the US Environmental Protection Agency, and the California Department of Health Services (CDHS) have all concluded that malathion and diazinon are not carcinogens or mutagens. Furthermore, CDHS has conducted an analysis of the possible cancer risks due to malathion exposure, based on "worst case" considerations from existing animal studies. CDHS concluded that even if malathion or its metabolites were speculatively carcinogens (which they do not appear to be), they would have to be extremely weak ones; the incremental lifetime cancer risk to any individual which might theoretically be attributed to the above schedule of spraying would be insignificant, approaching less than one chance in a billion.

There is no evidence from animal studies that either malathion or diazinon causes adverse reproductive outcomes, unless the doses administered to the pregnant animal were so large as to jeopardize the health of the mother. At lower exposure levels, specific adverse reproductive outcomes have not been seen. A careful epidemiologic study of birth outcomes in the San Francisco Bay area in 1981 and 1982, following aerial applications of malathion as often as 15 times over a 3-county area, failed to show an association between exposure and adverse reproductive outcomes.

Direct upper respiratory irritant effects from exposure to airborne malathion or corn syrup bait might theoretically be observed in persons who are out of doors and come into direct contact with the droplets during the spraying. Additionally, following a substantial exposure, an individual might theoretically experience allergic symptoms, including exacerbation of asthma, rhinitis, urticaria, or angioedema, or non-specific reactive symptoms such as headache or nausea. Fever is not seen. Such symptoms would be expected to resolve rapidly. However, in practice such reactions appear to be quite rare, despite extensive surveillance in Los Angeles County and elsewhere in the state during past medfly episodes. Skin irritation and eczema following contact with malathion also appear to be rare.

Of note, malathion-containing lotion (Prioderm, 1/2% malathion) has been available for years for the treatment of head lice. Occasionally, tingling of the scalp has been reported by patients following application of this prescription medication, but other side effects are very rare. The amount of malathion in contact with the skin following such application of Prioderm is probably 10 to 100 times greater than would occur during aerial spraying of malathion.

Advice for Persons in Areas of Pesticide Treatment: Although the health risks and the amounts of malathion used are small, it is nonetheless prudent for individuals to take steps to decrease exposure to malathion. Residents may wish to avoid direct contact with sprayed surfaces, and may wish to wash off picnic tables or toys left outside which might be mouthed by small children. Detergents and other alkaline solutions degrade malathion almost immediately. Residents should avoid being out of doors during the spraying, and for about 15 to 30 minutes afterwards. Residents in the spray areas may also wish to keep doors and windows closed during the spraying, although even without such precautions the risk of any adverse health effects appears to be extremely low.

Residents in the spray areas should keep children and pets away from diazinon-drenched soil for a few days, to avoid harvesting fruit from sprayed areas for three days, and to wash all fruit before eating. Agriculture officials warn that

January 3, 1990

MEDFLY/FRUIT FLY INFORMATION

Page 4 of 4

the spray mixture may mar the acrylic finish on cars, an effect due principally to the corn syrup protein bait. Covering cars overnight or washing them the next morning appears to obviate most problems with car finishes.

Medical Treatment: In the event of a serious unforeseen accident involving exposure to malathion or diazinon (such as might occur through accidental spillage or gross contamination), the victim should be advised to remove all contaminated clothing immediately and flood the skin with water or wash with soap and water to remove residual pesticide, and then seek medical care. If concentrated pesticide splashes into the eyes, irrigate the eyes with water immediately.

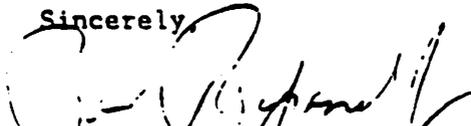
The treating emergency physician should assess whether the victim manifests signs and symptoms of significant cholinesterase inhibition. If the exposure involved a large dose of malathion, perhaps a few grams or more, a plasma and RBC cholinesterase level should probably be obtained. Cholinesterase testing is not indicated for residents in the spray areas because the dose of malathion is so low. Treatment with atropine and pralidoxime is indicated only for severe poisoning.

It is important to note that normal levels of cholinesterase vary widely among individuals. Therefore, to preclude false positive interpretations, it is important to correlate cholinesterase results with clinical findings. Thus, a person with a borderline low cholinesterase level but no history of significant exposure and no symptoms or signs of pesticide poisoning would probably represent a "false positive." To preclude false negative interpretations in mild cases of pesticide poisoning, a follow-up level should be drawn at least three weeks later, when recovery is complete, to determine what the individual's "baseline" cholinesterase level is.

In the event of irritative or allergic symptoms only, including eye or throat irritation, headache, nausea, angioedema, or exacerbation of pre-existing asthma or rhinitis, treatment will be purely supportive. Because such symptoms have been quite rare in the past following malathion spraying, health care workers should also seek other causes for the patient's illness.

Any health care worker who observes a case of illness likely to be linked to the current aerial spraying of malathion, is asked to report that case to Dr. Paul Papanek within the Department of Health Services, at (213) 744-3235. Persons needing more medical information about the spraying may also call this number. Additionally, state law requires that all pesticide-related illnesses be reported by the treating physician to the County Registrar, at (213) 974-7821. For further information about the locations and exact dates and times of future sprayings, call the Medfly Hotlines, at (800) 356-2894, (800) 225-1346 or (818) 350-1929. Thank you for your kind attention to these matters.

Sincerely,


Paul J. Papanek, Jr., MD MPH
Chief, Toxics Epidemiology Program

DEPARTMENT OF FOOD AND AGRICULTURE

PRB #202

1220 N Street, Room A-400
Sacramento, California 95814

December 8, 1989

Page 2

TO: ALL COUNTY AGRICULTURAL COMMISSIONERS

Dilution Rate: Apply with up to 39.9 gallons of water per acre by ground or apply with a maximum of 2.9 gallons of water per acre by aircraft. No dilution with water shall be used over urban areas.

Method of Application: Ground spray equipment or by aircraft (see "Other Requirements" Section #7 regarding impact on endangered species).

Frequency/Timing of Application: This is a quarantine treatment. Repeat applications will be made at a minimum of 7 day intervals.

Worker Safety Reentry Interval: Do not enter treated areas until spray residues have dried.

Preharvest Interval: 3 days

Effective Date: December 9, 1989

Expiration Date: December 8, 1992

- Other Requirements:**
1. Applications shall be made by or under the direct supervision of the California Department of Food and Agriculture, Division of Plant Industry, or other cooperating agencies.
 2. Aerial applications whenever possible should be limited to late evening and early morning hours in urban areas.
 3. Only ground applications shall be made in environmentally sensitive areas, such as water.
 4. In urban areas, ground applications shall be made with appropriate ground spray equipment. Mist blowers or hydraulic spray rigs may be used on commercial crops.
 5. Residue data will be taken upon treatment of a specified crop under this quarantine exemption. Any treated commodities with residues of malathion in excess of 8 ppm will be withheld from the channels of trade and EPA notified by phone. Residue data should be submitted to the Agency with the reports required in item 9.

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE
MEDICAL TOXICOLOGY BRANCH

SUMMARY OF TOXICOLOGY DATA

MALATHION

SB 950-343, Tolerance #111

July 30, 1986

Revised February 23, 1987

Revised May 3, 1988

I. DATA GAP STATUS

- Combined (chronic + onco) rat: No data gap, no adverse effect
- Chronic dog: No data gap, no adverse effect - dog, toxicity study in progress
- Onco rat: No data gap, no adverse effect - rat (not onco)
- Onco mouse: **Data gap, inadequate study on file, no adverse effect indicated**
- Repro rat: **Data gap, inadequate study on file, possible adverse effect indicated**
- Terato rat: **Data gap, inadequate study on file, no adverse effect indicated**
- Terato rabbit: No data gap, no adverse effect
- Gene mutation: No data gap, no adverse effect
- Chromosome: **Data gap, inadequate studies on file, no adverse effect indicated**
- DNA damage: No data gap, no adverse effect - dog, toxicity study in progress
- Neurotox: **Data gap, no study on file, study to be initiated**

Note, Toxicology one-liners are attached

** indicates acceptable study

Bold face indicates possible adverse effect

File name SB343MAL.JG3, revised 5/88 by D. Shimer and J. Gee

193 preliminary note the "NOT dose dependent" comment on pg 4.

The safety of Malathion has not been definitively established. Would have seem prudent to spray until we're down.

They know Malathion is more injurious

*AP 5-3-89
RH sl:*

EPA

Pesticide Fact Sheet

See pages
3, 4, 5, 6

Name of Chemical: MALATHION
Reason for Issuance: REGISTRATION STANDARD
Date Issued: JAN - 1 1988
Fact Sheet Number: 152

Toxicology Characteristics

Acute Oral: Toxicity Category III (ranges from 1546 to 1945 mg/kg in female rats and 1522 to 1650 mg/kg in male rats).

Acute Dermal: Toxicity Category III (>2000 mg/kg in female and male rats and rabbits).

Acute Inhalation: Toxicity Category III based on toxicity values ranging from 1.7 to >4.0 mg/m³ in rats.

Primary Dermal Irritation: Toxicity Category IV based on mild dermal irritation reported in a rabbit study

Primary Eye Irritation: Toxicity Category III based on findings of mild conjunctival reactions 72 hours post application in rabbits' eyes.

Skin Sensitization: Non-sensitizing

Delayed Neurotoxicity: Data gap.

Subchronic Inhalation: Data gap.

Oncogenicity: Data gaps for mouse (using malathion) and rat (using malaoxon).

Chronic Feeding: Data gaps for rodent and nonrodent (using malathion) and rodent (using malaoxon).

Metabolism: Data gap.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 16 1989

Mr. Jim Wells
California Department of
Food and Agriculture
1220 N Street
Sacramento, CA 95814

OFFICE OF
PESTICIDES AND TOXIC SUBSTANCES

(Excerpted)

Dear Mr. Wells:

An acceptable rabbit teratology study demonstrated no teratogenicity; however, developmental and maternal toxicity were noted. A rat teratology study, which demonstrated no evidence of maternal or fetal toxicity, was judged to be inadequate and must be repeated. A 3-generation rat reproduction study was also found to be unacceptable.

The Malathion Registration Standard, issued by the Agency in February 1988, identified the need for certain additional data to support continued malathion registration. Based on existing data reviewed by the Agency to assess the potential of malathion to produce chronic health effects, the Agency determined that the pesticide is not carcinogenic in two species of rats, and that its metabolite, malaoxon, is not carcinogenic in mice. However, oncogenicity studies using malathion in the mouse and malaoxon in the rat were not acceptable and are being repeated. These data are necessary for the Agency to make a final decision regarding oncogenicity.

None of the data available to the Agency meets or exceeds the criteria specified in the regulations for initiating a Special Review of the pesticide. However, a final determination cannot be made until the additional data required in the Registration Standard have been reviewed by the Agency. The chronic feeding/oncogenicity studies are due to be submitted to the Agency in April 1992. This will allow for a final decision regarding reregistration or other regulatory action late in FY 92 or early FY 93.

In summary, based on existing data, EPA does not believe existing uses of malathion present any unreasonable risk. The Agency is requiring additional data needed to make a final reregistration decision.

Sincerely yours,

Edwin F. Tinsworth, Director
Special Review and
Reregistration Division

Chapter 3 CHEMICALS AND YOUR HEALTH

LETTERS TO THE STAR-NEWS Spraying only profits chemical companies

I wrote the State Food and Agriculture Department in Sacramento, suggesting that a safer way of dealing with the Medfly would be to carefully inspect all baggage or shipments from Hawaii where the Medfly is not labeled as such.

My letter said that the Medfly will be exterminated and that the Medfly will be exterminated and that the Medfly will be exterminated.

How much Malathion? Only 2.4 ounces per acre. The 2.4 ounces per acre area is 12 sprays per acre. Let's say school yard spraying, two pounds per acre. So multiply two pounds by 10 pounds per acre. Of course, it doesn't all get into the water.

Quote from the state's own agricultural monitoring for 1981: "The lower absolute concentration of Malathion detected in streams is probably due to the fact that the runoff problem is less a natural situation than it is a storm runoff situation. Rain runs off the hillsides and into the streams."

Sometimes a seemingly intractable problem becomes less awesome if you step back and take a new look at it. That's why it's high time for state officials clinging to the current helicopter-bomb-bardment strategy of eradicating the Medfly to rethink assumptions about the pest.

James R. Carey, a top entomologist selected as an adviser by the state Department of Food and Agriculture—that is to say, he is no wild-eyed extremist—is convinced, along with a few vocal others, that the current Medfly infestation is not the result of a recent invasion but a deep-rooted natural process that won't ever end. Carey's research indicates that the Medfly is endemic to parts of Los Angeles and Orange counties. But judging by the betting and defensive reaction at an assembly malathion hearing Tuesday, one would think Carey had declared that the world was flat and motherhood a subversive idea. Agriculture officials and many legislators were unwilling to even consider the wisdom of the testimony of Carey and others recommending another look at the pest—hunting, eradicate at all cost philosophy. It's true that many of his colleagues disagree, but shouldn't the state at least further investigate his findings? Of course, implications of controlling an endemic Malathion population are awesome. But, as Carey eventually got to belly up to the pest and deal with it head-on. That attitude apply to the state's assumptions, too.

Time for the Big Medfly Rethink



colleagues disagree, but shouldn't the state at least further investigate his findings? Of course, implications of controlling an endemic Malathion population are awesome. But, as Carey eventually got to belly up to the pest and deal with it head-on. That attitude apply to the state's assumptions, too.

Another questionable "given" in the equation is that the general malathion revised by many residents will largely depend on the part by the end of spring. The danger in pushing all of your eggs in one basket, so to speak, is that they can all break at once, and leave quite a mess.

The danger in pushing all of your eggs in one basket, so to speak, is that they can all break at once, and leave quite a mess.

Moratorium on Malathion Spraying Is Widely Backed

By CATHEEN DECKER
TIMES STAFF WRITER

And growing public criticism of efforts to eradicate the Mediterranean fruit fly, Southern California is being urged by The Times to suspend a moratorium on Malathion applications until more pest studies are done to assess the pesticide's safety.

Asked about a spraying moratorium, the California branch of the Sierra Club, 57 percent of respondents said they wanted aerial applications stopped. On 12 percent favored continued spraying.

Malathion is a deadly chemical that causes like symptoms, and has on cancer and birth defects. Water such as rain gets into the water and gets into the water.

Agent orange has wiped out people, especially since it was sprayed in our area. There are hundreds of small car accidents, including deaths of children, and we are all victims, and we are all victims, and we are all victims.

DEBBIE
and do you own live in the city and county officials to have that spray in sight? Would it not be more dangerous to spray every yard and engage the services of pest control companies to spray those areas? The local agencies could then engage the services of pest control companies to spray those areas?

High Pesticide Levels Found Inside Homes

Pesticides may travel long distances through the air and become trapped in homes years after they were applied, a study issued in Washington by the Environmental Protection Agency suggested.

for 32 substances used in lawn care, pest control, and household cleaning. The study found that the average indoor level of some pesticides was 50 to 80 times greater than the levels outdoors.

but spray, insecticides and other chemicals.

Introduction to Chapter 3



EDITOR'S NOTE: Russell Jaffe, M.D., Ph.D. just completed a study which he has released to the press stating 16 million Americans are allergic to pesticides. Jaffe also lists the most used pesticides and the amounts used in industry on a yearly basis. This study is excerpted for you in this chapter.

Many of the people who are chemically sensitized are those leading the fight against the spraying of malathion, according to a member on the Public Health Advisory Committee. The member further stated the environmentally ill and the chemically sensitive are considered by many health professionals to be a 'fringe' group. In other words, this is a group of people the Public Health Advisory Committee feel are at the least 'controversial.'

According to the PHA Committee the American College of Physicians and the American College of Allergists have come forward stating this group of people don't meet the diagnostic criteria. So, in other words, they are saying much of their illness is psychosomatic.

However the March 1, 1990 issue of The New England Journal of Medicine published a report on chemical sensitivity, with Part II the following week. Both of the articles are excerpted for you here in this chapter.

Iris, R. Bell, M.D., psychiatrist from Harvard has authored a paper titled "Environmental Illness and Health: The Controversy and Challenge of Clinical Ecology for mind-body Health. Excerpts are also listed in this chapter for you.

Fred Nelson, Director of the Chemical Sensitivity Foundation was interviewed for this chapter and he sheds new light on the narrow mindedness of some health organizations and the "new" medicine now coming forth in this country today.

Next are articles by Megan Shields, M.D. and Allen Lieberman, M.D. on reducing pesticides in the home. These articles are followed by a Product Use of Malathion, in other words the tolerances set by the EPA for malathion in or on our raw agricultural commodities.

Last but not least is an article by Journalist, Michael Culbert, titled: "AIDS, The Iatrogenic Connection, Drugs-Legal and Illegal-Join Immunizations and Dioxin as possible AIDS Iatrogenic Factors." This article is listed for you along with an article by David Bergh, on the connection between AIDS and chemicals. Could malathion present the same problem to us in the future as Agent Orange did to the Vietnam Vets?

Many years ago on television we saw and heard, "Better living through Chemicals." It seems chemicals play a large part in our lives on a daily basis. The Agent Orange used in Vietnam in the 60's has just now been proven to cause certain kinds of cancer. Hopefully it will not take the government another 20 years to find out that malathion is cancer causing while also causing birth defects..

• P R E S S R E L E A S E •

SERAMMUNE PHYSICIANS LAB 11100 Sunrise Valley Drive, Reston, VA 22091

Release Date: April 2 - a.m.

Contact: Russell Jaffe M.D., Ph.D.
(703) 758-0610 (800) 533-5472

16 MILLION AMERICANS ARE SENSITIVE TO PESTICIDES

About 5 million Americans are highly allergic to pesticides and risk severe immune reactions ranging from runny eyes and itchy skin to shock and death when they are exposed to these chemicals, reports Russell Jaffe, M.D., Ph.D., principal scientist at Serammune Physicians Lab, a biotechnology laboratory in Reston, VA.

Another 11 million have moderate reactions to pesticides ranging from tearing and dripping noses to hives and muscle and joint pain.

This is the first study that makes an accurate determination of the body's immune system response to pesticides - a class of chemicals called biocides used to kill life. In a five year period, the study measured responses of more than 8,000 patients to the three major classes of pesticides -- carbamates, organophosphates, and halogenated compounds.

"Our research is the first to clearly link pesticides with immune recognition responses," says Dr. Jaffe. "It is no longer a matter of guess work. Now we can determine for an individual their sensitivity to pesticides."

Dr. Jaffe's study data are derived from the ELISA/ACT test, a state-of-the-art evaluation tool of immune system reactions to 235 foods, pesticides and environmental chemicals. This is the first procedure to fully diagnose immune responses - providing physicians an *immunologic finger print*.

In susceptible people even low levels of these pesticides can cause major problems such as asthma, bronchitis, eczema, and migraine. The report estimates that about 500,000 people have these types of responses.

A finding of the study is that more than 16 million people show impaired immune function due to the effects of these pesticides -- increasing susceptibility to chronic viral and bacterial infection and decreasing the body's ability to repair itself.

Chronically impaired immune function greatly increases the risk of cancer and heart disease. Future prospective studies are needed to determine the exact nature of this risk.

Environmental Illness and Health: The Controversy and Challenge of Clinical Ecology for Mind-Body Health

Iris R. Bell

Iris Bell, M.D., Ph.D., is Instructor in Psychiatry at the Harvard Medical School and Psychiatrist in Charge of the Geriatric Inpatient Service, McLean Hospital, Belmont, Massachusetts. She is the author of Clinical Ecology: A New Medical Approach to Environmental Illness.

Environmental illness and health have received much attention from the public, health care providers, and government in recent years. The concern has expanded from an initial focus on outdoor air pollution to include indoor air pollution such as passive smoking,¹ tap water contamination,² formaldehyde in building materials,³ and radon gas exposure in the home.⁴ Meanwhile, interest in nutritional factors in preventive medicine⁵ and in alternative medical treatment of various disorders⁶⁻¹⁰ has also grown. Within this context, a controversial field of medicine—"clinical ecology" or "environmental medicine"—has developed over the last fifty years or more.¹¹⁻¹³ Clinical ecology synthesizes the fields of toxicology, nutrition, and allergy in its fundamental approach. What are the issues in this field—and what significance do the ideas of clinical ecology have for the frontiers of mind-body health?

Definition of Clinical Ecology

Clinical ecology proposes that chronic adverse reactions to low doses of commonly encountered chemicals and foods cause and/or exacerbate numerous maladies in susceptible individuals.¹¹⁻¹³ Common foods implicated include corn, wheat, milk, egg, sugar, chocolate, potato, orange, beef, tomato, and yeast. Common chemical substances implicated include polyesters; plastics; natural gas; chlorine; formaldehyde; pesticides; smoke; car exhaust; paints, solvents, and glues; phenols; and perfumes. Generally, the disorders of environmental illness (EI) are less dramatic than the cancers (for example, lung cancer with asbestos) or birth defects associated with certain types of pollution (for example, birth defects with radiation). Rather, EI dysfunctions are chronic and nonfatal, though often disabling,

THE NEW ENGLAND JOURNAL OF MEDICINE

MEDICAL PROGRESS**OCCUPATIONAL MEDICINE**

Vol. 322 No. 10 (First of Two Parts) March 1, 1990

MARK R. CULLEN, M.D., MARTIN G. CHERNIACK,

M.D., AND LINDA ROSENSTOCK, M.D., M.P.H.

THE clinical discipline of occupational medicine, largely unstudied, untaught, and unpracticed in major medical centers as recently as a decade ago, underwent unprecedented rejuvenation in the 1980s. Spurred by national regulatory programs and requirements, widespread litigation concerning toxic injury, and an altered public perception of environmental risks, the demand for the services of occupational medicine has risen sharply, especially outside the workplace.¹ An outgrowth of this increase in demand has been an explosion of new investigations and new information as the field rejoins the mainstream of medicine, as well as new academic faculties, journals, and training programs.

The goal of this article is to describe and review some of the new knowledge about clinical occupational medicine. Given the breadth of the subject, we cannot discuss every important topic in occupational medicine; instead, we shall attempt to cover the areas most relevant to clinical practice, emphasizing those that tend to be ignored in the nonspecialized medical literature. In a few instances, we discuss major advances involving less common disorders, because of their conceptual importance to developments in the field as a whole.

OCCUPATIONAL MEDICINE — CULLEN ET AL

MEDICAL PROGRESS March 8, 1990**OCCUPATIONAL MEDICINE**

(Second of Two Parts)

MARK R. CULLEN, M.D., MARTIN G. CHERNIACK, M.D.,
AND LINDA ROSENSTOCK, M.D., M.P.H.**Neurologic Disorders**

The tendency of certain workplace toxins, including organic solvents such as *n*-hexane, metals such as lead and arsenic, and certain organophosphate compounds, to cause profound and occasionally irreversible damage to the axons of peripheral nerves has been known for several decades.¹³³ The irreversible central nervous system effects of related compounds have also been well characterized in defined settings: the organic psychosis caused by the solvent carbon disulfide, the diffuse encephalopathy observed in glue sniffers exposed to toluene, and the devastating consequences of lead intoxication in children, for example.¹³⁴⁻¹³⁶ In the past several years a new and far more serious question has been raised: does repeated exposure to legally acceptable and widely occurring levels of these kinds of compounds result in chronic neurologic dysfunction, especially of the central nervous system?

EDITOR INTERVIEWS

FRED NELSON, DIRECTOR

NATIONAL FOUNDATION FOR THE CHEMICALLY SENSITIVE

EDITOR: What countries have outlawed malathion?

DIRECTOR: WHO and the United Nations have severely restricted the cavalier use of malathion and Japan outlawed the use of malathion in 1972 because it is cancer causing properties.

EDITOR: What pesticide are they using for termite treatment these days in the United States?

DIRECTOR: They are now using Dow Chemical Dursban TC, (a chlorinated organophosphate). On the label of one of their gallon jugs of Dursban it states that the effects may be permanent. The label also states that some people will become sensitized by organophosphates and some may have a higher sensitivity to it.

Consequently we have found out that since small amounts of organophosphates interfere with the central nervous system of those people who have had their blood brain barrier compromised, the use of atrophine sulphate .3mg, has been found to be useful. If a small amount of organophosphate hurts you, then a small amount of atrophine neutralizes it.

The basic problem with this last statement is, if the liver (if you happened to be born without enough cytochrome T450 liver enzymes, phososulphotransferase liver enzyme and glucose 6 phosphatases), has had an injury where it is no longer producing adequate amounts of these liver enzymes so that when you inhale, or through skin absorption, (which is even more dangerous then inhalation), you do not detoxify or break it down from a fat storable to water excretable, you then consequently get a blood saturation. When the blood saturation occurs, then the blood brain barrier gets saturated and the ion exchange transference across the blood brain barrier occurs; so therefore your brain has been poisoned by the organophosphates, whether it's malathion, etc. It also happens with carbomates, and the organochlorine pesticides. What happens at that point is that the safety mechanism that they thought they had for the use of these pesticides on insects, (with less sophisticated livers) is no longer there. So we have probably 5 to 10 million people chronically effected in a very bad way and a total of 30% of the population are affected to some degree.

People who go into the pesticide application business, or who go to work for a pesticide manufacturer... have a very high turnover rate in the first couple of years. If you start off with an adequate amount of these detoxifying liver enzymes you are able to tolerate the levels that applicators and the people that work in the factory get. Although a great many of those people do have health problems. Those people applying the pesticides usually have a fairly good level of enzymes. Long term employees have cerebvascular problems late in life.

One of the first indicators of pesticide toxicity, especially the chlorinated hydrocarbons is the increase in triglycerides. They becomes quite high. You also have an increase in cholesterol. It is a problem created within the liver and those are the kinds of things that occur.

EDITOR: What about the people in Los Angeles who are already chemically sensitive or the ones who are border-line cases, what will happen to them after being repeatedly sprayed with malathion and all the other chemicals it is mixed with?

DIRECTOR: Those that know they are sensitized to this organophosphate have left the city waiting for this "madness" to be over with. Those that don't know, are going to know pretty soon.

EDITOR: Would this massive spraying affect the crime rate in a large city?

DIRECTOR: You may want to check to see if the incidence of violent crimes increased in this period of spraying...versus other periods when they didn't spray. Because one of the things that occurs is high levels of irritability and this liver damage actually creates a situation where the liver does not regulate or control the testosterone...I believe you will see a direct correlation.

You will also find that those children who live in public housing or HUD housing or those who have pesticides sprayed in or near their homes (usually an organophosphate or carbamate), who have a high level of the liver enzymes do as they should, but those that do not, have poor academic achievement because the malathion reduces the mental acuity. Many people that have chemical sensitivity, will tell you that they lose 40 I.Q. points upon exposure. What it does is give high excitation to the immune system so that you have an excess amount of T-helper cells, which causes an activated immune system. When a highly activated immune system, finds nothing, no virus, etc., it then attacks itself and the thyroid is one of the first glands or body tissue that is responsive, and the next is the senovial tissue and these are very, very common symptoms, along with CNS symptomology.

EDITOR: I spoke with a physician on the Health Advisory Panel in Los Angeles, and I asked him about the chemical sensitive person and the environmentally ill in relation to the spraying of malathion. He said the American College of Allergists and the American College of physicians have stated there is no diagnostic criteria for these types of people....

DIRECTOR: First of all let me say there really isn't any real controversy about chemical hypersensitivity or chemical injury (see Neurotoxicity. Identifying and Controlling Poisons of the Nervous System (GPO Stock #052-003-01184-1) There are only those that haven't kept up with the current research or have a financial interest in their adversarial pasture.

Most people in the medical profession focus on symptoms, and it is only logical because most medical schools teach medicine by saying, "Tell me your symptoms and I will tell you what is wrong with you." However, when you have an inappropriate inflammatory process that can attack tissue within the body, any organ, any system, the end result is a very confusing symptomology...and when you have too many symptoms, medical schools also teach- once you go past a couple of body systems, then it is not really an illness but hypochondria, or a psychosomatic problem. This is the error that is currently being taught in our medical system.

Second, these doctors in allergy and occupational medicine are actually begrudging many of the doctors who do treat these people because it is taking away a great chunk of their business. Previously you would go to an allergist and you would have all this symptomology and he would start giving you allergy shots for pollen and all kinds of other things. There is a thing called provocation-neutralization and probably 10 to 20% of the people that have chemical hypersensitivity are helped. But the 80% or so, are not helped. The first line of defense in chemical hypersensitivity is to avoid what hurts you. And it is an immune response, it is the activation of the immune system, it is not well understood. It is an inappropriate inflammatory process. That is it in a simple nutshell. It is more complicated, (I have over-simplified it) but, to put it simply- it is an inappropriate inflammatory process.

Dr. Nicholas Ashford, Ph.D. and Dr. Claudia Miller, M.D., M.S., have just completed a health analysis on Chemical Sensitivity for the Department of Health in New Jersey. The publications is titled, "**Chemical Sensitivity, A Report to the New Jersey Department of Health.**" You may call or write to the New Jersey Department of Health or you can get a copy through Dr. Ashford directly writing Dr. Ashford c/o Massachusetts Institute of Technology, 77 Massachusetts Ave., Bldg. E40, Cambridge, Mass. 02139. Price \$20.00. One of the statements made in the report is that there is a very petty argument between the allergists and occupational medicine doctors and those people who are treating.

EDITOR: Are there different degrees of chemical hypersensitivity?

DIRECTOR: There are different degrees of being chemically hypersensitive. If you are extremely sensitive, it is very difficult to go out there and take an exposure. Some people can get over the exposure in a few hours, some in a few days, some takes weeks. If the exposure is strong enough, it may be months. There can be quite a bit of damage.

EDITOR: You talked about the blood brain barrier, how can malathion get past the blood brain barrier?

DIRECTOR: By saturation. If you can detoxify easily, then it won't go past the BBB unless you get a tremendous exposure, but if you no longer detoxify these pesticides, and you activate your immune system, then the killer cells and T-helper (macrophages) go around actually attacking the organs. In those organs are the storage of these pesticides which the immune system identifies like a virus.

EDITOR: I was told by some physicians that the malathion leaves the blood through the urine in a very short time.

DIRECTOR: You must understand it has to be converted from fat soluble to water excretable. Kidneys do not excrete, if you are not detoxifying in your liver (breaking it down in an excretable form) then you are keeping it. If you keep enough of it, it saturates the blood brain barrier.

EDITOR: I was told that malathion leaves the body within 48 hours.

DIRECTOR: Let me go back a step. If your liver is in good working order and the amount you were exposed to does not exceed your ability to detoxify, to break it down to the metabolites that are excretable, they can find the metabolites of this in your system weeks, afterwards. They don't find the malathion there. Malathion crossed your lung barrier along with the oxygen. Don't forget, they also usually use a petroleum solvent as a vehicle. This is what emulsifies the chemical so they can wet it in water. The petroleum helps it across the skin barrier and the lung barrier. So, they keep saying you excrete it. Well... how about those people who don't excrete it.

EDITOR: Because they don't have enough liver enzymes?

DIRECTOR: Right. If you are already burdened with a large amount that is already stored in your body, (not malathion specifically), but of the chlorinated hydrocarbons, your enzymes are so busy keeping up with the fat storable chlorinated hydrocarbons; for instance everyone has DDT, (the metabolite of it is DDE). Many of the people have chlordane (small amounts) dieldrin, heptachlor, but they don't usually store them in the form they received them; they store them as a metabolite; such as transchlor, heptachlor, epoxides- in a metabolite form. When you have blood saturation, it saturates the blood brain barrier, and it migrates across, just as the oxygen migrates across and the oxygen travels by the red corpuscles. So what you end up with is a brain that is receiving a central nervous system toxic material.

EDITOR: What will the effect be?

DIRECTOR: The way they kill bugs is to suppress their ability to breathe through their central nervous system. One of the symptoms of this...you see, in the brain you have the hypothalamus, a couple of other components of the primitive brain area, that regulate heart beat, and sweating, and vascular constriction-dilation, permeability of the vascular system; many central nervous system toxic materials have the same effect, and the effect is to dysregulate the hypothalamus, and some of these things can travel there directly through the olfactory nerves. (the nose).

One of the first indicators of an exposure even if you can't smell it, is that you have tremendous pain, you actually increase fluid retention, so that your eyes then become blurry and you will also have brain dis-regulation. Some of the largest nerves in your body are your ocular nerves, and one of the things that organophosphates do (and malathion does it terribly), is to de-myelinate the nerve sheathing so that the ion exchange of potassium and sodium is interfered with so that nerves no longer conduct in the way that God made them. If you get a large enough exposure, then you actually have that sheathing that allows the nerves to work, de-myelinated, and you will have vision loss and peripheral neuropathy in usually the extremities of the body, and it strips it away, and you will be paralyzed. Those nerves will not work.

EDITOR: How will you be paralyzed...?

DIRECTOR: In the peripheral area or whatever area happens to be effected. They take on more of it quicker, and they have found that many of these toxic materials travel right up...malathion has a tremendous affinity for the nerve chemistry and the bugs die from the inability to breathe. Now the only thing that keeps the human and the bug separate when they spray, is that the human has a more sophisticated liver and it protects him, except when it doesn't... and so you have two pathways in there, the blood brain barrier and the olfactory nerve and some of them go directly to the hypothalamus.

EDITOR: That is very serious.

DIRECTOR: Oh, my goodness yes!

EDITOR: Are physicians trained to detect organophosphate pesticides and other toxic chemicals?

DIRECTOR: 95% of the doctors are not trained in toxicology. They spend 4 years in medical school, and less then 4 hours of study is devoted to toxic exposure of chemicals and pesticides.

EDITOR: You can prove that?

DIRECTOR: I can prove it because it was written in a book titled, **"THE ROLE OF THE PRIMARY CARE PHYSICIAN AND OCCUPATIONAL AND ENVIRONMENTAL MEDICINE.** It was published by the Institute of Medicine, a division of the the National Academy of Science, which is a Government Agency (it is independent) but it was written by them; that statement was made by them.

EDITOR: What are the symptoms of chemically hypersensitive?

DIRECTOR: The common symptoms of 90% of those with chemical hypersensitivity (injury) is chloracne, rash, anger, irritability, anxiety state, blurred vision, bone-joint muscle pain, chemical hypersensitivity, chronic cold infection, confusion, indecisiveness, chemically induced depression, dizziness, flu-like symptoms, gastrointestinal disorders, hallucinations and delusions, headaches and head pressure, heart palpations, hyperactivity, restlessness, hypertension, insomnia, numbness, tingling and anorexia, obesity, poor memory and concentration and respiratory problems, seizure activities, and suicidal feelings.

EDITOR: It is interesting to note these symptoms are about the same for someone that has been poisoned with organophosphates.

DIRECTOR: Yes. Your immune system it seems creates a brain allergy (that is not quite accurate statement) but it is so hard to coin new words and be understood...but the immune system does attack the brain...most people get confused, and then mis-interpret. If a person

is not storing a great deal of the toxic material in their body currently, and if they are in an environment that is really clean with air filtrations etc., then the symptomology calms down. This list of symptoms are not steady state, and it is a discussion of...it takes so long to clear.

The symptomology is like headache, the central nervous system problems, ...ear ringing, is a central nervous system toxicity problem, eye blurring- a central nervous system toxicity problem, lack of concentration, inability to concentrate, long-term, short-term memory problems. The confusion with some of the people, who they say have multiple sensitivity is, is that most occupational medicine doctors focus on one chemical exposure, one set of responses; the response is almost universal- central nervous system toxicity. The chemicals that effect 95% of the people are at least these and sometimes more..petroleum derived products, gasoline, deisel, solvents, benzine, those of the petroleum family, then the phenyls, formaldehydes, pesticides, detergents enzymes; then you have the synthetic perfume and synthetic fragrance then the synthetic flavor products. I can eat a cherry pie, made with nice, organic cherries, and eat the whole thing. I couldn't get past three bites of artifical cherry pie. I would become very ill.

EDITOR: Thank you very much Mr. Nelson for a very informative interview. I am sure many of our readers (as well as myself) have learned things about this most pervasive disease that we would never have learned otherwise.

Note: Mr. Nelson edits a newsletter for the chemically sensitive, health professional as well as for friends of the chemically sensitive. You may write or call for a subscription or copy. Mr. Nelson's address is listed below.

Fred Nelson, Director - The Foundation for the Chemically Sensitive
P.O. Box 9, Wrightsville Beach, North Carolina 28480
(919) 270-9441

Cause for Concern: Childhood Cancer

In 1987, a National Cancer Institute study revealed that children in households where parents used home or garden pesticides are up to six times more likely to develop some forms of childhood leukemia. "That

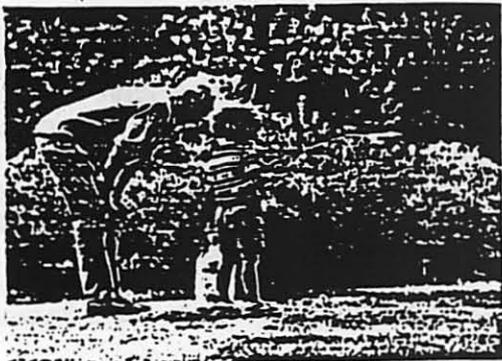
finding was kind of a fluke, really," said John Peters, a professor of Preventative Medicine at the University of Southern California and one of the study's authors. "The study was originally set up to look at childhood cancer and parents occupational exposures to chemicals. So we asked a few coarse screening questions on the use of household and garden pesticides."

Peters' group located 123 children in the Los Angeles area who had childhood leukemia and matched them with 123 healthy children to see if any environmental differences might be associated

with the cancers. The association between leukemia and pesticide exposure was strong. When parents regularly used indoor pesticides, their children were 3.8 times more likely to contract leukemia than children in households where pesticides were seldom used. When the parents used herbicides or insecticides outdoors, their children were 6.5 times likelier to get leukemia. When mothers regularly used herbicides or pesticides outdoors, their children were 9 times more likely to develop leukemia.

The study wasn't specific enough to identify any particular pesticide - if there is just one - that is responsible for the children's increased cancer risk. Peters is now returning to the same households and asking parents detailed questions about their home use of pesticides. By the end of 1989, he hopes to have more information.

A recent study shows pesticide use in the home increases the risk of childhood leukemia.



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HealthMed NOTEBOOK

VOLUME 1 • NUMBER 4

PHYSICIAN NOTES

Reducing Pesticide Risks at Home

BY MEGAN SHIELDS, M.D.

In 1987, the National Academy of Sciences issued a report on pesticides in the U.S. food supply. "Regulating Pesticides: The Delaney Paradox" concluded that the potential risks posed by cancer-causing pesticides in food were such as to cause over one million additional cases of cancer over our lifetimes.

This report considered risk only for cancer, and only from pesticides in food. It didn't address additional risks from drinking water or from the average American's single worst source of pesticide exposure: indoor air pollution in our own homes. According to a pilot study done by the Environmental Protection Agency, a full 90% of pesticide exposure occurs in and around the home as the result of our battle against insects, bacteria and offensive odors.

In another study called "Childhood Leukemia and Parents' Occupational and Home Exposures," funded by the National Institute of Health and Safety and the National Cancer Institute, it was found that leukemia risk increased greatly for children whose parents used pesticides in the home and garden.

POWER TO CHOOSE

The fact that so much of our pesticide exposure occurs in our own homes via air, water and food has one positive aspect. It means that it is within our power to make choices that can drastically limit our exposure and thus our risk of disease. Once again, here are some suggestions for action gathered from the "Suggested Reading" below:

1. Cease using unsafe pesticides in your home and garden. These include most common disinfectants, deodorizers and insecticides. All aerosol spray propellants should be avoided. Termite killers seem to be particularly noxious.

Thankfully, there are some safe household products. For alternatives to the toxic products above, see the book, *Nontoxic and Natural*, listed below.

Pesticide Risks (continued from front)

2. Install a high-quality water purifier in your household — there are affordable units which produce better drinking water than bottled water. Get a filter on your shower, since hot showers are known to liberate chloroform and other toxic chemicals in their vaporized water. Information on water purifiers can be obtained by calling HealthMed.
3. Where available, buy organic or pesticide-free produce and meats. Know that the higher you eat on the food chain, the higher the concentrations of pesticide residues you are generally exposed to (see Michael Wisner's column for an explanation of this). The books described below will refer you to sources of the safest produce, poultry, meat and fish, and other methods of health protection.

Even in a polluted world, our personal health is within our control — if we are willing to make the lifestyle changes which are sometimes necessary.

SUGGESTED READING

Choose to Live, by Joseph D. Weissman, M.D. explores the links between "modern diseases and toxic chemicals in the environment," and offers a 10-week program for taking control of your own health (Grove Press, \$18.95).

Nontoxic and Natural, by Debra Lynn Dadd, is a consumer's guide to over 1200 natural items rated for nontoxicity, as well as safe substitutes for toxic products (Tarcher/St. Martin's Press, \$9.95).

Help Wanted: An Activist's Guide to a Better Earth, by Cathy Spencer. OMNI Magazine supplement, September 1989 issue.

The Healthy House: How to Buy One, How to Build One, How to Cure a "Sick" One, by John Bower (Carol Communications, \$17.95). At bookstores or order directly by calling (800) 634-1380.

BRAVO Veterans Outlook: "Agent Orange: A New Hope for Veterans," by David Root, M.D. and R. Michael Wisner. September issue. Call BRAVO (818) 999-4218 for a free copy.

HealthMed Notebook: If you're not already on the list for this publication, call HealthMed at (213) 653-0837.

**ALAN LIEBERMAN, M.D. DISCUSSES PESTICIDES
ORGANOPHOSPHATES IN THE HOME**

I would like to talk a little bit about the chemically injured. Fred Nelson, of course is one of my patients, as well as a gentlemen who I talk to very, very often because he talks to hundreds of patients, and he gets a feel for what's going on, and if you remember, that out of about 6,000 of the case histories which he has collected, he has data that indicates that 80% of the people who are chemically injured can tell you exactly when they *became* injured, and of those 80%, the majority of them attribute their injury to pesticide exposure.

For pesticide exposure you are going to have to break your pesticides into two generic groups. One is the chlorinated hydrocarbons, and the other, of course, is the organophosphates. Everybody thinks the organophosphates are very safe, and 'easy' kinds of pesticides, that is really wrong, because technically they are the high powered, quick-knock-down type of pesticide because they paralyze the neurologic system, or the nervous system of the insect, that is how they are killing them, and its affect on acetylcholinesterase, so they can kill an insect in seconds; what they are saying is that the duration of action is not very long.

But there is this one thing most people don't realize about the organophosphates in particular and that is that these chemicals do not break down in the absence of sunlight. There is very little breakdown, and that is why they should really not be used indoors. Organophosphates are still the most commonly used indoor pesticides. Once they come into your home, for example, they are not so short acting any more, because they are not degraded by the usual pattern which is sunlight.

The last study which EPA did under Lance Wallace (Wallace is the one who did the TEAM Study), which deals with indoor air pollution; when they were studying the indoors of homes they were coming up with an astronomical number of chemicals and pesticides which they knew were never sprayed inside the home. So the question is, how did they get there? They still don't know the answer, but they think, or surmise at least (with good reason) that most of these chemicals came into the home on the feet, and they came in from the outdoors. Now where are these pesticides going? They are going on the floors of course. People who have carpeting on the floor for example and walk across this carpeting constantly with their shoes, which may contain residual pesticides and other types of chemicals, are then storing the pesticides in the carpet within the home. So we now realize of course that maybe the Japanese are right in terms of their shoes being removed before entering their home. It sounds silly, but that may be extremely important in the 1990's that we do that, and nobody talks about that, but I think that would be an interesting comment along with the fact these residues or pesticides may be stored in the carpet within the home.

Let's specifically talk again about malathion, and look at malathion in the context of being an organophosphate pesticide. What you are going to find now is a lot more complicated in that all of these drugs work on the basis of inhibition of the acetylcholinesterase enzyme.

If you could test patients for the cholinesterase enzyme, and (that is how you test to see if these patients have been exposed to a cholinesterase inhibiting chemical) specifically organophosphates, you would find that many people are walking around with compromised levels.

The interesting thing is that patients can react to these chemicals without demonstrating that--so it is not a hard and fast rule, that is, if you don't see it, it absolutely does not rule it out.

Let's go back first and talk about acute exposures, versus chronic exposures. I think there is a big difference. A patient who is exposed to toxic knock-down levels of cholinesterase inhibiting organophosphates pesticides is going to manifest a full syndrome and the full

impact which is nausea, vomiting, diarrhea, blurred vision, salivation, for example, mental confusion, fever, all these and also a flu-like syndrome, and that is what you would see for example.

Now when you want to talk about chronic exposure, what you are going to see is that the cholinesterase levels never return to normal and they are always compromised, they are always slightly down, and the question of course is what does that do? Apparently it does do something because that is what is happening and we are seeing differences in patients who are chronically exposed to organophosphates, and who are these people? Us! Almost every single one of us, because if you go into a restaurant, for example, the chances are you are exposed to an organophosphate pesticide. There isn't a decent restaurant in the United States that wouldn't spray, because God forbid anything come walking out on legs while you are there. So every place you go especially public places, hotels for example massively spray, hospitals massively spray, and people for example are literally being sprayed while they are sitting there, because the exterminator comes in and literally is spraying people rather than have them come out of their room.

Now studies have been done especially with the organophosphate pesticides, that clearly show it is not safe to enter into a room that has been sprayed for as little as 24 hours, and in some places over 48 hours and you are finding the routine use of these pesticides are done while people are actually there.

Our biggest concern of course is in the school, we are finding a routine application of pesticides in schools and they don't even wait for a Friday afternoon so the building can sit for a Saturday and Sunday; they will do it any day of the week, and so the students are exposed, the teachers are exposed and we are seeing a massive amount of pathology coming out of schools and the thing is that nobody even thinks about a lot of the reaction we are seeing as coming from pesticides. This is a whole new ball game.

People talk about the sick building syndrome because of poor air quality within buildings, and sealed buildings. Schools are the same way, because of the use of these particular types of pesticides.

**Dr. Lieberman is Certified in Environmental Medicine
by the American Board of Environmental Medicine**



**Pesticide Safety:
Myths & Facts**

National Coalition Against the Misuse of Pesticides
530 7th Street SE Washington DC 20003
202/543-5450

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Study Links Diseases To Agent Orange

House panel to hear testimony today

Chronicle Wire Services

Washington

Three kinds of cancer and five other ailments among Vietnam veterans can be traced to exposure to the defoliant Agent Orange, according to a report released yesterday by veterans groups.

The report, released on the eve of a House subcommittee hearing on a bill to pay benefits to Agent Orange victims, produced no new evidence. Rather, it reviewed existing studies.

In the latest in a 15-year controversy surrounding health effects of the wartime herbicide, the American Legion, Vietnam Veterans of America and the National Veterans Legal Services Project convened a panel of seven scientists to review all existing data concerning exposure to dioxin, a poisonous contaminant in Agent Orange.

'Scientifically Correct'

"It is not only appropriate, but it is scientifically correct" to award compensation to Vietnam veterans exposed to the dioxin-containing defoliant, said Senator John Kerry, D-Mass., a Vietnam veteran and sponsor of legislation in the Senate to award compensation.

The report said proof exists of a "significant statistical association" between herbicide exposure and non-Hodgkin's lymphoma; soft-tissue sarcoma; chloracne and other skin disorders; early liver disease; and porphyria cutanea tarda, a metabolic disorder.

The scientists also said there is enough evidence to give the benefit of the doubt in awarding compensation to veterans who were exposed and suffer from Hodgkin's disease, neurologic and reproductive problems and developmental problems with their offspring.

They say there is limited evidence of an association between exposure and a large number of cancers, as well as immunological abnormalities and psychological problems.

In March, Department of Veterans Affairs Secretary Edward Derwinski directed his agency to pay more than \$20 million a year to

about 1,800 Vietnam veterans stricken by non-Hodgkin's lymphoma. The action was spurred by a study from the national Centers for Disease Control that showed that the risk of the rare cancer was 50 percent greater among Vietnam veterans than among veterans who served elsewhere. However, that study did not directly point to Agent Orange or any other factor as causing the increased cancer risk.

A Senate bill has been passed and a House bill has been introduced to provide benefits to veterans who claim that their diseases were a result of exposure. The bills differ in cost — \$36 million for the Senate version and \$69 million for the House proposal — length of coverage and number of diseases covered.

A Veterans Affairs subcommittee is to hear testimony today on the House bill sponsored by Representative Lane Evans, D-Ill., a co-chairman of the Vietnam-Era Veterans in Congress.

Both bills would create an independent panel of scientists under the auspices of the independent National Academy of Sciences to review herbicide studies. Critics say the government has tried to influence the evidence on Agent Orange to avoid paying benefits.

35,000 Claims

About 35,000 veterans have filed claims asserting a connection between exposure and a variety of ailments. Only a handful — those for chloracne and, now, for non-Hodgkin's lymphoma — have been granted.

About 240,000 veterans believe that they may have been exposed to the herbicide and have requested physical examinations, the veterans department says. A total of 12 million gallons of Agent Orange was sprayed during the war to remove ground cover and crops.

Neither the CDC study nor the review commissioned by the veterans groups has been published in a scientific journal. Six of the seven members on the panel donated their services, and American Legion officials estimate that the total cost of the study was no more than \$10,000.

U.S. Admits Agent Orange Cancer Link

Washington Post

Washington

The government acknowledged for the first time yesterday that exposure to Agent Orange, the defoliant used widely during the Vietnam War, may have caused cancers among the 3.1 million U.S. military personnel who served in Southeast Asia.

Veterans groups hailed the decision by Veterans Affairs Secretary Edward Derwinski as a breakthrough in their decade-long, often emotional fight over whether the herbicide has caused a wide variety of cancers, neurological conditions and birth defects.

The cancers involved are a broad category known as soft-tissue sarcomas. Described by the Veterans Affairs Department as "difficult to diagnose," these are malignant tumors found on muscles and connective tissue and in body fat.

Until yesterday's decision, the government had acknowledged only that Agent Orange, a chemical that contains the carcinogen dioxin, could be linked to chloracne, a severe skin rash. It had rejected compensation claims for other illnesses on the ground that scientific proof of their relationship to Vietnam service was lacking.

Derwinski's decision will allow the department to offer compensation to an estimated 1,100 Vietnam veterans or their survivors at a total cost of about \$8 million a year.

Agent Orange Study Impeded, Panel Says

Reagan officials accused of obstruction

Washington

A House subcommittee yesterday said that White House officials during the Reagan administration "obstructed and obstructed" a national study of Agent Orange exposure during Vietnam.

The subcommittee panel said a current White House strategy to deny federal funding to the study was one of the reasons for the obstruction of the national study by the Centers for Disease Control.

The report by the House Subcommittee on Operations, Oversight, and Investigations of the Committee on Health, Education and the Environment of the House of Representatives, was released today.

The White House compromised the independence

of the study of military veterans.

As the CDC in Atlanta, spokeswoman Greta Lloyd said the report would have an impact on the study. It had no effect on the report.

Derwinski, she added, "We do want to pay benefits and we do want to pay benefits."

Derwinski's decision was announced by a White House press release about the Agent Orange Working Group.

The study was initially conducted by a White House panel.

The House panel said that the CDC study was obstructed and compromised by the White House, primarily through the working group and the Office of Management and Budget.

The panel said the study was

Your turn

AIDS may be tied to chemicals

By Dave Bergh

St Cloud

To many the Acquired Immune Deficiency Syndrome (AIDS) is a new and frightening phenomenon, but to me, it is a necessary and predictable outgrowth of the controversies surrounding dioxins and Agent Orange.

Considerable evidence suggests that AIDS may be an epidemic of leukemia/lymphoma associated with exposure to chlorinated hydrocarbons and their dioxin contaminants. The chlorinated hydrocarbons include the herbicides 2,4-D and 2,4,5-T (Agent Orange) as well as polychlorinated biphenyls (PCBs).

It is a virtual certainty that the Human T-cell Leukemia Virus (HTLV) is involved in aids. HTLV primarily affects T-cells in the blood. Studies on laboratory animals have demonstrated that dioxin (TCDD) acts specifically on T-cells and the thymus causing immune deficiency. Dioxins have caused immune deficiency in exposed chemical plant workers. While it was recently reported that B-cells are also affected in aids, it was also reported that T-cells regulate B-cell function.

But HTLV has been with us for some time. How is it that HTLV could change character and become fiercely aggressive? The answer is through mutation. The chlorinated hydrocarbons and their dioxin contaminants (particularly TCDD) are mutagenic chemical substances. It has just been announced that mutation of oncogenes (cancer genes) is responsible, in part, for causing lung cancer in the first proven case among humans. I suspect that aids has been with us for some time, as well, though only for the past two to four years being identified as a syndrome.

The Agent Orange family of herbicides was developed during the World War II era for military (later commercial) use but it was not until the Vietnam War era that these substances were found to be contaminated with staggering amounts of dioxins.

Studies have demonstrated remarkably similar symptoms among chemical plant workers, users of herbicides, exposure victims of herbicide spraying, railroad workers exposed to precursors of herbicides following a train accident, residents living near chemical plant, residents living near hazardous waste sites and AIDS victims. Time after time we see reports of birth defects (rare) soft-tissue cancer, liver damage and (often fatal) infections.

It is common for leukemia victims to die of infections. High incidence of leukemia among chemical plant workers exposed to the dioxins' parent molecule, benzene, has been documented for decades.

Australian Vietnam veterans' survivors have begun receiving service-connected compensation for lymphomas resulting from servicemen's exposure to defoliants. U.S. Vietnam veterans are experiencing lymphomas at a rate one-third higher than expected. In animal studies TCDD has been shown to impact upon the reticuloendothelial system; leukemia, lymphoma or both could result from this.

Dioxins cause the disease entity porphyria cutanea tarda (PCT), a liver/blood disorder that is potentially fatal in conjunction with drugs. Purple-red spots on the skin of aids victims (Kaposi's sarcoma-a soft-tissue cancer) resemble PCT and chloracne - the clinical marker of dioxin poisoning.

AIDS is clearly not limited to one or two segments of society. Last year over 92 percent of the reported cases of AIDS were in homosexual/bisexual males, but this year the percentage has dropped to 71 percent. An activated (by dioxin) virus of the oncogenic HTLV variety could be transmitted through feces and saliva as well as through semen and blood. TCDD dioxin is a very powerful enzyme inducer. Further research into TCDD's effects on the RNA enzyme, reverse transcriptase, may demonstrate how HTLV is activated by TCDD.

AIDS is a worldwide epidemic. But in the U.S., approximately 90 percent (and possibly all) of the reported cases of AIDS occur in states having chemical plants that produce Agent Orange-type substances.

Cancer vaccines such as alpha or gamma interferon provide some hope for stopping the AIDS epidemic. But the real solution to the problem lies in preventing human exposure to the chlorinated hydrocarbons and their dioxin contaminants.

For a fuller account of dioxin, Agent Orange and AIDS, see the pamphlet files "Agent Orange" and "Herbicides" at the St. Cloud Public Library. Related audiovisual materials, available at both the Great River Regional Library and St. Cloud State University & Learning Resource Center, include "A Plague on Our Children" (Part 1. Dioxins; Part 2. PCBs) and "Agent Orange: A Story of Dignity and Doubt."

Dave Bergh, a Vietnam veteran is active in environmental issues and as an advocate for other Vietnam veterans.

OUR CHEMICAL LEGACY IN VIETNAM 1961-1973

<u>CHEMICAL USED</u>	<u>USE</u>	<u>MANUFACTURED BY</u>	<u>AMOUNT APPLIED</u>
Agent Blue	Rice crop destruction	Ansul Co	2.2 million gals.
Agent Green	Kill grass & bamboo		
Agent Orange	Jungle cover defoliant	Bayer A.G., Dow Chemical, Union Carbide	8,208 gals.
	Jungle cover defoliant	Hercules Inc. Dow, Diamond Shamrock, Uniroyal.	0.3 million gals.
Agent Orange 1	Jungle cover defoliant	T.H. Agriculture, Thompson Chemical, Monsanto	million gals.
Agent Pink	Jungle cover defoliant	Miller Chemical Union Carbide Vertac Dow,	
Agent Purple	Forest defoliation	Diamond Shamrock, CANZ	122,800 gals.
Agent White	Forest defoliation	Dow, Union Carbide,	145,000 gals.
Aldrin	Control of soil insects	Union Carbide, Diamond Shamrock, Dow	5.3 million gals.
Azodrin 5	Insecticide for rice, potatoes	Dow, Union Carbide	15,400 lbs.
BHC	Insecticide for cereal, beets	Shell Chemicals	213,850 lbs.
Bidran	Insecticide for cotton	Crystal Chemical Inter-America	275,575 lbs.
Barate Chlorate	Herbicide and soil sterilant	Hooker Chemical, Woolfolk Chemical	94,800 lbs.
Bromocil	Weed killer	Shell Chemical	4,500 lbs.
Butoxone 80	Defoliant	Kerr McGee	16,500 lbs.
Cacodylic Acid	Grass, bamboo, rice destruction	Hopkins Agriculture	44,100 lbs.
Carbaryl (Sevin)	Insecticide for crops, etc.	ICI/ANZ	10,000 lbs.
Chlorfurazol S	Herbicide	Ansul Co.	72,750 lbs.
Chlordane	Insecticide, esp. termites	Union Carbide	less than 50 gals.
Cresote	Wood preservative	FISONS	more than 50,000 gals.
		PPG Industries	unknown
2,4-D Acid	Defoliant	Crowley Tar, Koppers Co., Los Angeles	
		Chemical Co.	815,700 lbs.
2,4-D Ester	Defoliant	Miller Chemical, Union Carbide, Vertac, Dow	
		Diamond Shamrock	224,870 lbs.
DDT	Flea control in quarters	Miller Chemical, Union Carbide, Vertac, Dow	
DDVP	Flea control, grain pest control	Diamond Shamrock, CIANZ	2.3 million lbs.
Dalapon	Control of grasses and brush	Montrose Chemical, Diamond Shamrock	674,000 lbs.
Deet	Insect repellent	Hopkins Agricultural	121,250 lbs.
DEL Defoliant 21	Fire base defoliant (causes leaves to drop from trees)	Dow, Crystal Chemical, Bayer	unknown
		Chemical Formulators, Hercules	more than 44,100 lbs.
		Australia	
Diazinon	Control of soil insects	Ciba Geigy	1 million lbs.
Dibrom	Insecticide	Chevron Chemical Co.	520,285 lbs.
Deffdrin	Insect control around quarters	Shell International	11,025 lbs.
Diquat	Defoliant, aquatic weed control	ICI Plant Protection Div.	40,000 lbs.
EPN	Control of boll weevil/stem borer	E.I. duPont	26,450 lbs.
Endrin	Insect control on grains/cotton	Velsicol Chemical Corp.	451,940 lbs.
Furoden	Insect control in living quarters	Pillar Int'l, FMC	103,620 lbs.
Gardona	Cotton/corn/grain/insect control	Shell Int'l	26,450 lbs.
Lindane	Roach/flea powder for living quarters	Celamerck Gmbh and Co	46,300 lbs.
Malathion	Roach/pest control for living quarters	American Cyanamid Co.	1.4 million lbs.
Moneb	Control of tomato/potato blight	Crystal Chemical, Cumberland Int'l	485,000 lbs.
Methyl Parathion	Insect Control	Kerr McGee Chemical	343,920 lbs.
Mirex	General purpose insecticide	Allied Chemical	unknown
Monuron	Soil sterilant	Hopkins Ag. Chemical Co.	unknown
Paraquat	Contact herbicide/dessicant	Ortho	330 lbs.
Phosphamidon	Insect control in quarters	Chevron Chemical Co.-Ortho Ag.	41,900 lbs.
Phosvel	Grain storage insect control	Velsicol Chemical Co.	41,900 lbs.
Picloran	Herbicide against deep-rooted weeds	Dow	5.3 million gals.
Polybor Chlorate	Weed and grass killer	US Borax	68,500 lbs.
Tandex	Weed & bush defoliant	FMC Corp.	unknown
Trinoxol	Herbicide for brush control	Union Carbide	unknown
Urox 22	Long-lasting soil sterilant	Hopkins Ag. Chemical Co.	unknown
Zinc Phosphate	Mice/rot/rodent control	Hopkins, Bell Laboratories	99,200 lbs.
Zineb	Control of mites on citrus	Bayer A.G., Framopiant, FMC Corp.	257,940 lbs.

SCIENCE CORNER

AIDS: the iatrogenic connection

Drugs—legal and illegal—join immunizations and dioxin as possible AIDS iatrogenic factors

the drug in the United States. This was confirmed by its principal pharmaceutical supplier. Subsequently the major recipients of the drug have been the Malian boys: people who vastly exceeded marketing. Outside of the United States, the drug is frequently administered in Angola and Zaire, two countries also associated with AIDS.

"Thus, the finding that a drug is frequently and almost exclusively used in subpopulations now thought to be significant risk for AIDS deserve further scrutiny to rule out iatrogenic factors, possibly confounded by additional nutritional factors."

Smith also noted that iodoquinol and a related compound, cloquinol, have been implicated in subacute myelopticoencephalopathy (SMON) in Japan⁽¹¹⁾ a disease once thought to be caused by "slow" viruses.

As Smith analyzed, "because of the substantial possibility that the nervous system and the immune system may share selected functions and molecular mechanisms, investigators must not overlook possibilities that neurological and/or immunological side effects may be associated with one or both of these drugs..."

These considerations are of utmost importance, particularly in light of the widely disseminated view that AIDS somehow originated in central Africa, either as some kind of mutation from a similar virus in the African green monkey (a theory later dropped) or due to some other transcendent event.

One view is that the alleged "AIDS virus" may have spread in human populations because health workers did not use sterile needles when they injected drugs — mainly penicillin.

It is also known that major pharmaceutical companies rou-

create the groundwork for a new virus can hardly be doubted.

In fact, in the late 1970s the term "immunotoxicology" was coined to describe the harmful effects of environmental agents on various components of the immune system and led in 1981 to the coinage of a "unifying model for immunotoxicology," a chain of chemical-immune interactions just beginning to be discussed at the advent of the AIDS crisis and — strangely it would seem — less discussed today.⁽¹²⁾

There are political and economic considerations in the development of adequate information concerning the real threat of industrial chemicals in everything from hair dyes to agricultural pesticides, but the knowledge now available suggests that it is only the tip of a very large iceberg.

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It is now clear from the research that dioxin is associated with Kaposi's sarcoma and non-Hodgkin's lymphoma, two cancers common to HIV/AIDS patients, as well as the most common immunologic features of the HIV/AIDS infection curve: depressed T4 numbers and inverted T4:T8 ratios.

inely "dump" huge supplies of antibiotics, (some of them not having passed muster with, for example, the U.S. Food and Drug Administration (FDA) in terms of safety) in Third World countries.

The poisoning of the human species by wonder drugs, legal drugs, and illegal drugs does not stop with antibiotics, steroids and "recreational" substances.

The 1970s and 1980s turned in an avalanche of warnings and information concerning the toxic reactions in humans of thousands of industrial chemicals used in everything from fertilizers and pesticides to food ingredients. Also, and quite suggestively, information came to light of the delayed side effects of chemicals used in the recently concluded Southeast Asia War, including manifestations of dementia and immune depression.

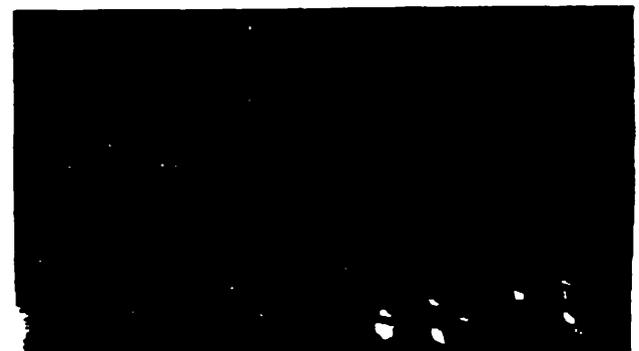
Activists such as David Bergh⁽¹³⁾ have brought to light the under-then-expected use of Agent Orange and of its major contaminant TCDD (dioxin) not only in Korea and Vietnam but in wide sectors of North America. In all these places the dioxin family of synthetic chemicals has been used as herbicides. Yet they have subsequently been found to help cause cancer and to lead to immune depression, birth defects and other problems.^(14, 15, 16)

It is now clear from both animal and human research that dioxin is associated with Kaposi's sarcoma and non-Hodgkin's lymphoma (NHL), two cancers common to HIV/AIDS patients, as well as the most common immunologic features of the HIV/AIDS infection curve: depressed T4 numbers and inverted T4:T8 ratios.^(16, 17)

Investigator Paolo Vineis⁽¹⁸⁾ concluded: "The similar immunosuppressive effects of HIV and TCDD dioxin and similar excesses of NHL suggest that the possible association between KS and TCDD is biologically plausible and should be investigated further."

While authorities have dismissed some proponents' arguments that Agent Orange, dioxins and similar compounds are actually causes of HIV/AIDS, the role of such chemicals in helping

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AIDS WAS THE TOPIC — Committee Chairman and author Mike Culbert, addressing an international symposium on cancer and AIDS in Limassol, Cyprus, waves a copy of *THE CHOICE*. He reported on the Bradford Research Institute-Mexico case-load of more than 90 HIV/AIDS patients.

— Roy K. contact photo

Introduction to Chapter 4



Although tests done by Savage in the following paper, "**Chronic Neurological Sequelae of Acute Organophosphate Pesticide Poisoning**" were for those acutely poisoned (those who worked with organophosphates on a daily basis), the reader can certainly draw his own conclusion after reading the abstract, test scores, discussion and conclusions regarding results of neuropsychological deficits, academic results and social withdrawal, etc. through exposure to organophosphates.

Paul McClain, Molecular Biologist was interviewed by KPFA (Los Angeles) regarding a little known testing instrument (at least with the State of California) called the Vibraton. This instrument is capable of measuring fine motor skill deficits of those who have been poisoned by organophosphates, lead, nickel, chromium etc. The machine is non-invasive and the test takes only a short time to conduct and is quite inexpensive. The **EPA** and **WORLD HEALTH ORGANIZATION** have used this instrument for years.

A chemist at Pacific Toxicology Laboratory is developing a test for malathion exposure. This test is more sensitive to low dose malathion exposure than the cholinesterase test.

Also included in this chapter is a study done by Dr. Alan Lieberman, M.D., a certified Environmental Medicine Physician. This double blind study on children shows how malathion aerielly sprayed near a school, has affected these particular children's behavioral, social and academic skills.

NOTE: It has been brought to my attention as Editor that the test being perfected by Pacific Toxicology Laboratory could also be perfected by the State of California in a relatively short period of time. For some unexplained reason, however, the state refuses to develop this test.

Chronic Neurological Sequelae of Acute Organophosphate Pesticide Poisoning

ELDON P. SAVAGE, Ph.D.
THOMAS J. KEEFE, Ph.D.
LAWRENCE M. MOUNCE, B.S.
Colorado Epidemiologic Pesticide Studies Center
Department of Environmental Health
Colorado State University
Fort Collins, Colorado
ROBERT K. HEATON, Ph.D.
JAMES A. LEWIS, M.D.
PATRICIA J. BURCAR, M.D.
Departments of Neuropsychology and Neurology
University of Colorado Medical Center
Denver, Colorado

ABSTRACT. To evaluate the latent neurological effects of organophosphate pesticide poisoning, this epidemiologic study examined 100 matched-pairs of individuals with previous acute organophosphate pesticide poisoning and nonpoisoned controls. No significant difference between poisoned subjects and controls was found on audiometric tests, ophthalmic tests, electroencephalograms, or the clinical serum and blood chemistry evaluations. Of the more than 50 scores from the neurological examination, abnormalities were demonstrated among the cases only on measures of memory, abstraction, and mood, and on one test of motor reflexes. Differences between the two cohorts were much more apparent in the neuropsychological tests. The differences occurred on tests of widely varying abilities including intellectual functioning, academic skills, abstraction and flexibility of thinking, and simple motor skills. Twice as many cases as controls (24 vs. 12) had Halstead-Reitan Battery summary scores in the range characteristic of individuals with cerebral damage or dysfunction. Results from the Minnesota Multiphasic Personality Inventory and the Patient's and Relative's Assessment of Patient Functioning Inventories also revealed greater distress and complaints of disability for the poisoned subjects.

THE INCREASED USE of organophosphate (OP) pesticides in the last four decades has been accompanied by numerous acute organophosphate poisonings. The World Health Organization (WHO) has stated that the problem of acute pesticide poisoning is extensive and serious with as many as 500,000 cases occurring annually throughout the world.¹ In the United States, na-

tional studies of hospitalized pesticide poisoning cases from 1971-1973 and 1974-1976 resulted in an estimated 8,241 and 9,278 admissions, respectively; the organophosphate compounds accounted for 31% and 25% of the observed pesticide poisonings during the two study periods, respectively.^{2,3}

The organophosphates are cholinesterase inhibitors.

Table 1.—Psychological Test Score Means, Standard Error of the Difference of Means, and the Probability Level of the Analysis of Variance Test for the Comparison of Organophosphate Pesticide Poisoned Subjects and Controls with Respect to the Halstead-Reitan Battery, the WAIS Battery, the Peabody Individual Achievement Test, and Added Ability Tests

Variable	Means		SE	p level ^{1/}
	Cases	Controls		
Neuropsychological Summary Scores				
Average Impairment Rating	1.07	0.91	.05	<.001
Halstead Impairment Index	0.30	0.23	.03	.020
WAIS Verbal IQ	105.40	111.86	1.31	<.001
WAIS Performance IQ	108.41	110.13	1.46	.242
WAIS Full Scale IQ	107.5	111.77	1.32	<.001
Halstead-Reitan Battery				
Category	39.55	31.57	2.59	.002
Trails-B	75.31	67.72	4.09	.067
Speech Sounds Perception	7.78	5.92	.51	.001
Seashore Rhythm	26.65	27.16	.33	.120
Tactual Performance-Memory	7.62	7.78	.17	—
Tactual Performance-Location	4.57	4.45	.25	—
Tactual Performance-Time	13.07	11.88	.77	.125
Finger Oscillation Test*	100.80	103.69	1.41	.042
Perceptual Disorder†	4.68	4.17	.63	—
Aphasia Exam‡	5.59	4.55	.58	.075
Spatial Relations§	2.81	2.71	.13	—
WAIS Subtest Scaled Scores				
Information	10.73	11.83	.28	<.001
Comprehension	11.32	12.13	.34	.020
Arithmetic	11.15	12.40	.32	<.001
Similarities	11.10	12.09	.31	.002
Digit Span	9.80	10.95	.43	.008
Vocabulary	10.49	11.68	.30	<.001
Digit Symbol	9.71	10.64	.26	<.001
Picture Completion	11.13	11.00	.28	—
Block Design	11.24	11.75	.38	.187
Picture Arrangement	10.02	9.95	.35	—
Object Assembly	10.60	10.72	.33	—
Peabody Individual Achievement Test				
Reading Recognition	29.00	36.71	2.32	.001
Reading Comprehension	54.32	63.06	3.26	.008
Spelling	35.19	45.81	3.65	.004
Added Ability Tests				
Tactile Form Recognition	20.34	19.98	.75	—
Hand Dynamometer*	96.87	97.34	1.93	—
Grooved Pegboard*	148.34	137.96	3.26	.002
Hole-Type Steadiness*	59.39	62.82	6.76	—
Wisconsin Card Sorting Test‡	17.07	12.91	1.18	.001
Thurstone Word Fluency-Total	43.92	50.79	2.33	.003
Word Finding Test§	36.04	40.36	1.33	.002
Story Memory Test-Learning	1.87	1.67	.02	.045
Story Memory Test-Memory	.11	.10	.10	—

*Scores summed for both hands.
†Ratings defined in Russell et al.³³
‡Score available for 91 of 100 pairs.
§Score available for 99 of 100 pairs.
//The p level is not shown if the F-ratio is less than unity.

controls (24 vs. 12) showed an overall level of neuropsychological deficit that was within the range characteristic of individuals with documented cerebral lesions ($p = .020$). Of the 11 individual test measures that contribute to the Average Impairment Rating, the cases were significantly worse than the controls on 3 measures and showed trends ($.05 < p < .10$) in the same direction on an additional 2 measures.

Both the case and control cohorts showed above

average intellectual functioning on the WAIS. However, the case cohort obtained a mean full scale IQ that was approximately 5 points lower than the control mean ($p < .001$). The case cohort also did significantly worse than the controls did on all six verbal subtests and on one of the five performance subtests. The case cohort also performed at a significantly lower level than the controls did on the reading recognition ($p = .001$), reading comprehension ($p = .008$), and spelling sub-

Discussion and conclusions

This study was conducted to determine whether persons with previous documented acute organophosphate pesticide poisonings exhibited covert manifestations of latent chronic neurological deficits. The study was carefully conducted using matched pairs to compare a cohort of 100 cases previously poisoned by organophosphate pesticides to 100 controls. Each participant received a physical examination, neurological examination, electroencephalogram, and neuropsychological testing. Blood samples from each participant were analyzed for organochlorine pesticide residues and cholinesterase levels. All study participants were presented blind with meticulous care to the investigators to insure that the participant did not reveal his/her case or control status.

The results clearly indicate that there are chronic neurological sequelae to acute organophosphate poisoning. However, these sequelae are sufficiently subtle that the clinical neurological examination, clinical EEG, and ancillary laboratory testing cannot discriminate poisoned subjects from controls. It might be noted that Rodnitzky et al.²⁴ tested the hypothesis that neurobehavioral abnormalities were present in a mild degree in workers chronically exposed to organophosphate pesticides: a total of 23 such subjects were tested for abnormalities in memory, signal processing, vigilance, language, and proprioceptive feed-back performance. In that study, the performance of the exposed workers was not found to be deficient in any of the five measures assessed when compared with the performance of a control group matched for age and educational background.

Each of the 5 neuropsychological summary scores, as well as each of the 34 subtest scores, from the expanded Halstead-Reitan battery was analyzed using an univariate analysis of variance to determine the statistical significance of the difference between the OP poisoned and control cohorts. The poisoned subjects were significantly worse than the controls on 4 of 5 summary measures and on 18 of 34 individual subtest scores used in the study. The differences occurred on tests of widely varying abilities such as intellectual functioning, academic skills, abstraction and flexibility of thinking, and simple motor skills (speed and coordination). Twenty-four percent of the OP poisoned cases obtained Halstead-Reitan battery summary scores in the range characteristic of documented cerebral damage or dysfunction, whereas only 12% of the controls performed at the same level on these tests. The careful screening for other (non-OP) sources of neuropsychological impairment, as well as the careful matching of poisoned subjects and controls on age and socioeconomic status (i.e., education and occupation level), make it likely that the excess deficits recorded in the poisoned subjects are due to their previous OP poisoning.

The poisoned subjects' own subjective assessments of functioning found statistically significant differences in 10 of 32 aspects of language and communication, memory, cognitive intellectual functioning, and perceptual functions. The relatives' assessment of the subjects' functioning found the poisoned cohort to have more significant problems than the control cohort in 4 of 31 items in these same areas of functioning, as well as in 4 of 22 personality scale items (depression, irritability, confusion, and social withdrawal). These subjective ratings of the poisoned subjects and their relatives suggest that the mild neuropsychological deficits that were demonstrated on the objective testing are also apparent in the poisoned subjects' everyday functioning.

The neurological and neuropsychological evaluations are obviously complementary in that each emphasizes different aspects of dysfunction. When confronted with a patient who has been poisoned by organophosphates, the clinician cannot rely solely on the standard examination or on clinical intuition to decide which patients need further evaluation. The clinical neurological examination focuses primarily on sensory and motor functioning and is relatively insensitive to the higher level cognitive skills and activity, which are best assessed by the neuropsychologist. Although the neuropsychological evaluation demonstrated some impairment of fine coordination and motor speed of the upper extremities in the poisoned subjects, the major deficits were cognitive and appeared on tests of abilities that receive limited evaluation in the clinical neurological examination. The two methods of evaluation (clinical and neuropsychological) provide a more complete evaluation of brain function than is possible utilizing either examination alone.

test ($p = .004$) of the Peabody Individual Achievement Test.

Although the mean scores from the MMPI were well within normal limits for both case and control cohorts, cases and controls were significantly different on 4 of the 13 MMPI scales: validity ($p = .008$), defensiveness ($p = .018$), paranoia ($p = .027$), and social introversion ($p = .050$). The findings on the latter 2 MMPI scales suggest slightly greater social anxiety and tendencies towards suspiciousness or sensitivity to criticism and other social stresses among the OP poisoned cases. Multivariate analysis of variances of the 34 subtest scores in the neuropsychological evaluation found the overall difference between the exposed and control cohorts to be highly significant ($p = .008$).

Significant differences between cases and controls were obtained on 9 of the 32 items on the Patient Assessment of Own Functioning Inventory, with cases reporting more problems in each instance. Specifically, cases reported more difficulties in understanding speech of others ($p = .014$), in recognizing printed or written words ($p = .008$), in thinking of names of things ($p = .037$), in calculating ($p = .009$), in following instructions ($p = .004$), in solving problems ($p = .036$), in following directions ($p = .044$), in performing tasks with the right hand ($p = .010$), and with vision ($p = .019$).

In addition to the above assessment of the study participant's rating of his own functioning, relatives were asked to complete an independent inventory of the patient's functioning. Significant differences occurred in 4 of 31 areas: these were in general areas of language and communication, cognitive and intellectual functions, and use of hands (motor functioning). Again, all of the significant differences showed that the case cohort had more difficulty in functioning than the control cohort. The relative's assessment also showed the exposed group to be significantly different on 4 of 22 personality scale items: depression ($p = .005$), irritability ($p = .001$), social withdrawal ($p = .046$), and confusion about what is happening around him/her ($p = .036$).

Pesticide residue analysis for the organochlorine pesticides, as well as RBC and plasma cholinesterase (ChE) tests, were conducted on blood samples from all case and control participants. Both the case and control cohorts were well within the limits of normal RBC ChE and plasma ChE. The residue data showed a significantly higher mean serum level of organochlorine pesticides in cases than controls (62.1 ppb and 33.3 ppb, respectively). The control cohort performed significantly better than the case cohort on four of five summary scores from the neuropsychological battery, and the analysis of covariance failed to show any significant association with organochlorine pesticide residues. Consequently, any assumption that exposure to organochlorine pesticides influences impaired neuropsychological function is not supported by the data of this study.

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**VIBRATOR MACHINE FOR THE TESTING OF
NEUROLOGICAL DAMAGE TO THE NERVOUS SYSTEM,
DUE TO MALATHION POISONING AND INFORMATION ON
FEDERAL REGISTRATION OF PESTICIDES, ETC.**

**KPFK RADIO—"THE WIZARD SHOW"
(GUEST) PAUL MCCLAIN, MOLECULAR BIOLOGIST
INTERVIEWED BY
(HOST) BOB NIELSON, WITH CO-HOSTESS, FLOREANO,
AND TELEPHONE CALLERS.**

PAUL MCCLAIN: ...Let's just stay in this realm for a minute, and talk about this toxic substance, malathion and the dose. Well, dose is everything. If you think about the effect you are looking for, and the state never talks about this. They talk about dose being everything in terms of how much it takes to kill things. But how much 'dose' does it take to cause some other effect? Now Dr. Rogers at USC says, that she cannot find a dose of malathion, that does not effect the immune system. Now this is an entirely different argument.

So the state will never get out of this realm of "LD 50, and Toxicology" and talk about what kind of doses have what kinds of effects. And the fact is, all you have to do is watch the television or listen to the radio to find out, that these doses are having effects, but they are not having deadly effects, in most cases. They aren't having cancer causing, or mutagenic or these kinds of effects at these doses, that we know of yet, they well may be, but we do know these doses are causing effects which are considered by **World Health Organization and OSHA and NIOSH and most medical professionals, to be adverse effects.**

BOB NIELSON: Can we run down some of the effects, just to make sure...in case the public has not heard this.

PAUL MCCLAIN: Headaches, nausea, vomiting, abdominal cramps, diarrhea, blurred vision, muscle tremers...

BOB NIELSON: What about the famous 'flu-like' symptoms?

PAUL MCCLAIN: Those would all kind of be flu-like symptoms. Here is another whole issue, which is kind of my favorite. The organ in the body which is most susceptible to toxic insult, is the brain. And in this case, organophosphates are very specifically designed to effect the nervous system.

BOB NIELSON: Malathion is an organophosphate?

PAUL MCCLAIN: Right. So you would expect to see the smallest effect from the smallest dose being found in the most sensitive system. And in fact, you do. But it is not in blood test. It is in what we call behavioral neural toxicology. Which means, that some of the classic problems with organophosphates, from malathion, is impairments in memory, attention span, cognitive and verbal abilities, fine motor movements, and we find the most subtle effect, or if we look for any kind of test that would discriminate between exposed and unexposed populations, of any kind of a substance, solvents, lead, organophosphates, anything, what discriminates between exposed and unexposed is impairment of vibratory sensation.

There is a little instrument made by a company called a Vibratron, you simply stick your finger on these little vibrating rods, and depending on how much amperage you have cranked into the apparatus and made this thing vibrate (how intensely), you'll pick it up at a very subtle level, or if your nervous system has been impaired by these chemicals, the intensity is much higher, and therefore your threshold is much higher.

And what we see, is an enormous impairment in this parameter, with no clinical symptoms whatsoever.

BOB NELSON: You mean to say, (let's see if we can get this straight)...today's Thursday...and we are going to go to my neighborhood and find 100 people at random and give them this vibraton test, and then tonight the malathion helicopters are going to come, and we are going to do this test Friday, Saturday and Sunday, and we are going to notice a difference?

PAUL MCCLAIN: Why don't we do it right after they spray?

BOB NELSON: Before they spray, and do it right after they spray. Has this been done?

PAUL MCCLAIN: No.

BOB NELSON: Seems to me like it would be a fairly vivid test, which would be fairly straight forward to show.

PAUL MCCLAIN: I guess the state hasn't kept up with these kinds of scientific advancements, because we have only been doing this now for about 10 years. The World Health Organization has a world wide pilot study. It's been written up in many journals. It's now...there is now a whole computerized system of doing the cognitive and verbal skills..and special reference, and all the kinds of brain impairment.

BOB NIELSON: We haven't documented this in California, but it has been documented by WHO.

PAUL MCCLAIN: In a lot of cases, as I said, with lead, and inner city kids, with solvents in an number of industries, with pesticides in India, and we are talking about whole cities.

BOB NIELSON: How about malathion in this test?

PAUL MCCLAIN: Why would we ever test malathion, cause the state and the government keeps telling us it is safe.

It is hard to get grant money for things somebody says there is no reason to get. But it is interesting....

BOB NIELSON: But this would be an interesting test. It would be worth doing.

PAUL MCCLAIN: I presented it to the school board, and they were very interested. I'll tell you where I got the information; was from a friend of mine who is a research psychologist in the division of human effects of the EPA. In fact, has published several papers on this. and another fellow...this fellow is in Chapel Hill, and another fellow up in Oregon, with EPA, is probably kind of the world 'guru' in this area. They have been doing this work for about 10 years.

FLOREANO: Have they been working with malathion?

PAUL MCCLAIN: They have not worked specifically with malathion, but with other organophosphates, other chemicals and pesticides, and so forth. So there is a phenomenal data base, and a great acceptance of this technique, in determining if a substance 'period',

a substance, has an effect on the nervous system. We are talking about a \$2000.00 retail instrument, which takes about 12 to 15 minutes to run the entire test and profile, non-invasive, nonpainful. It's a fun little machine to use. There is actually one at USC, there is one at Veterans Administration, (their hospital there). And there are a few others in southern California; but, this technology, and this whole concept of neural behavioral toxicology is one that most people, just frankly, aren't aware of.

So when Jackie Goldberg, President of the School Board, asked Dr. Kirtz, Health Officer from the state, "Well gee Doc, is there any kind of test we could do to see if these kids are being exposed?" and he said, "No. There is just no way we can tell this." Of course, I being my subtle self, said, "Well, excuse me sir, but that is not exactly true, and we do have 10 years of research and published literature on the use of a whole panel of neural behavioral types of testing."

BOB NEILSON: You are listening to KPFK In Los Angeles. This is The Wizard Show and my name is Bob Neilson. My co-host today is Floreano and we are talking with Paul McClain, Diplomat in preventive medicine and molecular biologist. And we are talking about malathion. Paul McClain is one of the local, self-made experts, I guess, in malathion, although I think he is well equipped to be able to do that kind of scholarly research based on his academic training, and we are talking about malathion and its effects on the public. He was a previous guest on the show and presented a very compelling case early on, in the malathion dispute. We have him back. We are glad to have him back.

We have been talking now about various...whether any new information has been found out since the last time he appeared, which was back in February, and he tells us there is nothing new on the science front, other then the state has admitted that malathion can cause genetic damage, but of course they back-tracked from that and said, "But that's in a level that they are not going to be spraying us at."

However, he has introduced something very important, which I think we ought to think about, which is a new method of monitoring the effects of not just of malathion, but any other materials that are being spread about widely in the environment. The technique he is talking about is, neural behavioral toxicology, which is monitoring very subtle changes in our nervous system, using some fairly straight forward technology, which would allow us to do some surveys to see whether things like malathion, are affecting our nervous systems and our behavior.

PAUL MCCLAIN: The other nice thing is we can see a lot of these changes happen with increases in carbon monoxide. This type of testing has been used on toll booth operators, and within a matter of hours we find major impairments in these people.

A lot of studies have been done, for instance, in the textile industry, which use certain chemicals as flame retardants. So, we're not just talking about 'out-door' kind of environmental issues. We are talking about the workplace. There are so many chemicals, (and this is a whole other show) to get into the 100s of 1000s of chemicals of which over 750 are known to effect the nervous system and of those, over 250 are found in everyday use in the majority of the industries where people are working.

FLOREANO: So this is a very important kind of technology because it gives us results in a few hours...

PAUL MCCLAIN: Minutes...

FLOREANO: Rather few minutes, rather then waiting for years to do cancer studies, statistics.

**EDITOR INTERVIEWS ANALYTICAL CHEMIST
JIM PETERSON, Ph.D., OF PACIFIC TOXICOLOGY LAB
ON TESTS FOR EXPOSURE TO MALATHION**

EDITOR: Do you develop the methods at Pacific Toxicology Lab for testing malathion exposure?

DR. PETERSON: Yes.

EDITOR: In layman's terms please give the reader (as well as myself) an idea of what you look for to detect malathion exposure. I know there is the cholinesterase test but a lot of times I have been told this test is not quite all that it should be. Could you expand on this idea.

DR. PETERSON: Basically the cholinesterase test is a test of blood for an enzyme and the decreased activity of that enzyme due to the exposure to various substances, including organophosphate pesticides...which malathion is. Malathion is a rather weak inhibitor of that activity...therefore, the sensitivity of a cholinesterase test for detecting exposure to malathion is rather insensitive. It would be unlikely to see any measurable decrease in cholinesterase in humans exposed due to spraying of malathion for eradication of the medfly.

EDITOR: You said you didn't think there would be any cholinesterase decrease?

DR. PETERSON: Yes. Again I am speaking not as a toxicologist, but as a chemist; from what I know, I think the cholinesterase test is too insensitive in this situation to detect any decrease in cholinesterase. Malathion affects the cholinesterase so weakly.

EDITOR: In other words, malathion affects cholinesterase, but not that much, is that correct?

DR. PETERSON: Yes. However, there are other methods of detecting malathion exposure. One is the measurement of alkyl phosphate metabolites which is one portion of the original malathion molecule, which breaks apart or degraded in the body. There are also two carboxylic acids metabolites....they are larger portions of the original molecule which also include the phosphate. They are more specifically related to malathion exposure.

The alkyl phosphate portion is released in smaller quantities than the carboxylic acid portion; also the alkyl phosphate portion is common to other organophosphate pesticides. That is, if you are exposed to diazinon, or parathion or any other organophosphate it is going to give similar alkyl phosphate metabolites, therefore it is not as specific as the carboxylic acid metabolites to malathion exposure.

So.....those are the two options in the literature. Limited work has been done in using these tests...in non-occupational exposed individuals, that is, people like the residents who are being exposed during the med-fly spraying.....so little is known as far as levels of these metabolites following exposure to malathion, in terms of relating the original dose to the metabolite level.

EDITOR: So what you are saying then is alkyl phosphates (a group of metabolites) is in the original structure of malathion?

DR. PETERSON: Yes. It is in the original structure of malathion.

EDITOR: So this carboxylic acid is also part of the original molecular structure of malathion.

DR. PETERSON: It is produced in the various stages of the break-down processes of malathion..

EDITOR: What your test does (and what the cholinesterase test does not do)..is to directly measure these metabolites, and so here at Pacific Toxicology Lab you have the equipment and knowledge to look for these metabolites. How do you measure these metabolites?

DR. PETERSON: They are measured in the urine.

EDITOR: You have people give you an urine sample and you then measure the metabolites?

DR. PETERSON: Right.

EDITOR: You then look for the (metabolites) alkyl phosphate and carboxylic acid metabolites. It may be that these acids are not from malathion; it could be from one of the other organophosphates.

DR. PETERSON: The alkyl phosphate metabolites could be from another organophosphate but the carboxylic acid metabolites are specific to malathion.

EDITOR: Are you finding that when patients are tested, they have this carboxylic acid in their urine?

DR. PETERSON: Well, we have only done a few tests related to medfly spraying...and we don't always know the history of where they come from...and we have seen very few positives. We have not started to offer the carboxylic acid metabolites test yet..

EDITOR: How much will these tests cost the patient?

DR. PETERSON: The alkyl phosphate metabolites test cost \$70.00. The carboxylic acid metabolites would be slightly less than that. We also offer the cholinesterase test in blood; red blood cells plus serum for \$35.00.

EDITOR: That is reasonable!

DR. PETERSON: We think so. I should mention that this test is just a measure of detection...it doesn't necessarily mean any detectable level is a toxic level...it merely tells you if you were exposed or not...I find the problem so far...in this whole controversy is that no one really knows what the exposure level really is to Los Angeles residents due to the medfly spraying..

EDITOR: Do you mean the toxic level or the exposure level?

DR. PETERSON: The exposure level. No one knows what the exposure level is... it is all "on paper" so far.

EDITOR: What do you mean when you say 'no one knows what the exposure level is'...Why don't they know what the exposure level is?

DR. PETERSON: It is all speculation based on mathematical modeling.

EDITOR: In other words, you mean the specific test for exposure level to malathion has never been done on any of the sprayed residents?

DR. PETERSON: Not to my knowledge.

THE POISONING OF OUR PEOPLE

EDITOR: If I had a carboxylic acid test they would then know my exposure level?

DR. PETERSON: Right, but no one to our knowledge has done that.

EDITOR: So your lab is going to do it?

DR. PETERSON: Well, we are planning to develop the test, but there has been no systematic study of Los Angeles residents with that test.

EDITOR: So you will be the first.

DR. PETERSON: We are a testing laboratory, we would not undertake such a study on our own.

EDITOR: There should be one done by the state, correct?

DR. PETERSON: That is what we think...to determine what levels people are really being exposed.

EDITOR: It doesn't take that long to do- does it; to do a study on this type of test? How long does it take...very long?

DR. PETERSON: Perhaps about six months to complete such a study.

EDITOR: That is not too long is it?

DR. PETERSON: No, not in the scientific world..no.

EDITOR: Actually the state should have done this before with rats. On the other hand they say rats aren't that good as a test animal concerning malathion. According to Dr. Lawton, M.D., and I quote, "The problem with using rats as a test animal is - rats not only have beta esterase in the liver but they have it in their red blood cells (circulating around in their body). You can bathe rats with malathion and they can't get sick. You can give them huge dosages and about all that happens is they get some decrease in the number of offspring. They have such a great capacity to handle malathion.

The reason all this data doesn't compare to humans is people don't have circulating beta-esterase. They only have it in their liver. So you can't rely on any studies that are done on rats. Rats are absolutely worthless in evaluating human toxicity. Virtually all the studies showing how wonderfully safe malathion is, because it has for the most part, been tested on rats. There have been a couple of other studies, actually not very good studies, but most of them, the vast majority of them have been done on rats." Do you feel this could be a problem using rats as a test animal for malathion?

DR. PETERSON: Could be. Again I am not a toxicologist...All animals are slightly different in their metabolism...that is always the problem when you are doing animal studies. You can get some ideas but **to go directly from rats to make judgements concerning human metabolism is not always valid.** There are always some errors involved with that. The problem is how do you find out about humans other than by feeding them malathion...which...is not an acceptable thing to do...so it is a problem to determine what the affects are in humans...because you can't do human experiments.

EDITOR: Except they are...they are spraying all the residents of Los Angeles...

DR. PETERSON: So part of the state's program should be to determine what the level of exposure is...

EDITOR: In other words, if it is going to become a toxic level?

DR. PETERSON: Yes, if all the people that are getting sick have higher levels of malathion metabolites then those not getting sick they will have some data to make a decision on..but if you have no levels to correlate to, and then all you have is subjective symptoms from people, it is very difficult to make a scientific judgment on that basis... You do have to do a study to determine how much people are actually being exposed to malathion

EDITOR: For all we know, many of the people running around right now in L.A. could have been over-exposed, they would be very toxic, which could very shortly affect their immune system...

DR. PETERSON: My point is that you don't know what the exposure level is or the potential effect of any given level of exposure. On the other hand, maybe the exposures are very, very small...

EDITOR: You just don't know...

DR. PETERSON: No. I really should say malathion is one of the least toxic organophosphates, ... however, if the levels are high, much higher then they guessed they are.....then that has to be re-evaluated...as far as the levels at which they are spraying. On the other hand, maybe the exposure levels are much lower then they have guessed...and that information would also be helpful.

EDITOR: Yes, either way..it would be helpful.

DR. PETERSON: I am not saying measuring metabolites is going to be the magic bullet, it is just another piece of information that is required to paint the whole picture.

EDITOR: When do you expect to have the carboxylic acid test available?

DR. PETERSON: I don't know yet.

EDITOR: Would you say between 1 and 3 months...and would you say it would be closer to a month?

DR. PETERSON: It depends on how much interest there is...It could be as soon as a month.

EDITOR: Would you offer this to the state?

DR. PETERSON: Yes. I forgot to mention earlier that the metabolites are rather short lived.

EDITOR: In other words if I am sprayed with malathion today and I want one of the metabolite tests, and according to what you said earlier, I would only have 48 hours before the test would be invalid?

DR. PETERSON: Yes. It also tells you how quicky malathion is metabolized and excreted... it is not like DDT or Dieldrin...or PCB's, it does not accumulate in the body.

EDITOR: It does not go into the fatty tissue?

DR. PETERSON: No, there is no evidence of this.

EDITOR: Thank you very much for simplifying a very complicated process and thus making it a very informative interview for not only the professional but the lay person as well!

Dr. Peterson is Director of Research and Development at Pacific Toxicology Laboratories, 1545 Pontius Avenue, Los Angeles Ca. 90025.

EDITOR'S NOTE: It has been brought to my attention through reliable outside sources that the State of California has also had access to develop the above mentioned test for carboxylic acid metabolites for malathion exposure in its own lab; (it is in the scientific literature). This test is more sensitive then the cholinesterase test.

I find it rather strange and I think the reader will too, that the state has failed to develop this test for Los Angeles citizens and surrounding areas after all this time spent spraying for the Medfly.

ALLAN LIEBERMAN, M.D.
Certified in Environmental Medicine by the
American Board of Environmental Medicine

**EDITOR INTERVIEWS DR. LIEBERMAN ON DOUBLE BLIND STUDY
OF MALATHION POISONING IN SCHOOL CHILDREN**

EDITOR: What kind of medicine do you practice Dr. Lieberman?

DR. LIEBERMAN: I practice environmental medicine in Charleston, South Carolina and I have been doing this since about 1977.

EDITOR: How did the double blind study come about that you did on malathion poisoning?

DR. LIEBERMAN: In 1981 I received a telephone call from Pat Hardman, Ph.D. who owns 3 schools and who caters to learning disabled children. These three schools were in Georgia and Florida. The one particular school was in the panhandle of Florida, so that she was able to handle all three schools at one time.

There suddenly was an epidemic in one school, and Dr. Hardman noticed tremendous changes in the children in terms of their behavior and their learning. She knew something had happened but she couldn't identify what it was.

We put our heads together and realized there was a distinct difference between the children in one school versus the children in the other 2 schools. What we found out was that the school in Albany, Georgia was located practically on the edge of an airfield where they were aerial spraying. They would then dump the pesticides at the end of the runway before landing. This school was also surrounded by pecan groves, and they were actually spraying those trees also.

We also found out they were using an astronomical amount of chemicals, and one of the chemicals they were using was 'malathion.'

At that time Governor Jerry Brown was in trouble in California for refusing to let the state spray. I made a decision at that time to particularly pull out malathion, (because everybody said it was safe) and we did a double blind control study on the effects of malathion. We specifically challenged in a double blind manner children who were in these schools, and we found (at the end) when we broke the code, there was a very distinct pattern of re-activity in the children who were in the Albany school in terms of their reaction to malathion.

Malathion affected their whole learning process, their behavior for example...so we were convinced we had demonstrated what we had wanted to- that this pesticide is probably not the safest pesticide in the world.

My study is one of the few double blind studies which can be included in the literature, although it was not accepted for publication; so it sits in a non-published form.

Dr. Pat Hardman who owns the school was just contacted, actually through me, when the California people wanted me to talk over a radio station, and television, concerning the malathion, and I asked Dr. Hardman if she would do it because they were her students, so, she has been on the radio out in California several times being interviewed because of our work with malathion specifically and its affect on the learning process. She is a Ph.D. who specializes in learning disabled children. That was our contribution in terms of the malathion story.

EDITOR: The state just recently aerially sprayed (malathion) a "Little Pony League" while the children were on the playing field on a Friday night. Is that dangerous?

DR. LIEBERMAN: It is quite dangerous...and don't let anybody tell you to the contrary. There are several ramifications of the aerial spraying. No. 1 is the material itself-the organophosphate is a very small fraction of what is literally being sprayed. What is the other part? The other part is usually a heavy oil-like substance, which is a vehicle that distributes the chemical.

Is it like everybody knows, when you use aerial spraying for example, you are literally hitting one per cent of your top target, and the 99% is going everywhere else. It is a very impractical, inefficient, expensive approach to a problem, is to do aerial spraying, just for that very reason.

EDITOR: Do you feel because Los Angeles has been sprayed so long now, and because there have been people who have been chemically sensitive all their lives, and there are others who may have been somewhat 'sensitive,' that they people may now be pushed over the edge into environmental illness, is that a possibility?

DR. LIEBERMAN: To answer your question, I would say unequivocally yes!

Going back and talking about malathion aerial spraying particularly, we have a model which we can use, because in Japan they were doing the same thing (spraying malathion) and we have data which comes from Dr. Isikawa.

EDITOR: Well, the state says there is a lot data gaps in the study..

DR. LIEBERMAN: Who says there are a lot of data gaps?

EDITOR: The state, The California Food and Agriculture Department.

DR. LIEBERMAN: Well, they can discount it all they want, but it doesn't change anything, the point is Isikawa has developed a very, very nice tool, with which he can measure eye function. This is an extremely objective thing, and the point is is that many of the peoples' vision are changing.

EDITOR: Thank you Dr. Leiberman for taking time out of your busy schedule to be interviewed. Both the reader and myself have learned a great deal from you. Thank you very, very much!

Editorial

The rise in CAP scores

The Morgan Hill School District and seniors should be proud of the latest results from the California Assessment Program tests.

Seniors at Live Oak and Central high schools not only showed across-the-board improvements in reading and mathematics but also achieved the highest scores since testing began six years ago.

Compared to other 12th-graders across the state, the seniors scored in the 83rd percentile in reading, meaning that they scored higher than 83 percent of the state's 12th-graders. That's good.

But when compared to students elsewhere with similar socioeconomic backgrounds, Morgan Hill seniors were only at the 50th percentile. (That's not so good.)

In mathematics, seniors scored at the 80th percentile in statewide ranking and at 65th percentile when compared to schools with similar student body makeup.

Scores increased across the state despite this year's test being the most demanding in its six years of existence. State school Supt. Bill Honig credits the improved test scores to higher graduation requirements, tougher courses and

increased teacher training that grew out of the education reform movement.

Such tests are just one way to measure how well a school district and students are doing.

Educators correctly caution against putting too much importance on any one year's test. Instead, they say whether scores are going up or down is more important. And in Morgan Hill, the trend is up. The reading scores have increased 23 points to 293 since tests began. In mathematics, this year's score of 294 is 29 points higher than six years ago.

Still, there is room for improvement — especially since many local students are competing with others throughout the country and state for entry into colleges and universities. This year's seniors have a long way to go when compared to students in Palo Alto Unified, which ~~scored~~ scored in the top 1 percent of all school districts in the state, and in the Los Gatos-Saratoga Joint Union High School District where students were in the top 1 percent in reading and top 2 percent in math.



EDITOR'S NOTE: The children mentioned in the above editorial were sprayed with several rounds of Malathion as they played in the school yard. This editorial helps bring home the validity of the study (previous page) done by Dr. Lieberman— that aerial spraying of Malathion does affect children academically.

It is interesting to note that not one, but three Pony League teams were also sprayed directly with Malathion as they played on an open field. See Chapter 5 on survey conducted by Citizen Jean Hinsley of Norwalk after these teams were directly sprayed.

The spectators at this game were also openly sprayed, one of whom was a pregnant mother, and the other, a woman confined to a wheel chair.

According to a newspaper article, The Reverend Robert Schuler called from Anaheim and asked the California Department of Food and 'Ag' not to spray on or near 'Chrystal Cathedral' on a particular date as there was to be a tent dinner outside that evening for visiting ministers. Sacramento honored the Reverend Schuler's request and did not spray. The article went on to state that the helicopters would never spray over any outdoor event.

Doctors Get Warning on Effects of Malathion

Medfly: State and local officials tell the public spraying is safe, yet caution doctors that direct exposure can cause headache and nausea.

By ERIC LICHTBLAU
TIMES STAFF WRITER

Although state and local officials have assured the public that current spraying is safe, doctors warn that direct exposure can cause headache and nausea.

Shelters to open on nights of spraying

LOS ANGELES — The Los Angeles City Council voted to open homeless shelters on nights when helicopters spray malathion, broadening its policy of opening the shelters only on rainy nights.

Forum: Pesticide banned in Japan

Continued from Page A-1

led on a rural area of Japan where aerial malathion spraying was done to extensive rice crops, and where several elementary school children died of nearsightedness.

Researchers found that in the cases of nearsightedness, they also found no link to the parents that cause the nearsightedness.

He said that of the 40,000 who were compared spraying look place could not have their age corrected with those children had vision loss that classified.

SPRAYING SCHEDULE

The state Department of Food and Agriculture's helicopters take to the air this week to spray malathion in the continuing war on the Medfly.

On Tuesday, they are scheduled to fly over parts of Eagle Rock, Pasadena, South Pasadena, Alhambra, Monterey Park, City Terrace, East Los Angeles, Echo Park, Glendale, San Marino, Glendale Park, Highland Park, Mount Washington and El Sereno.

On Wednesday, they will spray parts of Alhambra, Monterey Park, City Terrace, East Los Angeles, Echo Park, Glendale, San Marino, Glendale Park, Highland Park, Mount Washington and El Sereno.

SPRAYING SURVIVAL GUIDE

- Tonight's spray area: The San Gabriel Valley spray area, rescheduled after being postponed Monday because of high winds, includes southeast Monrovia, south Bradbury, south Duarte, virtually all of Azusa and the north part of Irwindale.
- Boundaries: Hillcrest Boulevard and the Angeles National Forest on the north; Cactus Avenue on the east; Gladstone Avenue, the Santa Fe Dam and Live Oak Avenue on the south; and Myrtle Avenue, California Avenue and Canyon Boulevard on the west.
- Times: 9 p.m. to 4:30 a.m. the following morning.
- Tips: If cars are sprayed, wash them off with soap and water. If fruits and vegetables are in a quarantine zone, officials urge people not to eat them until they are washed. Information on malathion spraying may be obtained from the state Department of Food and Agriculture.



Robert Green / for the Board of Health and Community Development applauds at forum. Initiative process was 7 California nearly 80.

Medfly find deals state a 'major' setback

WIN FLECK

Officials announced on Monday that a major setback in the state's fight against the Mediterranean fruit fly has occurred. The fly, which has been spreading from California to other parts of the United States, has been found in a new area of California.

The state's fight against the Medfly has been a major setback. The state's fight against the Medfly has been a major setback. The state's fight against the Medfly has been a major setback.

SWITCH: New Allies Against Spraying

Los Angeles City Council members have switched their support from the state's anti-Medfly program to a new initiative. The council members have switched their support from the state's anti-Medfly program to a new initiative.

Medfly Mania: Facts Might Help

Could it be that finally Southern Californians are going to get some solid information about the public-health effects of repeated malathion spraying? It's almost too much to hope for, but this week scientific experts will get two important opportunities to clarify the health implications of the state's extensive anti-Medfly pesticide program.

On Tuesday, the Assembly will hold an unusual meeting of the full house to take testimony from researchers and public-health specialists who have studied pesticides. The meeting will no doubt attract much newspaper, television and radio coverage: here is a chance for state legislators to put the media spotlight to more than just self-serving use. They must use the hearing to ensure that it answers all of the obvious questions: How complete and credible are the many previous studies that indicated malathion posed no significant risk to human health? What factors exist in Southern California's current environment that might alter the conclusions of such studies? What about future preparedness? Is it realistic to suggest, as agricultural officials have that by June the state and federal facilities can produce 400 million sterile flies per week so that long-term repeated spraying will never again be necessary? And beyond scientific questions, there is the obvious political one: Even if all studies show, beyond a reasonable doubt, that spraying has minimal risk, what can be done to restore the credibility of the state and county agricultural officials who have mismanaged the Medfly public-information campaign in almost textbook form?

Their public information blundering was the reason the state formed what is now called the Public Health Effects Advisory Committee, a group of more than 20 physicians, scientists and public-health advocates. The committee held its first organizational session recently in Orange County and will meet again Thursday in Los Angeles. Its meetings, which are scheduled to occur regularly for the next few months, need to be more highly publicized so that those interested can attend. The state has rightly included on the panel some experts who have raised serious questions about the malathion spraying campaign, including representatives of the Sierra Club and the city of Pasadena. If given the needed staff support and full authority to pursue all health issues it considers relevant, the committee can help inform an impatient and anxious community—one that is not only weary of being bombarded with malathion, but with conflicting versions of precisely what the controversial pesticide does.

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Introduction to Chapter 5



An expert witness in pesticides and other toxic chemical cases is interviewed. Dr. Thrasher has a wealth of knowledge and pulls no punches in his condemnation of the state for keeping secret 16 different impurities (immuno-toxins) in the malathion spray.

Dr. Thrasher also found it fascinating the state neglected to do a follow-up study of the citizens within the area(s) after the spraying. At one time he had been contacted to do a study, but the idea was never implemented by the state.

Jean Hinsley, a resident of Norwalk, California called Dr. Papenak's office after the aerial spraying of malathion to report symptoms. When she told Dr. Papenak's office her symptoms, the reply was, "You just have the flu." She asked if anyone else had gotten sick as a result of the spraying. He replied, "People weren't affected by the spraying." She mentioned that neighbors on her block were ill. His reply: "You just have the flu, see your doctor."

It was then Jean decided to take a door-to-door survey herself (in her neighborhood) and find out what happened to the other people around her.

Jean learned later that Papenak and his staff had not been recording any of the health information people relayed to them at the Los Angeles County Hot Line, regarding their symptoms and illness after the sprayings, until several months later.

What is interesting to note is that the state did no survey to find out the effects of their aerial spraying program, yet, became quite interested in Ms. Hinsley's survey, and went to great lengths to get a copy of her report. To this date, however, the state has done no survey on the citizens.

A commentary is given by Jean Hinsley on the surveys she conducted as well as the entire scope of malathion. In story form Jean brings home to all of us the pain and suffering the state has inflicted not only on the adults and our children, but other loved ones, as well as our pets and mother nature.

**EDITOR INTERVIEWS EXPERT WITNESS IN
PESTICIDE AND OTHER TOXIC CHEMICAL CASES**

DR. JACK THRASHER, Ph.D
(Former Staff Member U.C.L.A.)

THE MALATHION CONTROVERSY

EDITOR: In your opinion, Dr. Thrasher how safe is the aerial spraying of malathion?

DR. THRASHER: In my opinion, malathion as it is being used has not been adequately tested for human safety. Particularly in the area of multiple applications. There is absolutely no information that states whether it is safe or not safe.

It is incumbent upon the state of California, by both federal law and state statute, from what I understand, to prove such materials are safe before you can expose individuals to potential adverse effects.

EDITOR: The state of California is breaking the law?

DR. THRASHER: I would assume so. I understand there is a federal statute, I haven't read it; which states that the safety factor must be a priority taken into account in such situations, and it has not been done.

EDITOR: There are all these experts around, like your good self, stating it is harmful to spray in populated areas, yet the state continues to do it. How can they do this in good conscience?

DR. THRASHER: The State can do what it wants to do in a State of Emergency. Governor Deukmejian has called a State of Emergency. So... they will go ahead and do what they please, that circumvents any and all state statutes. Now whether it circumvents federal statutes I don't know.

The only way this is going to be resolved is through litigation. I read in the paper this morning where the Los Angeles City Counsel and the County Counsel are going to go ahead and pursue their legal suits against the state in the event that this may re-occur, because the state may try to re-spray again sometime in the future.

The difficulty everyone is having with this whole issue, is the 'state of emergency' which has been put upon it.

EDITOR: Do you think, Dr. Thrasher, there is a 'state of emergency' from what you have seen?

DR. THRASHER: I haven't seen any data that would demonstrate to me there is a state of emergency. I am not an entomologist. There are conflicting statements on both sides of the issue. One says there is an infestation, the other one says there isn't. Who are you going to believe?

There are a number of anecdotal stories out there that would indicate there should be some full investigation as to what the problems may or may not be. For example, there is a Ms. Jean Hinsley down in Norwalk. I have reviewed the results of her studies. She has gone out into the neighborhood and she has found people who are getting sick. The County Health Department is not doing a similar study or anything to assist in locating such unfortunates. Neither is the state.

I have talked with Michael Bell, and his colleague, Jean Means. They have received 30,000 phone calls from individuals; about 50% of these people stated that they have suffered ill effects.

EDITOR: As a scientist, Dr. Thrasher, what do you suggest being done at this point?

DR. THRASHER: Being a scientist, I had told various people call me; I had told them that they need to develop certain scientific and medical data if they have a problem. That is what they are attempting to do.

EDITOR: Do people need to be tested right away if they think they have been poisoned by malathion?

DR. THRASHER: That is correct. Another thing you can do is retrospective studies. Lets say you have a group of individuals in a given area who get sick all at the same time, then you can retrospectively go back and find a common event that caused that illness.

For example, lets say someone has sprayed. Three days later, many people in a given area are all sick with the same symptoms, and they all occurred at the same time and they weren't sick prior to this. You would only have to assume the spraying caused the problem. I have seen no retrospective studies being done on the population here in Southern California by the state or county. The only retrospective studies that have been done are by the citizens out there who are concerned. They are finding information, that appears to me, that there might be a problem.

EDITOR: Don't you think it is strange the county is not following this up?

DR. THRASHER: Oh, I think it is strange, but on the other hand, it is probably a matter of personnel, as well as financial too.. I just don't know why they are not doing it. I think it is strange, yes, but why, I don't know.

EDITOR: Do you think children and older people and people with allergies are more susceptible than other people to the spraying?

DR. THRASHER: The answer is YES! ...and that is not the basic tenant of Agriculture toxicology. All toxicological studies are done on healthy animals and healthy people. There is very little data on people who have had previous illness, or on the young or the elderly.

When you do toxicology on research animals, you take a healthy group of animals and subject them to the poison. Why don't you take a group of sick animals that have similar diseases the human population has, and then see what happens? That is not being done, and has not been done. So how can you tell for sure what will happen to the young, elderly and those with illness?

Without this type of data how can you tell for sure what is going to be happening to the young, elderly and those with illness?

EDITOR: The state just sprayed an entire designated, populated area. They didn't warn people who had small children, or the elderly, or those with allergies, or those who were chemically sensitive, or environmentally sensitive. There are risks and they did not give them the option of leaving the area before the spraying.

DR. THRASHER: That is correct.

EDITOR: They now say they are going to stop spraying by the end of April. But a lot of damage has already being done in the meantime.

DR. THRASHER: Yes. That is one possibility and no one is looking into it. ...My biggest concern is from the immune system point of view. Our immune system responds very readily to small doses of chemicals given over a long period of time. That is how you develop allergies for example. These people have multiple exposures to malathion which contains other chemicals besides malathion, and no one has looked into the potential immunological effects, including sensitization of malathion and the contaminants that go along with it

I have seen Dr. Marc Lappe speak out on this and I have also read his papers. He said this material contains some 13 to 16 different chemicals besides malathion.

In addition, I have a copy of a letter from Mr. Voss, Director, Department of Food and Agriculture, to Senator Torres, Dated 2/20/90. The letter points out that the malathion that is used has at least 16 different chemical contaminants totalling 5.35%. Several of these contaminants have not been adequately tested. Also, they haven't, to my knowledge, been tested for additives or synergistic affects. The frightening aspect of this is that the public has been led to believe that "pure" malathion has been used in this aerial spraying.

I would like to emphasize that a 5.35% contamination content of any "pure" chemical is extremely high and potentially dangerous.

EDITOR: That was one of the things Dr. Lappe spoke out against when he was working for the State of California; he said the spray needed to be pure malathion.

DR. THRASHER: Correct. To give you an example. Phosphorothioates, which are bi-products of the production process and are contaminants of all organophosphate compounds; these are in the list by Mr. Voss. Dr. Lappe is concerned about this. They are in all technical grades of organophosphates. They are present to some extent in re-agent grades, in other words, highly purified. From my understanding, the state is using the technical grade which has got to have contaminants in it.

EDITOR: Have you testified (against malathion spraying) at any of these meetings in Los Angeles?

DR. THRASHER: No, I have not. I have stayed somewhat in the background. Based upon the following: both my partner and myself were approached by a certain individual at one time to do some testing on some sprayed people. Since that time we have never heard from him again.

So...I am going to speak out. In other words, this individual was from the proponents of spraying. Because the state did not follow through, I feel I am in a position to say my peace now. I am no longer remaining neutral. If certain individuals within the state and county were really legitimate in their concerns, they would have gone ahead with plans and done the testing.

EDITOR: You mean to say certain people within the state asked you in the beginning to do some testing of people, but then dropped the whole plan very suddenly?

DR. THRASHER: Correct. We haven't heard a thing from them.

EDITOR: Do you find that strange.

DR. THRASHER: I find it very fascinating.

EDITOR: That just tells me something else about the state.

DR. THRASHER: It tells me that someone within the state or within one of the local governments has found individuals who are complaining and they thought these individuals

needed to be tested, that is what it tells me. They are still denying that such individuals exist.

EDITOR: What are some of the possible damages that may happen to the people being sprayed?

Dr. THRASHER: My concern is immunologic injury; also there are other concerns from other scientists who look at other aspects of the organophosphate compounds and these are neurologic injuries, such as delayed neuropathy. In other words, we know certain individuals exposed to organophosphates develop permanent neurologic damage and the common term named for it is neuropathy. Neuropathy just means damage to the nervous system.

EDITOR: What about peoples' moods, their emotions after spraying malathion?

DR. THRASHER: I would assume some people will develop some form of paranoia associated with it. If you are being sprayed all the time...I have seen people who have been sprayed with other chemicals who develop a morbid fear of toxic chemicals, because of one poisoning.

EDITOR: I am referring to the literature which states one can have mental disturbances due to malathion poisoning.

DR. THRASHER: There are other non-cholinesterase effects of organophosphate compounds and they do interfere with the production of other neurotransmitters. These could have very subtle effects on human beings, such as serotonin and other chemicals that are produced in the central nervous system. There is documentation that organophosphate compounds do interfere with the production of these neurotransmitters, like serotonin. Dopamine is another one. Those would be two that would really concern me. Those would have subtle neurological effects.

EDITOR: Do you think if we can't stop the spraying in our state, we will have to go to the federal authorities?

Dr. THRASHER: There are several major law firms working on that issue right now. I know Jean Means has been working with some law firms in that area, along with Michael Bell.

For an ordinary citizen like you and I, to stand up, and say we don't want to be 'sprayed,' our efforts would be totally ignored. It would have to be done through litigation.

EDITOR: Thank you so much Dr. Thrasher for giving me your knowledge, time and advice on this very important subject which affects all Californians.

Jack Thrasher, Ph.D
11330 Quail Creek Rd.
Northridge, California
91326



**INTERVIEW WITH J. THRASHER, Ph.D, AND HIS
COMMENTARY ON CITIZENS' SURVEY AFTER AERIAL
SPRAYING OF MALATHION, ETC.**

DR. THRASHER: The survey Mrs. Hinsley has done. (and I have told her this) and I think we all have to understand- she has not done what is called a 'control population.' She has not looked at people who were unexposed at the same time to determine if they had similar or dis-similar symptoms.

Putting that aside (and I want the above made clear): when I have looked at the overall information that Mrs. Hinsley has collected, in my opinion, there appears to be a problem out there in the community that should be investigated by the Public Health Services.

This problem very strongly suggests to me that there are some individuals who at least are experiencing very severe, acute symptoms following exposure.

The symptoms they are suffering from by the way, are the same symptoms described by the U.S. Public Health Service back in the 1970s following exposure to organophosphate compounds. These symptoms are flu-like illness. The average physician out there will diagnose it as the flu rather than considering it as a potential chemical exposure. (which is the inherent problem we have in our society today).

Physicians have not been trained in the effects of pesticides on the human being. I get very disturbed with the Public Health officials who say they are going to leave it up to the physicians, and communities.

EDITOR: That 'Dear Doctor Letter' the County Health Department sent out stating if a patient does come with flu-like symptoms, the physician is to find other causes is rather suspicious to me...

DR. THRASHER: That is very true. The interesting thing is the flu-like symptoms... we had a discussion of this before. The flu-like symptoms are not caused by the virus. The symptoms are caused by the fact that the immune system has been activated by the virus and the immune system elaborates certain hormones and chemicals that cause flu-like symptoms. These people who are having flu-like symptoms...it tells me their immune system has been acutely stimulated by this chemical.

EDITOR: It is the chemical that is causing the immune system to react...

DR. THRASHER...Causing symptoms like the flu.

EDITOR: ...Causing symptoms because it stimulates the immune system in such a way all these hormones and different chemicals interact.

Dr. Dolan in a newspaper article stated one organization had gotten approximately 10,000 calls from the residents regarding their symptoms. Papenak said he had only gotten 700 calls the whole time.

DR. THRASHER: I think what you have to look into, from what I understand, (this is all anecdotal on my part..it is just what I have heard)...is that the County Health Department refused to accept phone calls from residents who had flu-like symptoms initially. They rejected them.

There was a program set up inside the County Health Department, that when these phone calls came in, these people were flatly told this wasn't a matter of malathion, they had something else.

I want to read you a quote from the INSTITUTE OF MEDICINE, it is titled, "Roll of the Primary Care Physician in Occupational and Environmental Medicine," published in 1988. This was on a survey done in 1982 and 1983, it states, "Figures rose to 66% in our medical schools which required 4 hours of the medical curriculum in four years applied towards environmental medicine, or occupational medicine. The other 34% is zero. It goes on to say that a survey of 89 departments of internal medicine identified that only 57% of the schools had programs and teachers in this field who were capable of teaching.

So now, if the County Health Department and others are going to send letters out to our doctors about finding symptoms of malathion exposure, what do our doctors know? What I am saying is the entire medical profession is totally under-educated in this whole area: only 4 hours of this type of curriculum-lets say they even got that much!

That means the average doctor out there is not going to be able to discern between the symptoms of the flu and symptoms of chemical exposure. The other point I would like to make- when I looked at Mrs. Hinsley's survey the proponents, the vast majority, I would say 90% of these people, didn't even bother calling their doctors. Why call the doctor over flu. Do you go to your doctor every time you get the sniffles?

EDITOR: No.

DR. THRASHER: So there has not been a legitimate survey done on this population to find out what is going on. A telephone survey will not do it. They have to go door to door with qualified personnel and the questions have to be geared and asked in such a manner that they don't bias the results, and they can't intimidate the population.

EDITOR: Thank you very much Dr. Thrasher for your time and informative interview!

Dr. J. Thrasher is an Expert Witness on Pesticides and Chemicals and was formerly on the staff at U.C.L.A.

**COMMENTARY ON SURVEYS CONDUCTED
AND THE POLITICS OF MALATHION**
by Jean Hinsley



I've done three different surveys. The first door-to-door survey was made on December 7, 1989 just after the first Norwalk malathion aerial spraying. After the spraying I became ill with a sore throat and laryngitis. I mentioned this to a neighbor and she said her whole family had gotten sick; headaches, vomiting and sore throats. I checked another neighbor. She said her family was sick also, as well as the children she baby sat for.

I called Dr. Paul Papenak, Chief, Toxics Epidemiology State Department of Health Services; Papenak's phone number was listed on the official notice stating to call this number if anyone had medical questions. This notice was left on my front porch before the spraying.

I remember I could hardly talk because my throat was so sensitive. I have had sore throats before, but never like this and never with laryngitis at the same time. (I just recently learned that chemical exposure can cause laryngitis).

At any rate, Dr. Papenak told me I wasn't sick due to the aerial spraying. He said I just had the 'flu.' I asked if anyone else had gotten sick as a result of the spraying. He replied, "People weren't affected by the spraying." I mentioned that neighbors on my block were ill. The response to that was 'we should all go to the doctor because we all just had the 'flu.' I had not been asked to give my name or phone number. It was obvious no information was being recorded. That is when I decided to take a door-to-door survey in my neighborhood and find out for myself what had happened to people after being sprayed.

I contacted 96 households out of about 150 homes that surround my Norwalk neighborhood. The only ones I missed were families who weren't at home. I asked how many people were in the household; was anyone sick the week before the spraying; was anyone sick after the spraying; date of illness after December 7, 1989; how many were ill and their exact symptoms.

These people were told in the official notice there was no health hazard from the aerial spraying of malathion. The people surveyed did not think anything was unusual when they came down with the 'flu' after they were sprayed. Over and over again people told me no one was affected by the aerial spraying... 'family members just had the flu,' they said. I had to press to get the exact symptoms so I could have specific information to analyze.

Most people were more upset about the paint on their cars and having to cover their cars, rather than concern for their health. People in general said they had to be sprayed, because there was a need... "It is a nuisance," they would say, "But that is life."

**JEAN HINSLEY CONDUCTS HEALTH/SICKNESS SURVEY
REGARDING
AERIAL SPRAYING OF MALATHION
NORWALK, CALIFORNIA**

Since the "Medical Information Line" provided by the L.A. Health Services was not keeping a record of calls/reports regarding sickness due to malathion spraying, Jean Hinsley, a citizen of Norwalk, decided to take a personal survey herself. Here are the results:

SURVEY I

December 7, 1989

96 HOMES CANVASSED= 353 people

Before spraying: 4% sick

After spraying 24% "flu-like" symptoms

SURVEY II

March 6, 1990

369 QUESTIONNAIRES DISTRIBUTED= 1107 people

Before spraying: 2% sick

After spraying: 28% "flu-like" symptoms

After previous sprayings 23% "flu-like" symptoms

SURVEY III

APRIL 17, 1990

BASEBALL FIELD SPRAYED DURING GAME

60 Families Surveyed- A total of 157 people (70 Affected)

After spray: 43% affected the night of spray

48% of Children affected

41% of Adults affected

Of the 96 homes surveyed there was a total of 353 people. I found 13 people were sick before the spraying and 90 people were sick after the spraying. Of those 90, 85 had symptoms of headaches, sore throat, coughing, nausea, vomiting, stomach ache, diarrhea, fatigue, laryngitis, hives, fever and nose bleeds. These were typical symptoms of the flu except for the nose bleeds and hives. I learned later that all these symptoms were also signs of toxic poisoning. On the whole, these people did not think anything 'happened' to them as a result of the spraying. However, a few I talked to were really upset and felt they had gotten sick directly because of the spraying. None of us knew (while I was conducting the survey) that the statistics would show about 4% of us were sick before the spraying and 24% were sick after the spraying. Those figures are something to take notice of. Now I had a picture of what was going on, whereas before I could not get any information from Dr. Papanak's office when I called him.

On January 17, 1990, Anne Davidson, a staff writer for the Daily Star-Progress, printed the following statements by Dr. Paul Papanak. "What you might see is allergic reactions...(from aerial spraying)...and the health department only acknowledges cases of illness reported by doctors... individual calls from people claiming they are sick are not considered." Michael Peterson, Medfly Hotline Supervisor, said they refer callers who believe they are sick from malathion to their doctors.

Can you imagine that! Direct lines for the medfly project are set up for the public to address medical questions, concerns and inquiries, but no statistics were being taken, no records were being made! There was nothing being compiled when callers had pertinent information (symptoms) after being sprayed with a toxic poison!

Malathion has never gone through the mandatory testing required by the Environmental Protection Agency. People have been sprayed since 1981 under an emergency exemption with a technical grade malathion which unavoidably includes a number of toxic impurities known to cause serious long-term health effects at very low doses. The state continues to use the emergency exemption and plans to go on using it indefinitely. The state keeps insisting their program works while they have aeriaily sprayed every year but one for the last 9 years and the 9th year of this program was the largest and worse infestation to date.

Another distressing note to our present plight is a "Dear Doctor" letter that Dr. Papanak wrote and mailed to all the physicians in the spray areas at the beginning of the spraying project. In this letter Papanak said...and I am paraphrasing...'Even though the people have been sprayed with a poison and they show classic symptoms of malathion poisoning, doctors shouldn't treat the patient for malathion poisoning, but rather seek other causes for the patient's illness.'

In the beginning of the "DEAR DOCTOR" letter to physicians, Papanak mentioned that poisoning with organophosphates requires a dose sufficient to inhibit at least 10% to 30% of the cholinesterase activity in the plasma or red blood cells. Classic symptoms of organophosphate poisoning, following a dose much larger than the dose used in the current spraying, include headaches, dizziness, blurred vision, salivation, nausea, diarrhea, and anxiety, and urinary incontinence. At even higher doses the victim can even develop respiratory distress, with wheezing, pulmonary edema, muscle fasciculations, paralysis progressing to collapse and death."

Remember, a lot of these same symptoms are what I have found when I went door to door and talked to people. Papanak's exact words were..."In the event of irritative or allergic symptoms only, including eye or throat irritation, headaches, nausea, angioedema and/or exacerbation of asthma or rhinitis, treatment will be purely supportive, because such symptoms have been quite rare in the past, following malathion spraying. Health care workers should also seek other causes for the patient's illness."

Doctors only have four hours of training in the field of industrial medicine, (which is chemical exposure), in their four year course of studying to be a doctor. Furthermore, only 60% get that much. The rest don't get any training.

Now here is something really bizzare. In July of 1990 testing was done for the first time: There were 50 to 70 volunteers who reported "allergic" (malathion) symptoms to their doctors. This test was being conducted through Dr. Papanek's leadership. July 3, 1990 Dr. Papanek was quoted in the Long Beach Press Telegram saying, "There aren't many things we know how to do to test for an illness related to malathion." When I read that I thought, @#@###! You mean we the (sprayed) people are required to go to the doctor at our own expense to prove our illness is malathion poisoning related, and you the authority, say the tests needed to determine the connection aren't really known; so how can people be diagnosed correctly?! Papanek's quote did go on to say, "But skin testing is relatively straight forward." For something that has so many different impacts on people, this is not good enough!...Here we are being sprayed with a poison, and the doctors don't really know what they are diagnosing or how to test to determine the connection, or how to treat the exposure for what it is. And then the doctors are told by Dr. Papanek NOT to zero in on classic symptoms that do indicate malathion related illness! This is an impossible situation.

There are a lot of chemically sensitive people around. Until this malathion issue, I didn't even know they existed. Those people are in trouble right away whenever people are sprayed. I believe a lot of these chemically sensitive people have yet to be diagnosed by a doctor and don't even know they are chemically sensitive. These are the people who are affected each time after they are sprayed. Often drastically.

I have a report of a 10 year old girl who experienced headaches, nausea, and loss of appetite the next morning following each spraying. These symptoms always lasted for three days. On the second spraying the little girl got chemical burns on her feet after running barefoot on her lawn the morning after her area was sprayed. She was chasing her puppy for about 15 minutes when it got loose out the front door about 7:30 A.M. By 3:30P.M. her grandmother was highly alarmed to see the condition of her granddaughter's feet. Not connecting the burns and blisters with the malathion the grandmother had sense enough to take pictures of the girl's feet. After ruling everything else out, the grandmother finally came to the conclusion that the burns on her granddaughter's feet were from contact with the lawn. It seems the little girl is chemically sensitive. Walking barefoot on a malathion sprayed lawn is out of the question for her.



So little is really known or admitted about the effects of malathion on humans (when they are deliberately sprayed with a poison) which is designed to kill living cells. We were told the bait sprayed did not pose a health hazard and it would kill only the medfly. We were also told it would not kill lady bugs or honey bees. I called medfly hotline and asked directly about lady bugs and honey bees. I was assured it would not harm them. Guess what? All the lady bugs and bees are gone in the spray area. The beneficial bugs which create a balance in nature have also been destroyed as of May 1990.

I found pet parakeets were also casualties. A parakeet kept on a back patio during the 12-7-89 spraying was found dead the next day. In another neighborhood, two pet parakeets were routinely put outside under a palm tree during the day for the last two years. They were purposely kept inside two days after the 12-7-89 spraying. On the third day they were put back outside, and they were both dead by the end of the day. Through all the surveys I've done, I have reports of parakeets, love birds, canaries, pet turtles in hibernation, pet rabbits, puppies and a few dogs all dying following the spraying of malathion. Many pet dogs and cats have experienced vomiting as a result of the spraying as confirmed by veterinarians. Yet we are told that the spraying will only harm the medfly.

On January 29, 1990 Los Angeles City Councilman Joel Wachs conducted a public hearing on the medfly issue. The speakers included state officials, scientists, doctors, elected officials and the general public. The state admitted to having spent 25 million dollars during the current application (since the July 1989 medfly find). As of May 1990, 40 million has been spent. One thing that was made clear at the hearing, was there has never been a comprehensive study done to prove that the aerial spraying of malathion is not a hazard to our health!

Councilman Wachs questioned Dr. Siddiqui, Assistant Director of the Food and Agriculture Department. Wachs asked if the spraying could be halted in order to bring together independent experts to do a comprehensive study that is needed. Siddiqui answered, "There seems to be a contradiction here. How would you conduct a large field study if there is no spraying. You're saying you want the spraying to stop, but at the same time you want the study to continue." Alarmed, Wachs countered, "It boggles my mind that you think you can spray people so you can do a study on them afterwards!" At the same time everybody in the audience groaned. We realized what we had already thought...WE ARE the study!

Think of all the people who have been sprayed since 1980! The state has never conducted household surveys (which I have done), and it wasn't until after the hearings in Los Angeles and Orange county and about six sprayings after the July 1989 medfly find, that information people called in to the officials was recorded; which was approximately the end of February 1990.

I did the second survey after the March 6, 1990 aerial spraying. This time 6 people helped me pass out 1439 questionnaires. We covered four different Norwalk neighborhoods and two different Lakewood neighborhoods.

The questionnaire stated: There is a growing need to know how everyone is affected after the spraying. Some people feel ill, some don't... we need to note everyone's reaction, sick or not. Please answer all the questions and put this questionnaire outside by the front door. It will be picked up the next day. The questions were: Where were you and family members during the spraying? Did anyone get sick the night after the spraying or during the next six days? Who was ill, the date, and how long were they ill. Description of the exact symptoms of each person. Were family members sick after previous sprayings? When, Who and exact symptoms. Was anyone sick the week before the 3-6-90 spraying? Who and the exact symptoms? Did any pet animal or bird get sick or die after previous sprayings? Describe. Has anyone in the family seen a doctor because of any illness since the spraying? Any property damage—describe. Any comments on the aerial spraying of malathion.

This survey was taken after the 6th aerial spraying. People were starting to realize (on their own) the connection between the spraying and reoccurring illnesses. Others were still trying to come to terms about the connection. These people hesitated in giving information on the survey that really pointed to a reaction from the spraying.

For instance, one woman who hadn't filled out her survey as I was collecting them, said she was hosing down her driveway the day after the spraying. It was a really hot day, and she was using water to wash the sticky spots off the driveway as the bait melted. While she was hosing the malathion down her face started burning and it burned all day long. She also got a horrible headache which lasted for the next two days. She said she wondered if it was because of the spraying. I told her I was just collecting information and would she please write it down for me. From talking to people in the first and second surveys, I believe people are reluctant to think the state would do something that could hurt them. I think it is a way to shield oneself from the facts when one feels so powerless to stop something that is so outrageous.

I also noted two or more in a family would get sick or there were none in the family who became ill. There seems to be a genetic connection. There also seems to be a gap in

understanding between the sick families and the families who don't get sick. The families who are sick know that something is wrong. Many of the families who aren't sick don't see a problem with the spraying.

For example, a family of five reports: Mother: dizzy, eyes burn, headache, fatigue and dry cough. Husband; rash and headaches. Son; spontaneous nose bleeds and fatigue. Each one experienced these health problems after previous sprayings also. Three out of five of the family members were affected. A family of 2 living next door states: "Absolutely no ill effects or property damage. Minimal inconvenience considering the big 'deal' everyone is making over the sprayings."

Another issue that (I believe) the survey reveals, concerns the state's official comment that the dose that is used makes the spraying technically sound. They say dose is everything, while also saying malathion is not safe. It is difficult to follow their logic, but this is the explanation we are 'stuck' with. The bottom line is we are sprayed based on theories! Scientific information is gathered and then worked out on paper. Conclusions in the form of theories are determined. Scenarios are given to illustrate their findings.

For example, the state says a 6 month old could lick an acre of grass sprayed with malathion and it wouldn't affect the child. This is all worked out on paper. In reality a mother reported on the survey questionnaire regarding her 18 month old child who played outside for an hour the day after malathion was sprayed. The child started vomiting and had diarrhea and lost three pounds. The doctor who was consulted had no explanation for the illness. Another mother reports that when her four sons mowed the lawn following each aerial spraying, all four sons have had dizziness and sore throats. Two sons have had stuffy and 'runny' noses. Still another mother reports her son was playing basketball for 15 minutes before school. She was called to come and get him. He was covered with a red rash and had a stomach ache, diarrhea and a very bad headache.

The stories are endless, but ignored by the people who maintain the dose has been proven on paper. What they predict on paper and what people experience doesn't match! It seems to me there is an unknown element. Let me illustrate. Sometime ago, some scientists put together every known element in sea water to make their own sea water. The only problem was, the fish died when put in that sea water. When real sea water was added to the manmade sea water that was supposedly complete already, the fish lived. There was an unknown element(s) in the real sea water. As for the aerial spraying of malathion, there is something that can't be calculated on paper that is detrimentally proven everytime we are sprayed!

The tabulated second survey showed about 26% of the households responded voluntarily. 2% of the people were sick before the spraying 28 were sick after the spraying. 23% were sick after previous sprayings. 10% of the sick people went to the doctor. There are a lot of sick people who don't go to the doctor for one reason or another.

On a follow-up survey from one of the six different neighborhoods surveyed a 100% account was completed in a solid block of 101 homes. 21 household responded voluntarily on the first pass. 69 more households responded on the second pass when we stated we needed a 100% response.

Some pretty desperate people spoke up this time, i.e.: Mother stated, "I have flu-like symptoms, and I am depressed. I have headaches and asthma attacks lasting 2 or 3 days. My children are tired and get headaches and nausea. It is the same after previous sprayings. I feel like the family is slowly being killed!"

Another woman stated: "I have been sick since the spraying began. I have been especially sick for the last month—sick and shakey. My eyes burn. I have a bad cough. I sometimes feel like I am going to die from coughing so hard! My husband's eyes burn and water so much he feels like he is going blind!"

On the third pass we accounted for the final 11 households for the total of 101 homes. 17% of that population got sick. This is a lower percentage than a different neighborhood surveyed in December 1989 which had 24% sick.

I believe there are at least two categories of people and animals who have adverse effects due to the exposure of aerial sprayings. Those who are chemically sensitive (who are in trouble everytime the spraying is done) and those who are chemically vulnerable. The vulnerable subjects don't react as severely, but are affected nevertheless. I believe that the chemical acts on the most vulnerable part of the body. I also believe after talking to Doctor Thrasher (also interviewed in this book) that the vulnerable subjects may find their adverse reaction will become chronic and extreme too—that they are being set up to become chemically sensitive in the future.

The circumstances that led me to do the third survey is appalling! A pony league field was directly sprayed at 9:20 P.M. during the baseball games on April 17, 1990. This involved two baseball diamonds with four teams of boys (basically 13 year olds) plus officials, parents, relatives and friends.

I was able to talk to 60 families which represented 157 people. I believe I got input from nearly all the people who were on the field at the time. The spectators in the bleachers included a pregnant woman. The spectators on the ground included a woman in a wheel chair and preschool children playing on the lawn in a designated area. As the helicopters approached, spectators ran from the stands for shelter, while the other players on a separate diamond were told to remain on the field in their position during the spraying. Some parents were frantic about this. The helicopters made a 'U' turn after the first pass and made an overlapping pass. The spray was clearly visible as they went over the second time. Again everyone ran for shelter.

70 or 45% of the 157 people sprayed had reactions. Those reactions occurred that night or some time during the next day. A lot of people had more than one symptom. Following the spraying or sometime during the next day all but 3 of the 70 had symptoms. Of the symptoms reported 51% were headaches; 40% were sore throats; 26% eye irritations; 17% nausea; 16% stomach aches; 14% coughs; 11% difficulty in breathing; 10% rash or hives; 9% nose bleeds; 7% fevers. That was an alarming percentage of reactions.

An additional concern is that there are many people who have to be out in the spray time period, i.e.: fireman, policemen, paramedics, railroad workers—people who have night time jobs. There are countless people who have to be out at night or who unwittingly travel through spray zones. I've heard from people in those categories too, telling me of the adverse effects they have experienced when caught outside during the spraying period. Inside or outside the state officials have said people are hysterically reacting to the aerial spraying. I say we are being hysterically sprayed by the state!

The senseless part is that malathion was never intended to be sprayed on people. It is a pesticide. Get ready for this. Right now, August 1990, The Federal Government is considering aerial spraying across the United States and the EPA is requesting information from those who have been sprayed in order to decide future use of malathion. I am flabbergasted!

The state keeps boasting how many times the Mexican and Medfly have been eradicated by the use of the aerial spraying. That's a joke! When something is really eradicated it doesn't come back. These flies keep coming back over and over again. Even with this current spraying so many generations of Medflies were sprayed. When the flies should have been eliminated more show up. There are safe, non-toxic ways to deal with the problem. The alternative avenues need to be recognized and developed (Editor's Note: See article by William Jordan, Ph.D. in Chapter 14).

How dare the state go on with this madness? We the people are paying dearly while the state is 'messing' with and damaging our health, squandering our money and invading our property!

The Orange County Register Saturday, February 17, 1973

OC health officials sent letter to warring about malathion

6,000 doctors told of possible reaction to pesticide exposure

By Louise Woo The Register

Despite the state's assurance that aerial spraying of malathion poses no health hazard, county health officials sent a letter to nearly 6,000 doctors and medical professionals last month warning that people could suffer eye and throat irritation, headaches and nausea from "moderate" exposure.

The letter was sent out by Orange County Health Officer Dr. L. Erling in Jan. 19 to alert physicians that could be reacting to malathion spraying in Los Angeles.

Dr. Erling said "persons sprayed with the pesticide fairly close to their eyes will experience eye and chest tightness, prolonged headache, and a feeling of burning within an hour after exposure stops. No residual illness is expected to follow if doctors tell their patients to avoid spraying after aerial spraying is completed."

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U.S. Toxicologist Questions Malathion Safety

By JOCELYN Y. STEWART TIMES STAFF WRITER

A City Council committee Wednesday ordered two city agencies to offer shelter to the homeless on nights when aerial sprayings of malathion take place.

The homeless would be housed in the same shelters that the city opens during cold and wet nights, according to the plan approved by the Community Redevelopment and Housing Committee.

Under the plan, the Department of Parks and Recreation and the Community Development Agency would be instructed to open recreation centers and other facilities "immediately . . . in communities that are being sprayed," said Councilman Zev Yaroslavsky, who proposed it.

Buses would transport homeless people to shelters from specified pickup points. Yaroslavsky said it would not be difficult for the city agencies to

comply with the order, which still must get full council approval later this month. "As far as the spraying is, it's not every night, seven nights a week, as cold weather can be during the winter," Yaroslavsky said. The committee's decision was hailed by advocates for the homeless. Toni Reicks, co-director of the California Homeless Coalition, said, "I appreciate that the city is willing

to do it." Reicks had been working with other organizations that petitioned the city to open the shelters. Homeless people in spraying areas have complained of flu-like symptoms and other health problems, she said, and many have no means of showering after the sprayings. "When malathion is sprayed over a neighborhood, people are advised to keep their pets inside," Yaroslavsky said. "It is morally indefensible not to provide people the same protection we tell pet owners to give their pets."

Last month the Legal Aid Society of Orange County lost a bid for a temporary restraining order to halt the spraying of malathion. The lawyers demanded that the state give 60-hour notice of spraying to all homeless people, provide shelter during the spraying, as well as medical care and laundry services to those sprayed. The Los Angeles committee also approved a proposal to develop a program to keep shelters open through all winter next year.

Kizer Seeks to Allay Malathion Fears

By BRITANNI PARKER Staff Writer

SALVAMENTS health director has sought to allay fears of malathion poisoning in neighborhoods sprayed with malathion and Tuesday that the risk of a dangerous reaction is greater than any hazard posed by the insecticide. Kizer and others have shown evidence that the chemical now being sprayed from the air is less potent than the malathion used in the past. "It is not covered up having significant exposure to malathion in the past," Kizer said. "The greatest health hazard that might be caused by the spraying program is the risk of a hazardous reaction to the insecticide in a person who is allergic to it."

Health Director Curt Kizer said Tuesday that the risk of a dangerous reaction is greater than any hazard posed by the insecticide.

At the moment, he said, a laboratory in Mexico is producing 100 million doses of the insecticide. The state is buying 10 million doses in 1973. The state is buying 10 million doses in 1973. The state is buying 10 million doses in 1973.

Doctors, politicians go on malathion attack

Expect more spraying in the valley this week

By JANE BYTES Staff Writer

PHILIPPI PARK — Medical doctors and politicians are warring over the use of the insecticide malathion to control the pestiferous fly in the San Joaquin Valley. The state is spraying the insecticide from the air. The state is spraying the insecticide from the air. The state is spraying the insecticide from the air.



JOHN FLECK 'Writer' began in 1957 the study of malathion spraying there in 1973

Scientist explores malathion, cancer link

JOHN FLECK 'Writer'

JOHN FLECK 'Writer'

Medical Assn. Refuses to Oppose Spraying

By LANE JONES and JOHN KENDALL Staff Writers

Leaders of the California Medical Assn. voting their vote in the state on Feb. 15, to endorse the Malathion Fly Control Program. The state is spraying the insecticide from the air. The state is spraying the insecticide from the air. The state is spraying the insecticide from the air.

Bradley, Others Do an About-Face in Waving Anti-Malathion Banner

By ABILEY GURCH Staff Writer

Los Angeles Mayor Tom Bradley said the anti-malathion battle just two weeks ago. Bradley said the anti-malathion battle just two weeks ago. Bradley said the anti-malathion battle just two weeks ago.

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Council Panel Seeks to Open Shelters to Homeless During Spraying

By JOCELYN Y. STEWART TIMES STAFF WRITER

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comply with the order, which still must get full council approval later this month. "As far as the spraying is, it's not every night, seven nights a week, as cold weather can be during the winter," Yaroslavsky said. The committee's decision was hailed by advocates for the homeless. Toni Reicks, co-director of the California Homeless Coalition, said, "I appreciate that the city is willing

to do it." Reicks had been working with other organizations that petitioned the city to open the shelters. Homeless people in spraying areas have complained of flu-like symptoms and other health problems, she said, and many have no means of showering after the sprayings. "When malathion is sprayed over a neighborhood, people are advised to keep their pets inside," Yaroslavsky said. "It is morally indefensible not to provide people the same protection we tell pet

owners to give their pets." Last month the Legal Aid Society of Orange County lost a bid for a temporary restraining order to halt the spraying of malathion. The lawyers demanded that the state give 60-hour notice of spraying to all homeless people, provide shelter during the spraying, as well as medical care and laundry services to those sprayed. The Los Angeles committee also approved a proposal to develop a program to keep shelters open through all winter next year.

Introduction to Chapter 6



A wide variety of interviews were conducted with different health professionals. Richard Kunin, the orthomolecular physician states, "Birth defects did somewhat occur more frequently than normal in the almost 2,000 women studied. Jorge Mancillas, Ph.D a Neurobiologist at the University of California, Los Angeles gave his input into the dilemma. Mancillas states many of the top doctors from around the world have all studied neurotoxic effects of organophosphates and they have found evidence that organophosphates can be neurotoxic...Dr. Lawton, an Ophthalmologist at Doheny Eye Clinic of Los Angeles, stated that "The problem with using rats as a test animal, is that rats not only have betaesterase in the liver but they have it in their red blood cells. You can bathe rats with malathion and they don't get sick. ..So you can't rely on any studies that are done on rats. They are absolutely worthless in evaluating human toxicity..."

A Physician from the Public Health Effects Advisory Committee states that the people most likely to be affected are the ones that have respiratory problems, allergies, and asthma "...because the amount of chemicals which they are exposed to, and it may not just be the malathion itself..it's the other co-products of malathion..."

Dr. Melvin Reuber formerly with the Frederick Cancer Research Laboratory, 'blew the whistle' on a manufacturing company showing malathion to be carcinogenic despite all claims to the contrary.

An M.D. from the L.A. Public Health Effects Committee states people who are environmentally and chemically sensitive are "controversial" because the American College of Allergists and American College of Physicians feel that for a diagnosis...there isn't enough criteria. Yet Alan Levin, M.D., an allergist in San Francisco and a California Medical Board Examiner states that these types of people become incapacitated and/or some even die after repeated aerial sprayings of malathion.

This Chapter, "How Chemicals Affect Your Health" further shows the reader evidence that these types of organophosphates do indeed cause even further damage to the environmentally ill and the chemically sensitive.

Pesticide Neurosis

by Richard Kunin, M.D.

Dr. Kunin is a practicing physician and psychiatrist, co-founder of the Orthomolecular Medical Society and author of the bestsellers, "MegaNutrition" and "MegaNutrition for Women." He teaches the nutrition-health connection by means of laboratory testing of nutrient levels and the "Listen to Your Body Diet" to determine your personal balance point.



Think of it: over 22 billion pounds of toxic chemicals were released into our air, land and water in 1987. That's enough poison to supply almost 100 pounds for every man, woman and child in the U.S.. The actual amount is much more than this because the official tabulation does not cover all of the 50,000-plus substances in common use. Nor does it account for the toxic wastes, some 750 million tons, which now lie in over 50,000 dump sites in this country. Of these dumpsites there are 593 that pollute the only water supply to their local communities in 49 different states. All of these locations suffer the tragedy of excess cancer mortality.

It staggers the mind to know that deep ocean fish from 2,500 feet down now carry an average of 7 parts per million of DDT in their fat. And in the Hudson River above New York City striped bass average 3 parts per million of PCB, an industrial chemical that was legally dumped by the GE plant in Schenectady between 1946 and 1975. It is now 13 years since PCB was banned but commercial fishing of striped bass is still off limits for 200 miles of the Hudson River because these big fish at the top of the food chain are too polluted for human consumption.

I think we have a right to be nervous about the fact that it is now "normal" for us humans to carry blood levels of the man-made chemicals DDT and PCB. In fact the current normal range of serum DDT is up to 50 parts per billion and PCB up to 14 parts per billion. The only truly normal blood level of these chemicals in the human body is zero.

You might guess that I do not agree with the current public policy to spray large geographic areas with Malathion, an organophosphate pesticide, whenever a few Medflies show up. In the first place, I think the time has come to give integrated pest management a chance to play a larger role. In fact, sterile flies were released in the area this year to compete with wild Medfly males and thus limit their reproduction. I clearly have my doubts that it was necessary to spray 60 square miles of an area densely populated with humans. The danger that someone in the area will be unusually sensitive to the spray or its propellant is not remote despite the press release headlines calling it safe.

In addition, birth defects were carefully studied by the California Health Department after the 1981 Medfly crisis, when Governor Brown reluctantly permitted spraying over an even larger area. Birth defects did occur somewhat more frequently than normal in the almost 2,000 women studied. Cleft palate, intestinal abnormalities and deformed limbs were increased though not to the point of statistically significant proof.

For the past five years I have measured cholinesterase enzymes in my patients, who come from all over Northern California, both urban and rural areas. I have found quite a number with low or borderline levels of this enzyme.

The weakened cholinesterase is unable to regulate the nerve transmitter acetylcholine. As a result nerve synapse connections go out of control to varying degrees, thus permitting overstimulation of nerves, muscles, and glands.

The result is easily mistaken for neurosis. Symptoms may include anxiety, irritability, insomnia, excess dreaming, mood depression, muscle tics, heart palpitations, irritable bowel, irritable bladder and a tendency to sweat. The most common indicator is a feeling of shakiness, a very subtle tremor, just enough to make handwriting difficult.

As is the case for all poisons, some people are more sensitive than others. There are a few with a hereditary low level of cholinesterase to begin with. I have seen three such patients and they are miserably sensitive to pesticide residues, such as at restaurants, gardens, nurseries and in agricultural areas. They should be warned that pesticide residues pose a special hazard—but none of my patients know about that, even after anesthetic paralysis, and two had been in psychiatric treatment for years because of what was essentially a pesticide induced condition. A cousin of one of my patients became acutely depressed after the 1981 Malathion spraying in the South Bay and attempted suicide. Was it because of the spraying? No one checked the cholinesterase to find out because the symptoms did not fit the diagnosis of acute pesticide poisoning, and chronic organophosphate syndrome is not well known.

Organophosphate type pesticides are popular because they do not accumulate in the body over the years as the organochlorine type pesticides do. Thus phosphate-anti-cholinesterase pesticides have replaced DDT, which was banned in 1972.

Organophosphates are broken down in a matter of days or weeks, and the amounts used in homes, gardens and foods are low enough so that symptoms from any single exposure are not likely to be great. However, there is a catch: the results can be cumulative. Each succeeding dose ties up more of the cholinesterase enzyme and each requires 2 to 10 weeks to recover; hence frequent small exposures can add up and inactivate enough cholinesterase to produce symptoms. These symptoms will come and go in spells of a week to a couple of months, will be made worse by stress and will possibly be misdiagnosed as neurosis. A blood test can save a lot of time and misery; however, it is important to know that the laboratory normal range is skewed so that a low normal reading is often sufficient to trigger the "pesticide neurosis."

California Commentary

Los Angeles Times

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Our Rights Get a Dose of Malathion

■ **Aerial Spraying:** It won't solve the problem of unwanted insects. But it will expose innocent people to unknown risks.

BY JEROME MARMORSTEIN

Should saturation aerial spraying of any pesticide be permitted in densely populated communities, or even sparsely populated ones? Is it right or legal to expose more than 1 million men, women and children to toxic chemicals without their approval and against their will, as is the case in Los Angeles?

Aerial spraying of pesticides on urban populations is a flagrant violation of human rights, common sense and scientific reasoning. It will not solve the problem of unwanted insects and will only expose innocent people to as-yet-unknown risks of toxic chemicals.

The malathion spraying controversy has at least two major overlapping considerations. First, is this insecticide exposure safe for humans, whether from the air, food or water? Second, even if malathion should be found to be relatively safe to use on vegetation by trained personnel wearing special protective clothing, does it necessarily follow that indiscriminate aerial spraying from helicopters onto densely populated urban areas would also be safe and reasonable?

The immediate toxicity of malathion may be less than that of its precursor, parathion, but it's still capable of causing harm to the brain and nervous system, such as convulsions or paralysis, if enough is absorbed into the body. More likely, the diluted concentrations in aerial spraying might cause flu-like symptoms, such as headache, diarrhea, cramps and anxiety. These would be difficult for physicians to diagnose as chemical reactions.

With many square miles being sprayed, there is no way of knowing how many children will play and roll on malathion-contaminated grounds days or weeks after spraying. Little is known about the variable effects of the chemical on the young, the ill and the developing fetus of a pregnant woman.

The effects depend on many factors. These include the chemical's relative toxicity, the route of entry, the age of the individual and his or her state of health.

It is difficult to predict how long toxic pesticides remain in the ground. What happens to even a so-called milder toxic

pesticide like malathion when it is hosed off autos and driveways and ends up concentrated on beaches where children play? What about contamination of reservoirs that hold our drinking water?

The Environmental Protection Agency has ordered more long-term studies on the hazards of malathion because of reports showing that it may cause cancer in mice as well as human birth defects.

In spite of this, current laws and health policies do not prevent Americans, including small children, pregnant women and the elderly, from being exposed to saturation spraying.

Long-term studies on human cancer and birth defects often take years or decades to discover whether a particular chemical can cause catastrophic illnesses in humans.

The emotional trauma—particularly stressful to children awakened by low-flying helicopters, as in a recent case—has been amply documented. It's frightening. It's intrusive. The typical reaction is, "We have no control over this. We have to totally go on faith in the government that the pesticide is safe." Yet we cannot help recalling that Agent Orange, a combination of two other pesticides, was also considered safe by our government when it was sprayed in Vietnam on people below, including many of our own soldiers.

Do we really need to spray any toxic chemicals on human populations? It has been repeatedly shown that insects can never be permanently eliminated by chemicals. In fact, it is known that insects adjust to pesticide exposure by eventually becoming resistant to its effects.

In a recent issue of Science magazine, a prominent professor of entomology said,



"The wholesale use of chemical pesticides is an approach whose time should be past. Annual crop losses to insects were 7% in the 1940s, and (in spite of increased pesticide use) rose to 13% in the 1980s."

Destructive insects can be controlled by combinations of non-chemical farming techniques and, if needed, chemicals applied locally from the ground. The fact that respraying is being done in some areas here reaffirms its lack of adequate effectiveness. Even top Los Angeles County and state experts are beginning to question the effectiveness of spraying.

Isn't it enough that Los Angeles is already putting up with one of the worst records in air and water contamination? Since aerial spraying remains ineffective, unpredictable in risk and a gross violation of human rights, it's time we use every legal means to so inform our officials.

Dr. Jerome Marmorstein is an assistant clinical professor of medicine at USC and chairman of the California Medical Assn. Committee on Environmental and Occupational Health.

EDITOR INTERVIEWS Dr. Jorge R. MANCILLAS, Ph.D

Dr. Jorge R. Mancillas, Ph.D., Neurobiologist
University of California, Los Angeles
(Formerly affiliated with
MRC'S Laboratory of Molecular Biology
Cambridge, England
and the Salk Institute)

THE AERIAL SPRAYING OF MALATHION-HOW SAFE IS IT?

EDITOR: How does malathion affect the living organism?

Dr. MANCILLAS: Malathion affects living organisms in several ways; the main way in which it affects humans, flies, insects, dogs, rats or any other animals is by binding and inactivating an enzyme. This enzyme is called cholinesterase. Cholinesterase is used by many cells in the body, but primarily by cells in the nervous system, for cell to cell communication.

All cells in the body are in constant communication with one another. This allows all the tissues to act in a coordinated fashion (this is the key point). One of the chemicals most commonly used for cellular communication, especially in the nervous system, is acetylcholine. Some nerve cells release acetylcholine and this leads to excitation of the cells they are in contact with. The cells that respond to acetylcholine, have an enzyme called cholinesterase, which destroys acetylcholine (to limit the period in which they will be excited). Malathion inhibits cholinesterase, and as a result, the cells that are exposed to acetylcholine, go into a frenzy of activity, (or a period of activity that does not end) leading to damage or leading to abnormal responses or abnormal activity in the nervous system. A short way of saying all of this is to say, malathion interferes with cell communication by inhibiting cholinesterase.

EDITOR: In other words, malathion affects the entire nervous system.

DR. MANCILLAS: Exactly. Any part of the system where you find acetylcholine, and therefore cholinesterase, that communication will be disrupted by malathion.

In the nervous system of flies, it acts by disrupting the control of their muscles, and kills them. In our bodies, acetylcholine and cholinesterase, are found most commonly in nerve cells that control muscles. They are found in the visual system in nerve cells and muscles that control pupil and lens contraction and eye movements; in the nerve and muscles that control respiration; in nerves and muscles that control the digestive system. They are also involved in the control of blood vessel contraction, release of tears and mucous secretion.

So, not surprisingly, when you examine the many well-documented cases in the clinical literature of people that have been accidentally exposed to malathion in the pesticide manufacturing industry or in agriculture; when it is clear that malathion was the causative agent, all of the symptoms documented involve those areas of the body I just mentioned.

The textbook description of the symptoms of malathion poisoning include increased lacrimation, irritated eyes, blurred vision; breathing difficulties, muscle paralysis, vomiting, diarrhea, increased mucous discharge and flu-like symptoms.

It can also affect the central nervous system, leading to headaches, dizziness, weakness, blurry vision, etc. Which of these symptoms will be displayed depend on the amounts of malathion and the mode of exposure. If the dose of malathion is really large, patients can display generalized convulsion, psychological disturbances, coma and death from respiratory or cardiac failure.

EDITOR: For example, if I am in El Monte one night (where they are spraying) and then Pasadena the next night (where they are spraying) will the malathion be cumulative- even if it is a low dose?

DR. MANCILLAS: Yes... let me interject a point before I go into that...if you are exposed to malathion, the question is how much of it do you get exposed to? Obviously a very small amount can kill a fly, but because our bodies are larger, the relative dose per kilogram of body weight, is much lower. Can malathion harm you? Well, if you are under a barrel and you don't touch it, you don't get exposed to it, and you don't breathe it, it won't harm you.

The question is how much malathion are you expose to? This is a critical question reaction. State officials repeatedly bring out the importance of the concept of dosage and claim that the doses applied are very low, too low to cause any harm. The first flaw with their argument is that they are not monitoring what doses people are being exposed to, but at best what amounts are being applied to the ground. But let us examine this question using their own figures. The Environmental Protection agency (EPA) has established that the No Observable Effect Level, that is, the amount below which no effects are observed, is 0.2mg per Kg of body weight. Based on that they have established a Provisional Acceptable Daily Intake level of 0.02mg per Kg of body weight, to account for some uncertainties in the data. Now, if you look at the State Department of Food and Agriculture's own figures of how much they are spraying, their official notices say that they are spraying 0.00049 ounces per acre. That sounds like very little, right? However, if you convert that to milligrams, it comes to 1.4mg per square foot. That is, there are 1.4mgs of malathion spread over each square foot. This means that a 50lb child (22.7kgs) would have to be exposed to the malathion found in 1/3 of a square foot to exceed the EPA's acceptable intake level and to the amount of malathion in 3 $\frac{1}{3}$ square feet to have observable effects. If you have a child playing in the grass, a sand box, or on a slide, drinking from a public fountain or elsewhere in a park or in his own home, he can easily be exposed to that amount.

We have also recently learned from scientists working for the California Department of Health Services that the amounts of malathion are closer to 1.9mg per square foot and that the distribution is not homogeneous, having found areas where the concentration was around 5mg per square foot. Is it therefore surprising that so many people in the sprayed areas are reporting adverse health effects?

There are a number of independent physicians in Los Angeles who have documented cases of people displaying classical symptoms of malathion poisoning. I am told by Dr. Thrasher that he has documented thousands of calls made to one of the non-governmental malathion hotlines and found that close to 15,000 people reported classical symptoms of malathion poisoning. That is not unreasonable if you consider that over a million people are being exposed, and that figure would represent something between 1-2% of that population.

EDITOR: So there are different symptoms for the different ways in which malathion gets into the body?

DR. MANCILLAS: Exactly. It depends on what part of the body it goes through, and what amounts the child/adult were exposed to. We get a lot of different symptoms reported. It just depends how much malathion they got on themselves, or if the pets were playing

outside and went into the house and jumped up on the table and then you ate something or you got it on your hands because you played around with your pet. It is difficult to know where in the body people got it, but the most commonly reported symptoms have been allergic skin reactions, which is also one of the clinical symptoms, as well as vomiting and diarrhea, nausea, headaches, and blisters on their skin. All of these are clinically documented as a symptom of malathion exposure.

A lot of people are reporting fever or high temperature. That in the clinical literature is considered less typical. But for some reason we are getting a lot of people reporting this. I am not sure that this is due to malathion, but it could be because together with fever they are reporting some of the other symptoms of malathion poisoning.

EDITOR: In your opinion, Dr. Mancillas do you think it is safe to spray?

DR.MANCILLAS: As a scientist I have to make a decision based on the data. I haven't told you about data that is much more worrisome then what I have told you so far. Based on the data... a very carefully worded opinion would have to be..."We're are running a risk." There is very serious reason for concern. This is a very risky proposition. This is not traditional use of this pesticide, which is to use malathion in restricted areas, by people with protective gear, in confined areas; who know malathion is there, and therefore take precautions. You look at the instructions for people using it in the fields or anywhere else, and they always say workers should not go back into the fields for a week. All this precaution. So the Department of Health says there have not been many problems in the past with malathion. There have been problems. You might have heard of the case in Pakistan where 2,800 workers were severely affected, and 5 people died. There are other cases, in fact, in California every year there are dozens of people reported every year in the fields who are poisoned by malathion, and we don't know how many cases go unreported.

It is a substance you have to be careful with. When you spray it over a populated area of close to 400 square miles, you have two things. #1. You have no control over the environment where the droplets are going to be deposited; what else is malathion going to react with? The reason there was an accident in Pakistan is that malathion reacted with something in the environment and became 'isomalathion' which is extremely toxic. We don't know what these droplets are going to react with in the atmosphere, because our atmosphere in L.A. is highly polluted. Also we don't know what the malathion will react with on the ground. We don't know what may happen. There is the potential for an accident under these conditions.

#2. More importantly, you are spraying it on a population that is larger then one million people, though some claim it is close to 2 million people. You don't know what different susceptibilities these people have. What do I mean by that? Their nervous systems varys, their bodies are different. For example, when any poison goes into your body the damage it causes depends on its toxicity and the amount of the drug that will go into your body, and how long it stays in your body. Eventually your body will destroy it and metabolize it, but if the toxicity or the dose is high it can cause extensive damage. If the toxicity or dose is low, but it stays in the body longer it can still cause damage.

Some people have less ability to metabolize malathion. Primarily young children, older people; people that are ill, people that have jaundice, liver disease, or other liver conditions. These people are less capable of metabolizing malathion, (even a low dose) so it will stay a longer time in their body, and it is more likely to cause damage. Also, there is a lot of medications used to treat psychiatric disturbances, or to treat visual problems, which will also affect that chemical system (acetylcholine) called the cholinergic system, so if you are taking that kind of medication, and in addition are exposed to malathion, you are going to get some very strange reactions. We have reports of people who have very severe reactions to that. When you are dealing with more then a million people, the chances that

you are going to get dozens/hundreds of people under these types of circumstances, are very high.

A brief statement (against malathion spraying) would be, "It is a very risky proposition to spray a known toxic substance over a large population, in an uncontrolled environment." The last sentence is a short version of what I have just explained to you in the paragraphs above. This paragraph is the carefully worded scientific version.

Personally, if I were your physician, and you were asking me is this the right prescription. I would say, "Don't do it. Don't do it. You don't take chances with people you are responsible for. You are taking a big chance when you are dealing with such a large population."

I have told you so far some of the risks of short term, immediate reactions. What worries me more are possible long term effects. When we used Thalidomide or DDT people didn't react immediately, but there was a negative effect in the body that only manifested itself months or years later. The same may be the case with malathion, because the data is not firm; it's not that there is data that says, there is no damage, or enough that says conclusively yes, there is damage; rather, there is only a limited amount of data, that shows longterm neurotoxic effects. The literature is just emerging, but I am not seeing anything which contradicts it.

That is what I have found very worrisome... You may have heard of some data that was collected by Doctor Satoshi Ishikawa of Kitasato University, Japan. He found damage to the visual system, opticneuropathy, a year, 2, 3, 4 years later. It is a long term affect. The state has said, that that data is inconclusive or is not valid. Their argument is that there were a number of substances these people were exposed to. That is a misleading statement. Dr. Ishikawa has been studying this problem for over 20 years. He has studied the effects of several substances on the visual and nervous system. In some of his reviews, where he summarizes all the data, he talks about all these substances... organophosphates.

If you are a serious, responsible scientist, like the people working for California Food and Agriculture Department should be, or the California Department of Health Services, you should look at the individual papers, not the reviews, not the summaries. In fact, Dr. Ishikawa shows that from 1960 to 1967, the only substance sprayed on the region was malathion, and there was delayed neurotoxicity in patients that they examined after that period. No other substance was sprayed from 1960 to 1967. There were several substances sprayed on the area, but Dr. Ishikawa is a very careful scientist; he did two things first. For those 1st 7 years, he looked at the patients exposed to malathion, and found damage to the visual and nervous system. In later years, he looked at patients who were exposed to different substances, but he did control studies, where he not only tried to sort out the different substances, but also to experiment with animals, where he subjected them separately to one or another substance, and tried to correlate the same affects with what is seen in humans.

The other point is, that the other substances which were applied in the Saku region, in later years, were also organophosphates which are the same class of chemicals as malathion; to say that the results with other organophosphates don't apply, is like saying- if I told you, "You are eating way to much butter, and that is the reason your cholesterol level increases, increasing your risk of heart disease." Then you would say to me, "But those studies were done with people eating to much cheese, and I am eating too much butter." The point is, anything that will raise/increase your cholesterol levels will have that affect. Whether its cheese, whether its butter, lord, or whatever you want.

All of these substances, that Dr. Ishikawa has been studying, belong to the same class of chemical, organophosphates. All of them have the same effect, they inhibit acetylcholinesterase; but the point is, (even if you want to be really strict) he did study

patients which were affected exclusively by malathion. so the state is trying to mislead the public by saying, (knowing Dr. Ishikawa's studies, in the Saku region) that there were many substances sprayed on the population. They weren't always sprayed at the same time but when they were, they were the same class of chemicals. they have the same effect on the body.

I don't know if the state officials are so incompetent they cannot understand the scientific literature or they are intentionally misleading the public; but I will tell you when you are talking about people who have the responsibility for the health of millions of people, neither option is very reassuring.

EDITOR: So, you think there might be a cover-up?

DR. MANCILLAS: Let me add one more point. Dr. Ishikawa is not the only one, there are scores of scientists, Dr. Duffy at Harvard, Dr. Johnson, Dr. Petty, Dr. Aldridge, Dr. Cavanagh, Dr. Jager, Dr. Babchina, Dr. Sakai, Dr. Chabra, Dr. Lowndes, Dr. Metcalf, Dr. Holmes, Dr. Gershon, and Dr. Gary Hollingshaus, all of which separately have studied neurotoxic effects of organophosphates, and they all found evidence that organophosphates can be neurotoxic, but this shows up years later, and you have to know what you are looking for.

Somebody a year from now may have blurry vision, so the doctor will just prescribe eye glasses. They won't make the link. Somebody may have headaches. or somebody may have symptoms that may be diagnosed as 'chronic fatigue,'etc.

What is going on..is there a cover- up? I can't read minds and I am not privy to the discussions they have at the California Department of Health Services. So I really can't say what their intentions and motivations are. All I can say is this. It took me less then 10 hours to run a computer 'med-line' search (asking for any article with malathion in its text). The search gave me 1103 articles. It didn't take me 10 days to put all this data together and to become clear as to what the risks are. So why hasn't the state run into this...why aren't they aware of this? Like I say, maybe they are very incompetent. The problem is, not only me, but Dr. Sadun, Dr. Lawton, Dr. Lappe have pointed out this data to them. They told them, "Look, here are the studies, here are the problems; these are the risks." Now...even if the California Department of Health is incompetent...now they have been alerted and know about the dangers....their response was to dismiss us and call us... "Scientists outside the mainstream" ... When asked, "What about Dr. Lappe's views?" They answered, "That is just one scientist's opinion." When asked, "What about Dr. Ishikawa's work?"..and again their reply was..."This is just one scientist's opinion."

I am a member of several professional societies. I am at UCLA. I am not at a 3rd rate institution. I am not here through the back door. I am a bonafide scientist. I am in contact with bonafide. reputable scientists, and I don't know anyone who has been asked to review the literature on malathion, who has reached the same conclusion as the state. ... When they form an informed opinion, they come to the same conclusion. I have asked my colleagues to review the literature and they come to the same conclusions as I have.

So. when I hear the state say, "Scientists think it is safe." I know this is not true; I know it is not true because it is not in the scientific literature. I don't find any literature to support their claims. They say "Hundreds of studies show malathion to be safe." I haven't found this. I ask them, "Can you give me one example from the literature? Tell me one." I have asked them in public forums. I have asked them while debating them on television, and I have asked them privately, and they have never been able to give me an answer, because it is not in the literature.

They have never been able to give me or anyone who has challenged them. a reference, one title of an article, or the scientist. When they keep refusing. I begin to question their

honesty. I am beginning to question whether they are honest or just incompetent. I am beginning to question what their intention is. I am just very wary and very doubtful of what their intentions are; whether they are being intentionally dishonest or whether there is a coverup. It is very hard for me to say if there is a cover-up. I can't read minds. I can't go behind closed doors. But they are not acting as though they are being open and straight forward and they have had more than one chance, and I have seen them in more than one set of circumstances which would put them to the test, yet they are not open and straight forward.

I testified before the L.A. County Board of Supervisors, and I mentioned some of the studies and so forth, and Dr. Stratton, from the California Health Department, made claims he never substantiated, i.e., "There are 100s of studies showing the safety of malathion." Yet he never mentioned one. Supervisor Edelman or Dana asked him to mention one study which deals with these issues which Dr. Mancillas presented showing damage to the nervous system. He could not mention one study which proves malathion is safe and does not cause harm to the nervous system. He evaded the question.

He did say, "All these scientists are outside the mainstream." Afterwards, when he came down from the stage, and reporters were talking to him, I went up to him and told him, "You have a lot of gaul, calling us scientists "outside" the mainstream. I am a professor at UCLA and so is Dr. Nicolini; Dr. Sadun, and Dr. Lawton are at the University of Southern California, and Dr. Lappe at the University of Illinois at Chicago. We are all reputable scientists. Dr. Ishikawa is chairman of the Department of Ophthalmology, Kitasato University.

I want to compare my credentials, my publications, my work, the quality of my work with any of you that can speak for the safety of malathion. I challenge you to compare credentials as scientists.

He said, "I didn't mean any personal offense." I responded, "It is not a question of personal offense. It is a question of misleading the public by trying to dismiss us or dismiss what we have to say, by misrepresenting our credentials, and never presenting yours."

People like Dr. Stratton and Dr. Kizer...they are highly paid bureaucrats. All they can say is, "I am Director of California Department of Health Services," but if they want to speak as scientists and challenge us, I want to know what independent, scientific research institute(s) they have ever been affiliated with.

I have been on the staff of the Salk Institute and I was also affiliated with one of the most prestigious Institutes in the world which is the Laboratory of Molecular Biology in Cambridge, England for 3 years; (that is the laboratory where the structure of genetic material (DNA) was worked out). I never like to make self-serving statements, but since this man was questioning our credentials...

When he says things like this, he is not just questioning me, but he is questioning unintentionally I am sure, the wisdom of the dean of the school of medicine, who hired me as a member of the faculty. UCLA is not necessarily a 3rd rate institution. My credentials are nothing compared to Doctor's Lappe, or Dr. Sadun, or Dr. Ishikawa. It is not a personal question. It is not a question of me being personally offended. I don't personally care what he says about us, but I do care that he is misleading the public.

EDITOR: If there is a cover-up going on, it seems that eventually people like your good self will be able to pin point it. because they have nothing to stand on scientifically... Even though you have the proof, and you have all the literature behind you, they are still spraying! That is the scary part.

DR. MANCILLAS: They may just get away with it... I didn't finish answering your question just before this...The question is: "How long does it stay in the body?" The problem is, it stays in the body only a few days. If you don't document that somebody who is having those symptoms now, and has elevated amounts of malathion in the blood and lowered amounts of cholinesterase in the blood; (you can also take a urine sample and look for metabolizing of malathion in the urine), if you don't document it in the first week, or first few hours, they can always say, look, "Is it malathion poisoning or was it something else that this person was exposed to? Show me some medical records which will prove this person was exposed to malathion and not to sarin, another pesticide. Maybe this person mishandled a cock-roach killer. Prove to me that it was our spraying of malathion." So...if you don't document it in the first few days you can't conclusively prove it.

EDITOR: What do you think the state's motive is, and do you think there is a cover-up?

DR. MANCILLAS: I can only speculate. They have been fighting the med-fly for 10 years. Every year they claim they eradicate it, off and on since 1980. Every time they claim they eradicate it, it comes back. They claim people re-introduce it. If that is the case, why haven't they inforced better quarantine? Dr. Carey claims that is not the case. He has evidence that they have never been able to eradicate it with this method. The reason is because it always re-appears in the same neighborhood. It is just too much of a coincidence that people are bringing it back from Hawaii or other locations: that it is always the same people and the same neighborhood. He thinks they have just not been able to eradicate it. Whatever the case, they have not been able to deal with it effectively for over ten years. They are getting desperate. They want to stop it. So they are just pushing this eradication method through.

Now from the beginning, (1980), when the state asked Marc Lappe (now a professor with University of Illinois) to head a commission to look into the risks, he has said, (and I have heard him say this publicly) that the state told him, "We are going to do the sprayng any way, we just want you to give us the information to tell the public that it is safe." He didn't like that. In other words, they were asking Lappe to rubber stamp the policy instead of finding out whether it was risky or not. Well, he found out it was 'risky.' They changed the figures. So there is, according to Marc Lappe, a 'cover-up.'

EDITOR: What is in it for the Agricultural Industry?

DR. MANCILLAS: They don't want to have the medfly. They don't want the medfly to establish itself in California. It is much better for them that it is fought in the urban areas, with taxpayers money. Because, if it is done in the fields, it will come from their money.

EDITOR: According to some international journals I have read, they say to spray in agricultural areas not in populated areas.

DR. MANCILLAS: That is correct, it is a safer place. It is still not ideal, because you can get residue in the food and so on.

EDITOR: Thank you Dr. Mancillas for allowing me to interview you, and for your research, time and effort you have put into this most serious matter, which not only affects all Californians but the entire nation.

**EDITOR INTERVIEWS DR. A. LAWTON, M.D. (Ophthalmologist)
DOHENY EYE CLINIC OF LOS ANGELES**

IS MALATHION SAFE TO SPRAY ON PEOPLE?

EDITOR: Do you feel most studies done on malathion (for safety in humans) are valid studies?

DR. LAWTON: There have really never been any good studies (of any kind) done on malathion. In fact, most animal studies don't apply to humans; the vast majority I would say. In the research I have done, well over 90% of the studies indicating that malathion is safe in animals were done on rats. In order to understand why rats are useless as test animals, you have to understand the physiology of how malathion is handled by the body. Because of its chemical structure malathion can be broken down two ways. One way is by working on the sulphur end, and producing a very toxic by-product. The other is to work on the end where the carbon atoms are, with an enzyme called beta-esterase, which breaks down as a harmless by-products. The reason malathion is felt to be so safe, is that most insects don't have beta-esterase. People do, and it is generally found in the liver. The problem with using rats as a test animal, is that rats not only have beta-esterase in the liver but they have it in their red blood cells (circulating around their body). You can bathe rats with malathion and they don't get sick. You can give them huge dosages and about all that happens is they get some decrease in the number of off-spring in their litters. They have such a great capacity to handle malathion.

The reason why this doesn't compare to humans is that people don't have circulating beta-esterase. They only have it in their liver. So you can't rely on any studies that are done on rats. They are absolutely worthless in evaluating human toxicity and that is where virtually all the studies showing how wonderfully safe malathion is have been done. There have been a couple of other studies done, actually not very good studies done on other animals, but most of them, the vast majority of them, have been done on rats.

Most of the human studies that have been done related to 'oral' exposure to the drug. They took volunteers and had them swallow malathion containing substance to see how they reacted. They found it was relatively safe. It took a lot of malathion to make people sick. The problem with accepting this as a way of finding out how safe malathion is for aerial sprayings is... anything taken orally and goes through the intestines, is immediately shunted to the liver, through what is called, the portal circulation. (A large blood vessel that takes all the blood supply from the intestines and sends it directly to the liver). So all of it is going to go straight to where it is going to be detoxified. If the exposure of the individual is due to inhalation, or contact with mucous membrane through the skin, that whole system is by-passed. It means that it is distributed through-out the body very rapidly, without being detoxified by the liver.

It is the same kind of thing that is found with a lot of medications. For example, there are people with heart problems that take nitroglycerin for chest pains; if they swallow it, it will not do anything for them, because it is broken down in the digestive system and liver. But...if they put it under the tongue and allow it to be absorbed through the mucous membrane, it works beautifully. I could also mention a few other illegal drugs like cocaine, which if you swallow it, it doesn't do much, but if you put it in your nose, it does a lot; so as to give you some comparison. It by-passes the whole detoxification process.

So... the studies that have been done don't really apply to the way it is being used now. There have been some attempts at studies done in the sense of looking at people who spray malathion. The studies reported by the government indicate that the people who have

ground sprayed malathion in the past have not had any big problem with it. however. they were probably all wearing masks and some form of protective clothing.

EDITOR: How do you feel having parts of Southern California declared 'a state of emergency?' I have been told if the people become too upset the federal government might just take over and spray. As a health professional like yourself aren't they listening to you?

DR. LAWTON: That is suppose to be the point of the public health panel. They have been meeting for awhile. In fact. they won't be finished until the last of spraying.

They take a very different attitude from the way most people in medicine think. The attitude of the state is. since most studies that have come out. shows malathion is not particularly dangerous, it must be safe. The medical attitude. as far as I am concerned. is that no studies have done showing that malathion being used the way it is now is necessarily safe, so, we have to assume it is unsafe. It's all a matter of whether you look at something as being half full or half empty. I tend to be very conservative about things like this. There is a lot yet to be known. There are certain areas which have been totally unstudied. There are a number of medications frequently used which inhibit the beta-esterase that breaks down malathion into its non-toxic by-products: which means that the oxidation process which makes it into 'malaoxon' is very toxic- is left free to break it down. In fact, I found one reference in the text book called "Clinical Toxicology of Commercial Products," (Section II Pg. 298, Item 1091) which has shown from previous work that agents known to block the esterase can raise the toxicity of malathion by about 100 times.

EDITOR: That is pretty damaging information.

DR. LAWTON: Yes. They mention one specific chemical. It is known that certain specific compounds for example, 'tri-o-poyl phosphate,' can lead to 100 fold increase in the acute toxicity of malathion.

It just so happens there are some very commonly used drugs that inhibit the enzymes in the liver, one of them is called cimetidine. It is widely used for treating people with ulcer disease (stomach). Not only does that inhibit the liver. but it also inhibits cholinesterase. I have a feeling these people are going to be extremely susceptible to the reaction of malathion. It hasn't been studied. No one has ever bothered to check it out.

EDITOR: The blanket spraying of everyone without taking into account people who are chemically sensitive, environmentally sensitive, or small children or older people....seems to me to be very irresponsible of the state.

DR. LAWTON: When studies are generally done to test the toxicity of agents such as malathion, generally, an attempt is made to find people who don't have any illnesses, or or taking any other medications, so they can make sure the effects they are finding are specifically related to the agent they want studied. If you look at the people they have used for these tests, they have been healthy. The question is, what does this do to unhealthy people: people with liver disease, people taking medicines, people with A.I.D.S.. people who have just had surgery? A lot of the general anaesthetics people inhale affect the liver. and temporarily affect liver activity. Nobody knows, That is a totally unknown area.

If you are going to spray several million people, I guarantee you, a lot of people in that population are going to be the elderly, children and those people who are ill.

EDITOR: I have been told we are spraying the surrounding L.A. area because the medfly has infested the farm area; so why are they spraying the populated. residential areas? I am sure there are medflies in that section, because a lot of people have fruit trees and so forth. but it's actually the farm land we should be concerned about. So why are we

spraying the cities and not the farm land?

DR. LAWTON: One of the reasons they are not spraying the farm land....A lot of this depends on definition. When you deal with governments, you deal with legal definitions. There are certain methods that are used for treating infestations. When it's a bug which came in that does not normally live there, there are certain techniques accepted for treating endemic populations, i.e., insects, which have become established in that area.

Once the government starts spraying the fruit and the farm areas, they are basically admitting defeat and saying, "Well, the bug is established in Los Angeles, and we are going to do a rear-line action here and protect the fruit. If they are still able to say, "It is just an infestation and we can wipe it out by intensive spraying of the area where the bugs have been found, and it hasn't spread to the farm growing areas as yet, then they can say, "It is not established here." If the medfly becomes established in the fruit growing areas, several things happen, one, the fruit is subject to quarantine. When it goes to other states that produce fruit, those states would be susceptible to medflies. Second, they have to market the fruit as being sprayed with insecticide. There are a lot of places that don't want to buy fruit that has been sprayed with pesticides. There are a lot of incentives to the state to be able to say, that it is just an infestation, and they can wipe it out.

EDITOR: According to some experts, there is an infestation, other experts say there is none.

DR. LAWTON. It is a real interesting problem; whenever malathion is used in the way it is being used now, you are asking for trouble. The reason you are asking for trouble is you are going to select out insects that are relatively resistant to the agent. And when that happens, you are basically breeding a better medfly. Say you have 1000 medflies out there. If you leave them alone, and only 2 of them, or say 5 of them are resistant to the malathion agent, and use techniques such as sterile medflies. You will hit all of them indiscriminately.

If you use something like sterile medflies, it won't matter whether you have an insect that is resistant to an insecticide, because you won't be using it. However, if you use the insecticide, (say you have 1000 medflies out there), the likelihood of those 5 breeding with each other is extremely small. Especially an insect like the medfly, which mates only once in its lifetime. The female mates once, lays its egg and dies. If you kill off all the ones susceptible to malathion, and leave those 5, their mating is much greater, and eventually what you will do, if you keep spraying like this, (I found one reference that said that). It said..."Studies done before, doing multiple sprayings, very rapidly produce insects which are resistant to malathion."

The same reference also pointed out that a lot of insects and fish and other orthopods you don't want to kill, are going to be wiped out by this kind of spraying.

EDITOR: So...it will damage the whole eco system.

DR. LAWTON: Tell me the last time you saw a bee flying around? They are extremely susceptible to malathion. Spiders are very susceptible. When is the last time you saw a cob web? Malathion is very toxic to a large variety of beneficial insects and spiders we want hanging around. All malathion is very toxic to fish. Fish are extremely susceptible to malathion.

EDITOR: ...and the bee carries pollen to the other plants.

DR. LAWTON: Correct. The way fruit trees will be behaving here for awhile and flowers. They will lose one of their 'vectors.' When you wipe out something like spiders or wasps, and all the things they prey on, these other insects will suddenly 'take off', and you will suddenly find an epidemic of insects which happen to be resistant to malathion. It's a shot-

gun approach. You kill anything affected by malathion. whether you want it dead or not. Repeated sprayings will produce resistant organisms rapidly and that fish, bees and other orthopods are very susceptible to malathion.

EDITOR: What are the long term effects of malathion?

Dr. LAWTON: One study proposes that organophosphates will produce a long term toxicity. The Ishikawa study from Japan which has its statistical problems. The state has taken great pleasure in statistically attacking that study and it does have a lot of flaws in terms of its statistical analysis. However, I think there is enough evidence there to suggest there is something in organophosphates that produces long term neurological damage. Since nobody has really studied it, nobody knows.

EDITOR: Do you think there is any kind cover-up going on?

DR. LAWTON: It is hard to know. I don't know enough about what is going on in Sacramento to say whether anybody is intentionally covering up. I don't think the people up there are ogres, and want people to get sick and die. I know they are under a lot of pressure from the agricultural interests, which have tremendous power. They are going to do whatever they can to please them and if they can put things in such a light as to make it appear there are no showings malathion is dangerous, then they can go ahead and spray it.

Of course, it all depends on their not doing their own studies. If you look at the sprayings that occurred earlier in 1981 and 1982 in Northern California and what's going on down here. They are relying on a telephone "hot line". A telephone hotline is the best kind of study to do if you want to prove, what you want to prove. It's absolutely worthless. The only way to do a study (they have already lost) and that is to plan ahead of time to see what the effects are going to be. As soon as you know you are going to spray an area, rush in there, with people who are geared up to do this in advance. Check out people who are suppose to be normal, and document they are normal. Then compare them after the spraying to people else where who haven't been sprayed, but have been matched. Make sure they are representative of the population. Anything that is done now is absolutely worthless. You have to start with a known population, and they didn't do that.

EDITOR: Legally can't we stop the state from spraying due to what you have just stated?

DR. LAWTON: Health professionals have no way of stopping the government from doing anything. They have used chemicals (which might be dangerous) in the past many times. If they feel the over-all benefit outweighs any risks... for example, the DPT vaccine: there are going to be a certain number of children who take these DPT shots who are going to get permanent neurologic injuries from it. However, there are going to be a lot of cases of diphtheria pertussis and tetanus prevented and a lot more lives saved. so you weigh the risks against the benefits and the state is basically doing that. They are saying right now there is no solid evidence anybody is being done any harm.

EDITOR:...but they aren't testing anybody. They are not doing a survey and finding out if in fact people are becoming ill. That is negligent.

DR. LAWTON: Someone has to charge them with it. That would have to be a court suit. That would not be legislative

It is a Catch -22. because somebody is going to walk in there and say it is unsafe. and it is going to be the same exact situation.

I became involved with a law suit in Orange County for the homeless. I was going to be a consultant for the legal aid lawyers who were representing the homeless. These people were getting sprayed and were reporting all kinds of symptoms which suggested they might be poisoned by malathion. The case never went to trial because the judge said there were no studies showing malathion unsafe.

EDITOR: What were some of the symptoms the homeless were exhibiting?

DR. LAWTON: The magazine, INSIGHT, April 9th, 1990 had a good article on it. I will quote to you from it. It stated the following: "Spraying malathion to beat back infestation of the Mediterranean fruit fly in Southern California, has spurred a number of law suits charging the insecticide is dangerous to humans. One such suit followed on behalf of homeless people allegedly made sick by the medfly spray, charged that they were particularly threatened by the spraying because they could not return home when it began, and could not change their contaminated clothing. The class action suit was filed by the Legal Aid Society of Orange County. Last month the federal judge denied legal aides requests for preliminary injunction seeking more shelter for the homeless or an end to the spraying ruling that the group had not provided medical evidence that malathion causes symptoms described in the suit, which included blurred vision, difficult breathing, bizarre dreams, and loss of appetite. The day after the judge's ruling the state agreed to provide more beds for the homeless. The Society plans to drop its suit."

Again...the government is just going to say there are no studies showing malathion does produce these things.

EDITOR: What do you think our next step should be?

DR. LAWTON: I think the next step should be taken by the Public Health Committee. I testified before them, and I stayed around for some of the other people and I got the impression that a number of people were disturbed by the gaps in knowledge related to how the insecticide was broken down into the body, how it was absorbed, what effects it really had and if it were up to me, I would put a stipulation if they used malathion again, they must plan in advance to study people in a scientific way, using investigators who are independent, non-government employees, who would be under no influence from the government, and actually do a study while the spraying is going on. If there were any signs it was dangerous, they would be forced to stop spraying immediately and they would never be able to use malathion that way again.

The way they are doing it now, there is no way they will ever be able to come up with any meaningful data of just how dangerous it really is. They would have to study all groups of people, not just healthy people and healthy children, or sick people and people on drugs. A lot of those studies to see just how malathion would interrelate with medications could be done now on animals, and they are not being done.

EDITOR: They are not being done?

DR. LAWTON: No.

EDITOR: This is where the state is negligent.

DR. LAWTON: Yes. This is a legal term. You can't say it is negligent until you go into a court of law and you get a judge or jury to agree with you. To that point you can still go along and say the studies that have been done so far have not indicated that it is dangerous. That would have to be taken through the court system. You would have to find a judge willing to hear the entire testimony. At this point, it apparently has not happened. Everytime anybody's gone to a judge to get an injunction to stop the spraying, the judges have stated, "No studies have shown that the malathion actually produces these effects in people." They have no basis for stopping the spraying. I don't exactly know what the threats of the federal government... how they apply. If you look at the scientific committee, three of the five people on that committee are employees of the federal government.

EDITOR: Now who are these people?

DR. LAWTON: The United States Department of Agriculture. They are on the 5 person scientific committee which is made up of 'bug' specialists. Three of them work for the USDA.

It would be a very interesting legal question to see if the federal government (if the state had a referendum for example —such as the green referendum, that said insecticides could not be sprayed unless there were extensive studies already indicating their safety, (not in absence of studies indicating that they were dangerous).

If the federal government could step in and spray against the wishes of a sovereign state which had voted against it...I don't know if they would have that authority. It is a big, legal question of who controls the air space, and I think, if you ask the federal government, they would say the federal government controls air space by the authority of the FAA.

So...could they technically spray if the state said no, I think you would have to take it up with a federal court.

EDITOR: Have you examined any people who have been sprayed...their vision, etc'?

DR. LAWTON: No, I don't think anybody ever will. The government obviously doesn't want to do it. They have not been doing it.

In fact, if you look at the way the 'phone-in' hot-line is being run (which Dr Papanak admitted in radio interviews), is that if individual citizens call in...saying they have got complaints that sound like flu-like syndromes that could be related to malathion, (it is basically assumed since they haven't been proven by a physician to have malathion poisoning) that it must have been the flu because the amounts being used aren't enough to cause injury to healthy human beings and they don't follow it up. They will only follow up documented cases, those seen by physicians, and generally the ones they are interested in, are those that showed evidence of skin allergy. Whether it is the malathion or bait..there is something in it that produces skin allergies.

EDITOR: Thank you very much Dr. Lawton for giving me your time and your expert opinion on the toxicity of malathion spraying on humans.

REFERENCE:

CLINICAL TOXICOLOGY OF COMMERCIAL PRODUCTS

Authors: Robert Gosselin, M.D., Ph.D.;

Prof. of Pharmacology Dartmouth Medical School

Roger P. Smith, Ph.D., Chairman of Dept. of Pharmacology,

Dartmouth Medical School, Harold C. Hodge, Ph.D., Dr. of Sc.

Prof. & Chairman Emeritus Dept. of Pharmacology and Toxicology

University of Rochester Medical School

William and Wilkins, 1986

**EDITOR INTERVIEWS PHYSICIAN ON
PUBLIC HEALTH EFFECTS ADVISORY COMMITTEE**

EDITOR: I understand you are on some committee regarding malathion?

M.D.: Yes. I am on the Public Health Effects Advisory Committee.

EDITOR: I would like to ask you about the cholinesterase test. To use this test for an urban population being sprayed aerially with malathion, is this the proper test?

M.D.: Well, I think it is a good test, it has to be interpreted pretty cautiously and when we are talking about spraying malathion on urban populations it is not nearly as useful as say monitoring agricultural workers, or workers manufacturing pesticides.

EDITOR: Why is that?

M.D.: Well, mostly because it takes quite a bit of organophosphate pesticides to lower the cholinesterase. The amount we would expect to get from urban spraying probably wouldn't lower it. There are different reasons; one is that there are two kinds of cholinesterase, one is the red blood cell, and one is in the plasma, and the one in the red blood cell is the one that's mostly correlated to the cholinesterase in the nervous tissue and brain, and that's correlated with symptoms. The one in the blood, is closely correlated with symptoms and there are a lot of other factors too. Much of this is made in the liver, and factors associated, say with liver disease could alter those levels. Plus the tests are kind of difficult to perform. The other problem is that the most important thing is seeing a change in a person, and so you pre-impose exposure, and rarely do you have that, so you have to fall back on population normals; it may not fit very well with an individual.

EDITOR: Each person is different.

M.D.: Maybe, yes.

EDITOR: There are people who are environmentally sensitive, and chemically sensitive and environmentally ill, and there are people that have lived up here in the Bay Area who were sprayed in 1981-82 and have since moved to the Los Angeles area. There are people with emphysema, and all these different variables, and now they are being sprayedthis could really push them over the 'edge' as far as what is happening with them in their own bodies.

M.D.: This is a very controversial subject, as you can imagine. The chemically hypersensitive, and the environmentally sensitive issue is really controversial, in fact we talked about it at our meeting last night. As you know organized medicine has come out through American College of Physicians, and most recently through the American College of Allergy and other groups, saying that they felt for a diagnosis...there weren't enough criteria. So there is kind of a bias against it; a lot of the most vocal people in Los Angeles are those that feel they are in that group, and it has met some resistance, let me say that.

EDITOR: Even for diseases that the establishment does recognize, for instance, people with Parkinson's disease, or emphysema...couldn't the spraying really affect them adversely, much more than the person who has never had any health problems?

M.D.: The people who are most likely to be affected are the ones that have respiratory, allergies, asthma people...because realistically the amount of chemicals which they are exposed to, and it may not just be the malathion itself...it's the other co-products of malathion.

EDITOR: You mean something like malaoxon?

M.D.: Malaoxon, isomalthion. OO, AS, OOS, Thri methyl, diathyioades. and other products are either formed, along with malathion, and or the malathion break down into...which may be more toxic or as toxic as malathion....and also some things such as chemical called mercaptains; other sulphur containing chemicals...that may have an odor..and the odor itself may or may not be associated with symptoms. This is data not only from urban spraying but from people living near toxic dump sites, or living in the agricultural field who have been exposed to toxic chemicals, sometimes pesticides, sometimes others that have odor, and they have a lot of symptoms, let alone the actual concentration of the chemicals which have been demonstrated to be kind of low...but these things...you can smell them at very low concentrations, or there is a toxic effect, or where there is a psychological sensitization, you smell something...you know it is going from a toxic dump site, you feel sick...the bottom line is you feel sick.

EDITOR: Most doctors in our medical schools aren't really trained that well in detecting pesticides...is that true? You would have to almost be an internist, or toxicologist to really delve into this..what I guess I am leading up to is...the doctors in the spray area who when people come in and are ill with the flu...(they think), or headache or nausea, or whatever, The doctors are saying, "Yes, you have the flu;" when in fact, it could be malathion poisoning. In other words the doctors don't quite know how to test for organophosphate poisoning, is this a possibility?

M.D.: Yes. I am probably not the best one to talk to about what they learn in medical school..since I have been out of medical school for along time...and I would imagine medical schools say like in agricultural areas would in more likelihood have more information, then say strictly urban universities, where I went to medical school. ... I think physicians in general don't have a lot of training in pesticides.

EDITOR: This State Health Effects Advisory Committee that your are member of, what will this committee do, will it bring in other physicians along with your good-self to have a bridge between physicians and the state on this issue?

M.D.: The idea...this group has been meeting since February....basically every other week, and it is made up of...some physicians in the community, representatives from the County Medical Associations, representatives of the county government, or county medical department.

EDITOR: Dr. Papenak, Dr. Kizer, and people like that?

M.D.: Paul Papenak, L.A. County Health Department, Rex Ehling from the Orange County Health Department, ...employees of the health department, and the various counties. There was at least one physician from Pasadena..which was important, because Pasadena had cited the helicopters....so they were pretty interested as a group...people from UCLA, people from UC Irvine, people from USC.

EDITOR: Can any health professional join that group or do you have to be invited?

M.D.: You have to be invited. I don't know how many people there are there, the state health department has a lot of staff people working on it...so they are there, the Department of Food and Agriculture...UC has some representatives there.

EDITOR: What is the bottom line you feel ...on whether they should spray an urban population like they are doing?

M.D.: I think I am probably a little more on the conservative side then most, although, nothing has really come to a vote, so I can't say for sure...off the top of my head estimate...I basically think there are a lot of unknowns...and to be scientific, we would like to know as best as possible, what the risks are, both for acute health effects and for long term affects, particularly cancer and reproductive effects, so we can make a policy of well...the

risk is so low that it's O.K. to spray..or, the risk is unacceptable, and there is some other method of controlling this admittedly bad pest, should be undertaken...and we just don't have the data....so my personal philosophy is, if we don't know...we should probably wait until we know....but, there are a lot of people with different opinions.

EDITOR: It seems like most of the residents do not want it...

M.D.: You can understand, it is totally not to their benefit.

EDITOR: They talk about how malathion does go through you and it does not stay in the fatty tissue like DDT....

M.D.: That is correct.

EDITOR: So, as it goes through you, it could cause neurological effects like in the nervous system, fine motor skill problems in children...(that type of thing); are not these types of things possible?

M.D.: Yes...what happens is it doesn't stay in the body very long. In fact, a remarkably short period of time. But, the effect it has, is that for all practical purposes it in-activates permanently these neuro-transmitter related enzymes.

EDITOR: It does permanently?

M.D.: Virtually permanently, yes....they regenerate, new ones are formed, but the ones that are inactivated, basically, most of them stay inactivated.

EDITOR: Well, that is pretty serious.

M.D.: Well, it is dose related. So if you get a big dose, you get a lot of them inactivated for a long time...but if it is a very small dose...you can tolerate it without any symptoms, but the point is, that if you have (let me say it this way) the cholinesterase- we estimate from either the plasma, which is not a very good way of looking at the effects (although it is a good measure of exposure); the red cells have the cholinesterase inhibited, and it takes a long time for that inhibition to ...if you measure the red cells and you find you have a drop in the cholinesterase activity, it takes weeks to months for it to get back to normal. Partly because the red cells are being replaced at a constant rate, (so it really reflects not the enzymes that are inhibited) but the new red cells (normal enzymes are being produced, and the old one with inhibited enzymes) are being destroyed. So it probably mirrors what happens in the nervous system, that is that the enzymes are inhibited and they stay inhibited until new ones are formed, so it takes a long time.

EDITOR: How long does it take to make new neuro-transmitters?

M.D.: Well, I don't know for sure in the nervous system, that is very hard to study, and I don't know if anybody has really studied it. In our health committee experts are going to come in and talk about that, but as we are talking right now, I don't really know. I would think it would probably be in the order of the same as the red cells...It would probably take weeks to regenerate. The point is..even though the malathion does not stay in the body, the effects of it, the inhibition of the enzymes may last for quite a while. If it is a small amount it doesn't matter. If it a large amount and it is continuous, then you might have the effects of a cumulative dose.

EDITOR: Although malathion doesn't accumulate in the body, the effects might be cumulative.

M.D.: Right.

EDITOR: I have seen literature that states, "Stay away from an area that has been sprayed with malathion for 30 days...and if you have cows and other animals get them out of the area because it goes through the skin and it will get in the milk, etc. and yet they are spraying I believe, Riverside where they have cows, and other animals, and we are going to be drinking the milk, is this dangerous also?"

M.D.: I don't think it lasts for a month in the environment. Malathion itself..as opposed to the actions on the body which may be , may have the effect of being cumulative...in the environment if the malathion is destroyed after a few days to a week, that is it. Regarding the cows, we would expect, assuming it lasts the same in humans...if the cows ingested a dose of it, it pretty much would be gone in a day.

They have done studies on humans...and they have injected them with malathion..and half of the malathion they injected was eliminated from the body in three hours. So, that is not exactly what happens in the environmental situation, because if you have it on your skin it takes awhile for it to be absorbed through the skin, and in fact, it doesn't go away that fast...but actually once it gets into the blood stream it shouldn't last very long...so it doesn't build up in cows either.

EDITOR: I understand there are 16 different chemicals included within the malathion that is being sprayed in L.A. and surrounding areas, is that correct?

M.D.: They are spraying not pure malathion, but technical grade malathion. and that means for all practical purposes 95% malathion and 5% other things..and that is assuming that it is 95%, and I think it varies, so there is 5% of other things. They have shown a large number of different chemicals, but I think it varies, batch to batch. But there are some in there that are much more toxic then malathion...

EDITOR: Really?

M.D.: Yes., but in very small concentrations.

EDITOR: According to some of the literature I read, it talks about spraying near or where there is a lot of moisture in the air (Los Angeles would have a lot of moisture in the air because it is near the ocean) and that would produce an affect of changing malathion into malaaxon or other break-down products; can you tell me something about that?

M.D.: I am not a chemist, and I think that is basically correct, it probably stays in the air longer and does break down more because of the moisture in the air. Whether that is significant consideration or not, I don't know. I know they don't spray it when it is raining, partly though, I think, because it does not stick and it might concentrate more in the run-off and poison more fish...and that kind of thing...

EDITOR: But if they continue to keep this up, it seems to me it would be really serious for the population.

M.D.: I think that is what we are trying to figure out...what is the risk and what exactly are the risks...will only certain sensitive people get sick, or allergic people get sick for only a short period of time, (not that that is O.K. necessarily). If you spray a million people, and 20,000 people get sick, that is probably not acceptable either. Or, from my way of thinking, there is significant long-term problems with cancer, immune suppression, reproductive problems, this is what we are looking at.

EDITOR: The long-term effects which are very important.

M.D.: Maybe the most important.

EDITOR: If you have children down the line, who when born, look O.K. and they act O.K. but 2 years later or 6 years later, when they begin school and they can't write properly or their eyesight is bad or whatever, then we will have realized just what the term, "long-term" effects meant.

M.D.: Right....and those things are very difficult to study...but, in this committee we are trying to look at those things...plus the birth defects and the cancer.

EDITOR: There is a woman in San Jose that was sprayed in 1981 or 1982 and she works for the City and she said that 15% of the babies are now being borned with extra fat that they didn't have before. She also said, there are also a great deal more cesarian births since the spraying, because the muscles of the body are affected; subsequently a woman can not give birth in the normal fashion.

M.D.: As you may know, there was a study on birth defects....done in Northern California, it had a lot of problems, and these things are very difficult to study.

EDITOR: In fact, Judy Grether who did that study, stated in the conclusion, that there were certain effects that weren't studied, and so you couldn't take the complete study as being 100% accurate.

M.D.: That is absolutely true. And the things they did study, were subject to substantial criticism, because of the way the study was done, (not that the study was done poorly), but because it is so difficult to study.

EDITOR: And then Dr. Duncan Thomas down at USC did a study on birth defects...and that study I understand was never given to a peer review, it has not been published, and I understand people I have talked to, that at this point, it could never be published, (I don't know how to say it) because of 'inconsistencies,' or whatever...I don't know if you are familiar with Dr. Duncan Thomas's report?

M.D.: I do actually have a copy it. He is on this panel also...It has not been published, and I don't know if it will be, but again,....

EDITOR: What do you think of that report?

M.D.: You know if I read it, it has been quite awhile ago, and I don't actually remember all the details of it, we haven't actually got on to that discussion of that aspect yet.

EDITOR: The report has not been published, that is the thing that bothers me...they offered Judy Grether's report (it was published in 1987) and they offer Duncan Thomas's report, which has not been published. The state keeps holding these two reports up and claiming these two are the 'Bible;' when, in fact, there are hundreds of other journals stating malathion is unsafe for living beings.

M.D.: I think not too many people would call these two studies the 'Bible'...anybody that is objective...

The state takes a good shot at trying to figure this out, I don't think there is any attempt to cover anything up. I don't think they found anything that frightening. If they were having an awful lot of birth defects or an unusual amount of birth defects, or something unusual like thalidomide where very unusual birth defects occurred...if you get something like cleft palate, which occurs quite commonly, (you have a 50% increase)..you would never pick

it up as being related to this....so you would have to get 10 times the amount of cleft palates, or something like that to have it even be meaningful.

EDITOR: Paul McClain, Molecular Biologist was interviewed on KPIX radio .. He stated there was a machine the EPA used, and I think WHO whereby you could test children's fine motor skill abilities...with a \$1500 machine; which would show the level of skill before malathion spraying and afterwards; in other words, how malathion affects the fine motor skills. Are you familiar with that machine?

M.D.: I have heard him speak a few times, I don't recall anything about that machine. But I am not surprised. There are a lot of simple ways to test that sort of thing. The thing is there are a 'gillion' things you can do....and as a committee we have picked three real small studies, but still they are going to cost a lot of money....somebody is going to be paying for it.

EDITOR: So you all are going to do three studies?

M.D.: Three studies have been funded by the governor, and one has been funded by the Department of Agriculture, and that is just for starters..but these things are real expensive, and so you can't do everything that everyone thinks of, that's the problem.

EDITOR: Can you expand on what kind of studies they are going to be?

M.D.: The one that is hopefully going to be funded in the next few days, is the one by L.A. County Health Department, (Papenak's group). They are going to be testing people who said they had respiratory problems...and testing them in a special testing chamber, where they will be exposed to small amounts of malathion, to see if they do have asthma when they get exposed to malathion.

EDITOR: They are going to expose them to malathion and then test them?

M.D.: Yes, to see if their symptoms are actually due to malathion. They also have another group that is complaining of skin rashes, and they are going to do skin tests for malathion...and when the people complained, they did get urine samples from them to detect the levels of malathion in the metabolites in the urine.

EDITOR: They did, or didn't?

M.D.: They did. This is what I understand.

EDITOR: This was Papenak's office?

M.D.: Right, they did it in conjunction with Rancho Amigos Hospital, where there is a very accomplished pulmonary specialist there who has developed testing techniques for these respiratory challenges. They weren't developed for malathion, but they can be applied to malathion.

EDITOR: It is good to hear that.

M.D.: Yes, we have been kind of pushing for that for quite a while..and talking to Paul (Papenak) last night, they have finally gotten to the point where they are going to write the check...

EDITOR: So, basically if you were being sprayed with malathion you would leave the area?

M.D.: Personally I think I would. I think we don't know enough, there are plenty of people who would stay, and it reflects philosophical position, not strictly scientific.

EDITOR: In your case, it is both philosophical and scientific?

M.D.: I don't think there is enough science to make a definite decision... I guess that is what I am trying to say. We will have a good idea after Papenak's studies are done. We will know if it is going to cause long term effects. I will have a better idea when some of these studies are done, (particularly the ones by the EPA), but they are not going to be finished for years.

EDITOR: Oh, they are not going to be finished for years?

M.D.: No, the cancer studies probably...they are re-doing all the animal studies, and they have given the manufacturer, (American Cyanamid) 4 years to do the studies, the clock started running in February 1990. Basically what happens is, all the old pesticides have to be re-registered, that is, they have to go through testing, specified by the EPA, so that the EPA will register them again, that is, allow them to be used, and some of the old pesticides won't make it, they are too toxic, because when they were registered originally, the testing was very lax.

EDITOR: What about malathion?

M.D.: Malathion has come up for re-registration. So they looked at it and said, most of these studies of cancer are no good, you have to repeat them, and they have been going back and forth for a few years now with the manufacturer, and now they have made a final decision of what test has to be redone. They said to the manufacturer, O.K., if you want to sell this 'stuff'...you have to do these tests, and the manufacturer has 4 years to do them, and if they don't do it in four years, they suspend their registration and they can't do it anymore.

EDITOR: I understand this batch they are spraying over L.A. came from a company in Denmark, not from American Cyanamid.

M.D.: Right. But it really doesn't matter, because it is malathion and malathion as a chemical is registered. So if American Cyanamid says, "We don't want to spend this 5 or 10 million bucks to do this stuff,"... then in 4 years the EPA won't allow malathion to be used anymore regardless of who makes it.

EDITOR: These studies they are formulating in the committee you are in, it is going to take 3 or 4 years to complete them?

M.D.: No, the cancer studies, and the risk assessment by the EPA realistically won't be finished for 4 years. Some of the studies, like the skin studies, skin allergy and respiratory stuff should be completed within 6 months to a year. I am just guessing. Some of the other studies of acute health affects, it is probably the same time range.

EDITOR: 6 months to a year? That is a step forward.

M.D.: Well, it is..realistically it is not going to make a hell of a difference for the spraying program right now.

EDITOR: It is not?

M.D.: I don't think so. I think basically it is going to be stopping in L.A. county and going forward in Riverside and San Bernadino for awhile.

EDITOR: Thank you so much Doctor for all the information you have shared with us today.

FRANKLIN HIGH SCHOOL, MARCH 1990
Series of Lectures on Dangers of Malathion

INTRODUCTION OF DR. MELVIN REUBER, M.D.

The first speaker is Dr. Melvin Reuber, who some one yesterday on a talk radio station said, "Well, I suppose you could call him the 'hero' of the protest movement. And I think that is a nice thing to call Melvin, "The Hero of the Protest Movement."

A very distinguished scientist who is credentialed as a medical doctor and who became a pathologist. Melvin recoils, I think, with a good bit of alarm, if anybody describes him as a "whistle blower", but that is exactly what he is, and in the best sense of the word. As a consultant to the Environmental Protection Agency he looked over the records that had been prepared, showing the "safety" of aldrin, dieldrin, etc. and said "Hey, something is wrong here." He gave the report to the EPA and Senator Kennedy's Committee. This resulted in the ban of these very commonly used pesticides, worth hundreds of millions of dollars. Obviously the industry was not very keen about that. In 1976 he joined the Frederick Cancer Research Laboratory and was going on doing more of what he was suppose to be doing, protecting public health and safety.

In the course of his investigation he reviewed some slides prepared by a private laboratory. It is very important for us to remember that in many cases, as in the case of drugs (It is the manufacturer who does the research demonstrating the safety and efficacy of his product, and then presenting the product to the government to get a license). In any case, Melvin looked at these slides and said, "Something is definitely wrong here," and what was wrong was that malathion was definitely carcinogenic, despite all the claims of safety. So he wrote about this to the Director of Agriculture in California, who was also suppose to be protecting us and the Director of Agriculture sent a letter back to the head of the Frederick Cancer Research Laboratory saying..."Hey, this man is causing a lot of trouble out here, farmers have crops that are worth a lot of money, we don't want anymore of this," and one thing led to another and Melvin after a couple of years resigned from the facility at great cost to himself, I might say, but the end of the story is not a gloomy one, that fourteen months ago he was vindicated in a federal court when his suit for liable against Agricultural Chemical News was resolved in his favor. At any rate, I would like for you to meet Melvin Reuber, the hero of the protest!

DR. REUBER'S LECTURE ON MALATHION

DR. Reuber: Thank you. Increasingly we are besiged with news of environmental contaminants which threaten human health and welfare. Some perils of the environment affect the lives of only a relatively few workers in a particular industry or chemical plant. Aerial spraying of residential and commercial areas, place essentially everyone at risk. Pollutants may cause problems to exposure to relatively high concentrations for short periods of time, or to comparatively low concentrations over long durations. In fact, this latter condition, of long term exposure, to low concentrations of chemicals, poses the greatest threat.

The mountains of evidence concerning the harmful effects of malathion to humans, has been overwhelmingly documented since as far back as the 1940s and 1950s. Back in the 1950s American Cyanamid Company, the sole manufacturer of both malathion and parathion went after the home owner.

Cyanamid dollars in consumer publications and commercials stated that parathion used on 50 crops was highly toxic, but stressed the harmless nature of its related nerve gas compound, malathion. They called malathion one of the safest insecticides to handle,

(according to U.S. Department of Agriculture) and said, "It is now possible for the home gardener to use malathion for the protection of home grown fruits, vegetables, flowers and ornamentals with the same efficiency as does the commercial grower using parathion.

The Cyanamid advertisements stated and I quote, "Malathion a development of American Cyanamid Company Research, brings an entirely new kind of insecticide to the home gardener. Now for the first time gardeners can use this one material to control practically every major pest attacking flowers, shrubs, trees, and garden vegetables and fruits. For wide spread testing has proven that malathion controls more kinds of pests than any other single garden insecticide." It went on, and I quote again..."With this wide range of control, the use of malathion goes a long way towards solving two perplexing problems to the home gardener. It practically eliminates first, the problem of which insecticide to use, and 2nd the problem of having to wait until insects show up in order to know what to treat. By using malathion at regular intervals, beginning early in the season, the many pests are taken care of before they have a chance to build up." In other words, even though you don't have any, (pests) 'spray' for them. Their instructions were also, "Make thorough, full coverage sprays with repeated applications." They also claimed, or pointed out it was useful for fleas on dogs and cats, for mites and poultry, and for use in dairy barns and since it was a new chemical, it was highly effective against flies, even though flies were previously immune to chemicals such as DDT.

Then they went on and they managed to corner the lucrative alfalfa aphid and cotton boll weevil markets for malathion. Something that is reminiscent of the pleasant medfly situation. Just how safe are the organophosphate insecticides, including parathion, and malathion? There really is no need to discuss it. Data from the 1950s and 60s indicate that these pesticides are very dangerous. In Japan, a small country, there were 19,500 cases of phosphate insecticide poisoning over a period of 17 years, including over 10,000 accidents, and over 9,000 deaths. In Finland, another small country, there were 286 deaths over a six year period, and in Denmark 273 deaths over a 6 years period. In California between 1957 and 1960, there were 950 cases of poisoning during 4 years, including 790 agricultural, 90 industrial and 70 other causes. Actually no one disputes that these figures are too low and that the actual number of persons poisoned is many times higher. Incidents of mass poisoning of thousands of people by gross contamination of food with organophosphates have been reported from India, Egypt, Singapore, Mexico and elsewhere in the world.

For the last decade we have been hearing about the need for further research on the toxicity of malathion. More is known about the toxic effects of the organophosphate chemicals than any other insecticides. This is not only because of their use as a pesticide, but because the U.S. Government, the military, had a keen interest in their uses of nerve gases to be used in war. The organophosphate containing insecticides were developed in Germany for use as war gases, but strangely enough they were never used. They were introduced into the United States in 1946. In a very few years, or thereafter they became widely used as agricultural insecticides, because of their effectiveness against a variety of insects, including some species that were resistant to DDT. From the very beginning they were recognized as dangerous to humans.

In 1952, an eminent researcher, DeBois, wrote, "The high inherent toxicity of the organophosphates and the fact of substantial differences in the toxicity of these compounds, from mammals and insects, emphasizes the necessity of obtaining a thorough understanding of the effects, which these agents may have on man and domestic animals. Research of these chemicals was carried out at the most prestigious universities in the world, including Johns Hopkins and University of Chicago. The work was too important to be trusted to the chemical companies or to the contract laboratories who worked for the chemical companies.

1950 information on practical aspects of toxicology; these compounds with respect to man

and animals was widely published in scientific journals including the Journal of the American Medical Association, the American Journal of Medicine, the British Medical Journal, The British Medical Bulletin and elsewhere.

Humans are more susceptible to poisoning by these insecticides than experimental animals. In 1953 scientists published a paper in the American Journal of Medicine and they described the initial signs and symptoms of poisoning as headache, nausea, vomiting, squinting, blurred vision, myosis, weakness, diarrhea, abdominal pain and pallor and skin rashes. In moderate to severe signs of poisoning, the signs and symptoms included, dyspnea, salivation, lacrimation, muscle fatigulation, shock, cardiac arrhythmia, coma and death. Now some of these earlier symptoms are similar to flu and might be confused with the flu. Again this was in 1953, they listed the central nervous system manifestations. And I want to read those to you. Giddyness, tension, anxiety, restlessness, emotional mobility, excessive dreaming, insomnia, nightmare, headache, tremor, apathy, withdrawal and depression, drowsiness, difficulty in concentrating, confusion, slurred speech, ataxia, generalized weakness, coma with absence of reflexes, labored respiration, depression of respiratory and circulatory centers, cyanosis and fallen blood pressure.

Concentrations of malathion that might be considered safe for healthy individuals, should not be considered safe for others. According to the California Department of Health in the 1980s, the following are particularly susceptible: Pregnant women and their fetuses, those with respiratory diseases, such as asthma or emphysema,. The very young or the very old.... and those with cardiovascular diseases. ...And to this list should be added, persons whose liver function (with regard to drug metabolism) is inadequate, including but not limited to those consuming alcohol. Those with skin sensitivity or with previous exposure to malathion or other skin diseases. Those with depressed immunological systems. Children given malathion for the treatment of head lice andindividuals with mental health problems.

The conversion of the organophosphates takes place in the liver, and for example, parathion is metabolized to paraoxin and malathion is metabolized to malaoxin, and malaoxin is many thousands of times more toxic than malathion. Absorption of organophosphate insecticides, in most instances of occupational poisoning, has been through the skin and respiratory tract. The most common instances has been in agricultural workers during or shortly after spraying crops, and less commonly in industrial workers during manufacture, formulation or transportation.

It's not mentioned often that malathion can also be absorbed to the conjunctiva of the eye. With increasing use of these insecticides there have been more instances of accidental exposure particularly in children, by dermal exposure, inhalation or ingestion. There have been instances of poisoning after ingesting foods sprayed with pesticides when there has been insufficient time for breakdown or removal. And even in some countries, poisoning by ingestion for the purpose of suicide or homicide has been a cause of death.

In addition to these more acute affects, there are other toxic effects of malathion. The mutanogenicity, carcinogenicity and teratogenicity, of malathion has been investigated. I will make some remarks about this, yes...concerning the mutanogenicity, or damaged genes that may show up for generations...I am going to quote from a recent publication, "Malathion ought to be viewed with caution, as a potential genotoxic agent in humans, particularly for those who come in contact with the compound repeatedly. Concerning teratogenicity, or harmful effects on the fetus, the infant may acquire these hostile elements by placental transmission in the womb, and from the mother's milk, during nursing. Concerning carcinogenicity, according to Adrian Gross, the EPA toxicologist, "Malathion and malaoxin have conclusively been shown to be a carcinogen. As such, there appears to be no ambiguity whatsoever in regarding malathion as a carcinogen to experimental animals, and by implication as a likely carcinogen for humans.

THE POISONING OF OUR PEOPLE

Malathion made by Cyanamid Company contains a number of impurities. One is called OSSF ME, just one of a number of the impurities present in the so called "safe" malathion; increase the acute toxicity of malathion. These impurities cause toxicity, suppressed immune effects, and in this regard they are similar to dioxin.

Another toxic compound isomalathion, has been found in malathion, particularly in water formulations. Storage (particularly higher temperatures) has a significant effect on the formation of isomalathion. Needless to say, malathion should not be stored for long periods under such conditions.

A study was done (looked at the formulations of ready to use in the home and garden and were sold over the counter), and they found they contained very little amounts, if any, of malathion but they contained large amounts of isomalathion. So that these things for the home gardner had been standing on the shelves, and eventually there was nothing but isomalathion. But we have to beware of the impurities, because soon American Cyanamid or the state of California, or the EPA will be telling you that they are making a new malathion and have removed the impurities, that have caused all the problems, and then malathion will be safe. It's a old tactic.

The administration of apparently low doses of organophosphate chemicals, including malathion, can greatly alter the toxicity of other chemicals. These toxilogical interactions, among the organophosphates, have been known since 1950. This can result in additive, simple doubling or it can result in synergistic responses which are many times what you would expect from two compounds. Or one compound can interfere with the other. Thus, drugs, or other pesticides might potentiate the toxicity of malathion and on the other hand, malathion might potentiate the toxicity of other drugs and other chemicals.

The state of California argues that malathion is preferable to other organophosphates because of its low toxicity. This difference loses some of its apparent significance when one considers that larger doses of malathion, over a longer period of time need to be given. And...they keep stressing the low concentrations, while the long term exposure to low concentrations of malathion again pose greatest threat to the pregnant mother, the fetus, to those with depressed immunological systems, those with previous sensitized skin lesions, they cause eye problems, (particularly in children) and those with asthma and emphysema.

It has been almost 50 years since malathion was first registered for use by the U.S. Agricultural Department. It has been 20 years since the EPA has taken over with the registration of pesticides. Yet, only now is the EPA requiring additional mutanogenicity, teratogenicity and carcinogenicity studies as well as several other studies. This is a delayed tactic that has become common at the EPA. Continued registration of a pesticide, based solely on a few toxicities studies in animals. Then when public pressure becomes so great, and insensed, and they finally feel they have to do something, the EPA asks for more studies that will take years to complete. Then they may request another entirely new group of studies and on and on. In the meantime, the public continues to be exposed to the so-called safe malathin.

During the past several years state officials have told you malathion is a safe insecticide. Malathion is relatively non-toxic to the laboratory rat. Malathion is one of the least toxic insecticides. More recently you have been told, most likely, such low exposures to malathion are harmless. Or many individuals who claim exposure to malathion have been exposed to such low quantities that they do not have any real toxicity. And finally, the tax payers of the state of California are being told the amount and tone of the news coverage of malathion has significant power of suggestion and many individuals attribute psychosomatic complaints to malathion, indeed, I personally heard Beverlee Myers of the California Health Department say in 1982, "These people would be sick if they were sprayed with water." The truth of the matter is, is that malathion and other organophosphates are not safe. Indeed, some scientists have compared them to botulism and dioxin, two of the deadliest substances known to man.

National Coalition Against the Misuse of Pesticides

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HEALTH CONCERNS REGARDING MALATHION SPRAYING IN SOUTHERN CALIFORNIA

by Catherine Karr,
M.S. Environmental Health/Toxicology

Despite claims to the contrary, the use of malathion to control medfly in Southern California can not be deemed harmless. Toxicologists assess the health hazard of poisonous substances in terms of exposure and toxicity. Continuous aerial applications to highly populated urban areas, as is the current practice, precludes avoidance of contact. Exposure will occur and it will occur over a broad population representing a spectrum of sensitivities. As for toxicity, although the EPA points out numerous gaps in the data requirements to support malathion's registration¹, the data that exist indicate that malathion can and has presented health hazards to those exposed.

Even though malathion is one of the less acutely toxic synthetic pesticides, having a rat oral LD₅₀ of 1500 mg/kg, numerous human poisonings have been reported. EPA's Pesticide Incident Monitoring System reported 962 incidents from 1960-80.² In California, the only state which presently enforces mandatory reporting of occupational pesticide incidents, malathion was the third most common cause of pesticide illness from 1981-85. Malathion caused five times as many occupational illnesses than the average pesticide during that time period.¹

The applicability of such poisonings to non-occupational settings has been questioned. Yet EPA is imposing drift data requirements for the outdoor uses of malathion "because of malathion's volatility and its ability to persist in air, and because pesticide incident data show that spray drift is a principal source of poisoning risk for humans from this chemical".¹

The acute toxicity of malathion resulting from acetylcholinesterase inhibition is well-described. However, subtle effects of continued low exposure or long-lasting results of a single exposure are far less understood yet may be substantial. Cases of long-lasting polyneuropathy^{3,4} and sensory damage⁵ have been reported in man, as well as behavioral changes⁶. Corresponding indications of neurotoxicity are seen in animal studies. Acute delayed neurotoxicity has been seen in hens and EPA has asked registrants to submit further tests in hens for evaluation.¹ In a 1976 U.S. Army study, malathion was found to cause behavioral effects at levels at which the standard hospital test for organophosphate poisoning would be negative.⁷

There is ongoing controversy whether malathion, exclusive of any formulation inerts, is or is not a carcinogen. The latest EPA review of the data-base points out a large number of deficiencies, including chronic effects, carcinogenicity, mutagenicity, teratogenicity, reproductive effects, metabolism,

and environmental fate.¹ In B6531 mice fed malathion, however, statistically significant dose responsive increases in liver carcinomas and neoplastic nodules occurred. In the F344 rat, there were increases in thyroid and benign mammary tumors in rats fed malaoxon, the more toxic metabolite/breakdown product of malathion. National Cancer Institute/National Toxicology Program (NCI/NTP) bioassays in the Osborne-Mendel and F344 rat with malathion itself show negative results, as do B6531 mouse study data using the more toxic metabolite/breakdown product malaoxon.¹

Proclamations that the medfly spraying currently in progress in southern California are harmless conflict with a respect for the history of malathion-caused poisonings, data that indicates adverse neurological effects associated with low levels of exposure, and the unknown chronic health problems that are impossible to assess because of data gaps.

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ANALYSIS-BIRTH DEFECTS STUDY

MALATHION: A sticky issue

Council question legality of clean

JENNIFER OLDHAM Staff writer

Forming a small committee of elected officials to lobby Governor Deukmejian would "put urban on the cutting edge" among midland cities in their effort to halt malathion spraying. Councilmember Michael Hastings said Tuesday night.

"I think all cities should band together to form a small group of elected officials to put something alive together to move this mountain," Hastings said. He said this committee should be formed as soon as possible to travel to Sacramento to hear why the Deukmejian feels comfortable spraying in Southland with malathion.

Communicating with the California League of Cities to create a lobbying committee is part of a five-point resolution approved by the council Tuesday, following two hours discussion on how to handle what councilmember Tim Murphy called the malathion morass.

Details of the resolution include having the City Attorney's office support other cities' legislative attempts and look into legal actions against the

state in concert with the Acting City Attorney advised the council to number of impediment who choose to file a state. "We would need to have to challenge the department director's signature to malathion, as error's state-of-emerg Scott said.

Huntington Beach and Monterey Park rary restraining on These cities were tol present scientific malathion is harmful.

"If we do file litigation I want to do it so it sticks. This would take time," Scott said.

Scott said she plans to meet with representatives from the Los Angeles City Attorney's office Thursday to discuss alternatives in combating malathion spraying.

Hastings' second "cutting edge" proposal, to have rans equipment in schools and parks, was voted down

Legality/A-8



Burbank residents met

Reside

Medfly spraying questioned

School board leads

weeks, says

Medfly spraying questioned School board leads weeks, says

Pasadena to Send Its Copters Aloft in Bid to Halt Medfly Spraying

Malathion: The city passes an ordinance that clears the way for police to ticket state helicopters. The state says the plan is unsound and dangerous. By ASHLEY DUNN and VICKI TORRES Times Staff Writer

As the contamination in the air grew, Pasadena city leaders and state agriculture officials each issued repeated volleys of threats and complaints, only hours after the city's Board of Directors approved their novel plan to halt the Mediterranean spraying.

Orange and Orange counties are scheduled to be sprayed once every three weeks or so through April with malathion mixed with a corn syrup bait in an attempt to eradicate the pest.

Goldberg said she will introduce a motion at Monday's regularly scheduled meeting asking the Los Angeles Unified School District board to request documentation from state and county officials on the effects of malathion on small children.

JENNIFER OLDHAM Staff writer

It was a family affair at a rally outside City Hall with more than 50 residents protesting the double-spraying of malathion-laced bait this week.

The rally's organizer, Debbie O'Connell, with children in tow, brought along her father-in-law and sister-in-law. "What is this doing to us? To our

children? They haven't given us any proof that they know what malathion does," McGinnis said.

McGinnis and sister-in-law Marie Acevedo started planning the press room protest last week, passing out more than 1,500 fliers to local businesses and homeowners.

Several motorists honked and waved in support of the demon-

Letter to the Editor:

Seven months ago my doctor heartily congratulated me and gave me much good advice which I have eagerly followed:

- 1. I do not smoke
2. I have not had a drink of alcohol
3. I eat three balanced meals daily
4. I do not eat products with artificial sweeteners
5. I drink four glasses of milk daily

Recently, I asked my doctor if I could add a regular "enhancer" of malathion to his list of good advice. Unfortunately, this practice.

"When we were at grocery stores we saw that 90 percent of the people we spoke with are against the spraying," Acevedo said. Residents toned signs reading "Crop Profits 100, Public Health 0," and "Malathion Kills" Mothers pushed baby strollers with red stop signs saying "What will malathion do to me?" Assistant City Manager Chris Fries said it's important that residents are community oriented. He said the city attorney's office has been working "around the clock" researching alternatives the city can follow in dealing with malathion spraying. Cousas Jenise Acevedo, 7, and John McGinnis, 7, said they know malathion's a poison that can give you cancer and make you

child.

Lynne Mallya

Introduction to Chapter 7

In a News Release dated May 28, 1986 State Health Director Kenneth W. Kizer, M.D., M.P.H. announced the release of a study which evaluated the effect of the 1981-82 California Medfly Eradication Program on birth outcomes.

The study found no increased incidence of either birth defects or low birth weight from the low doses of malathion used during the program.

Dr. Kizer noted, "This is the first study of its kind that looks at the effects of a large scale aerial application of a pesticide over a major urban area," and he commended Judith Grether, Ph.D., the principle investigator of the study and other staff of the California Birth Defects Monitoring Program for their work.

In the **DISCUSSION** of the report it states, "Non-biological explanations for our findings must also be considered, however. One such explanation is misclassification of exposure status. Potentially, as many as 10-15 per cent of exposed births were misclassified, thus reducing the possibility of finding an effect from exposure."

There are also misclassifications in the outcome data. Congenital anomaly diagnoses were limited to those identified during the newborn period. Only about half of all structural anomalies are identified at birth. In addition, spontaneous abortions and many neurological and endocrine conditions could not be studied. These limitations should be kept in mind when interpreting the present results."

State Health Director Kenneth W. Kizer stated in his News Release, "Although the investigation has the definite advantage of a large number of babies studied, the results must be viewed with some caution because it was not possible to precisely determine the extent of exposure to malathion in individual cases."

The state uses Dr. Grether's report and Dr. Duncan Thomas' (unpublished) report as the two studies which supposedly prove the safety of aerial spraying of malathion over urban populations. However, after reading Dr. Grether's report and Dr. Thomas' report, the reader will find that both reports have data gaps.

Dr. Jorge Mancillas of University of California Los Angeles critiques Dr. Thomas' report (Titled: ANALYSIS OF OUTCOMES OF PREGNANCY IN RELATION TO MALATHION SPRAYING) on the following pages. His conclusion: no self-respecting journal would publish Thomas' study as it now stands.

As the Editor of this book, I ask you the reader, why is the State holding up Dr. Thomas' report as an example, (with all due respect to Dr. Thomas) when there are so many other published reports that cast a damaging eye on the use of malathion to living beings?

In the **LOS ANGELES READER**, dated March 2, 1990 an open letter appeared to Dr. Paul Papanek, Chief Los Angeles County Toxics Epidemiology Program. The letter was from David Steinman, an elected member of the National Academy of Sciences. He is also author of *Diet for a Poisoned Planet*.

In this letter to Papanek, Steinman states, "You may dismiss this as anecdotal evidence. But I have to bring to your attention, doctor, that here in Los Angeles County, Shannon Brooks, a certified childbirth educator and associate director of the Gentle Birth Center Medical Group in Glendale-whose staff includes physicians, nurses and midwives-reports that there is something quite suspicious occurring in their spray area.

Most of their clients are from an area under an intense three week spray schedule. She cautions us that their study is very limited. Yet, in a period of about three months, they have had twelve miscarriages occur in the first trimester of pregnancy compared to previous years in which nine such first miscarriages would occur over an entire year. They have also seen a large increase in threatened pre-mature births. ...In the same three-month period, the clinic has experienced two premature births and six threatened premature births. This compares with only one premature birth in the last two years."

**A COMMENTARY ON DR. DUNCAN THOMAS' REPORT-
"ANALYSIS OF OUTCOMES OF PREGNANCY IN RELATION TO MALATHION SPRAYING
IN A COHORT OF BAY AREA PREGNANCIES MAY 1981 TO SEPTEMBER 1982"
BY JORGE R. MANCILLAS, Ph.D.**

EDITOR'S NOTE: Dr. Jorge R. Mancillas, Ph.D., of UCLA School of Medicine, Department of Anatomy and Cell Biology & Brain Research Institute questions the validity of the paper presented by Dr. Duncan Thomas of USC regarding birth defects and the aerial spraying of malathion. The following is a direct quote by Dr. Mancillas after he reviewed Dr. Thomas' paper:

"The study by Duncan Thomas is presented as an analysis of the outcome of pregnancies in 3 Kaiser facilities in the San Francisco Bay Area during the period when malathion was sprayed. The first thing that must be noted is that, to determine the incidence of anomalies at birth, the author did not carry out physical examinations of the women or their babies but relied on what was reported on hospital records. This was supplemented by additional information obtained through questionnaires. Furthermore, their analysis was restricted to specific outcomes, such as still births and spontaneous abortions, and to specific anomalies. I should point out that only half of all structural anomalies can be detected at birth, and that they did not examine long term effects or effects on the endocrine, visual or nervous system, when it is the last two that seem to be the most vulnerable to the actions of malathion.

The central problem with this study, though, is that, although they went through great lengths to determine the location of the subjects' residences in relation to the areas where malathion was applied, they did not measure actual exposure levels of the individuals involved. This should be done by determining the levels of malathion in their blood or malathion metabolites in their urine. Without that data, any talk of "exposure levels" is at best a guess as to the "relative chance of exposure."

That is, people that they refer to as receiving higher exposure, can at best, be considered to be at a higher risk of exposure because their place of residence was located in an area that was more heavily sprayed. But they do not know how much malathion any individual considered in the study was actually exposed to, whether by inhalation, dermal exposure or ingestion. The only way that this can be established is by analysis of blood and urine samples soon after exposure. This can be strengthened by measuring the levels of the enzyme cholinesterase, which is inhibited by malathion.

In spite of all these problems that would tend to hide any adverse effects of malathion, the study reports a statistically significant association between "exposure" (which is really risk of exposure) and gastrointestinal anomalies. They also report "weak associations" with spontaneous abortions, still births and various "reportable anomalies." They claim, however, that the latter were not statistically significant. And herein lies the second flaw of the study. When they report that a higher percentage of those in the areas that were more heavily sprayed displayed a particular defect, but that the percentage difference is too small to be significant, they do not know if that relatively small number of subjects actually represents 100% of those that were actually directly exposed to malathion, and had high levels of the pesticide in their blood. They simply did not collect that information, and without it, to dismiss the observed correlation by diluting the numbers in the total population of their area represents poor judgement. I think a more responsible course would be, in the absence of the necessary data, to take those observed correlations as suggestive and indicative of the need for further studies.

A third problem is that they took in consideration "confounding" factors. When trying to establish whether an agent has any toxic effects at all, this is necessary. For example, when trying to determine whether cigarette smoking causes damage to the respiratory

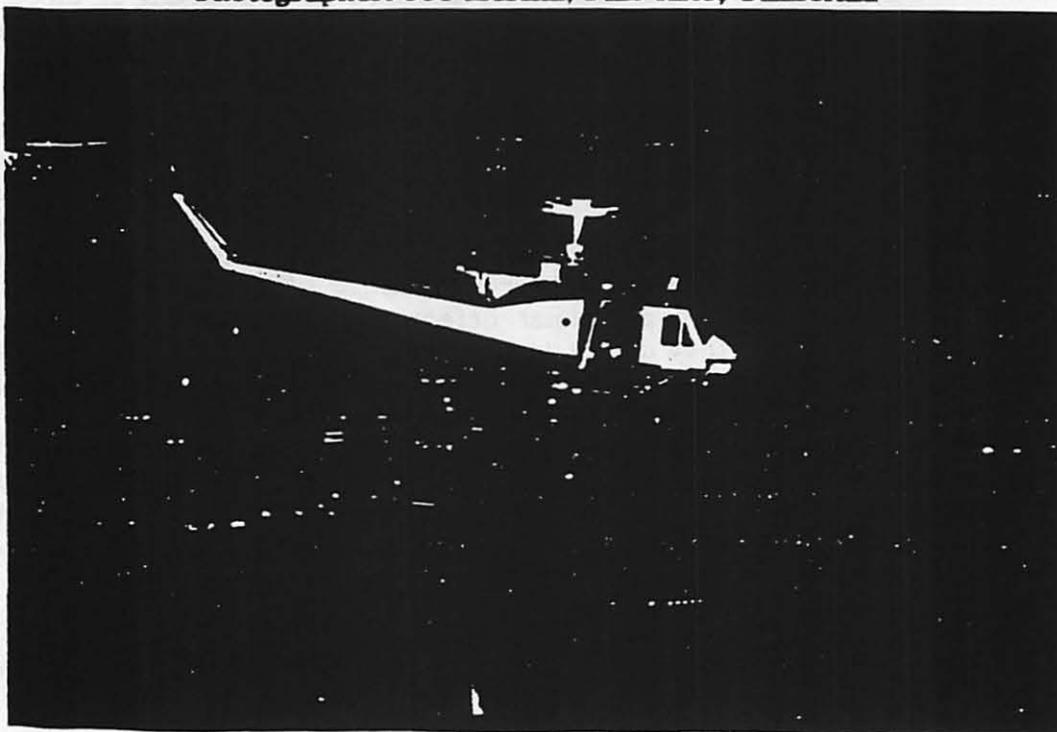
system, the fact that a patient lives in a highly polluted environment, would be considered a confounding factor. However, once it has been established that both have a negative effect, they can be considered additive or at times they can even be synergistic. Since malathion is known to be toxic, some of the factors that they list as confounding factors could, in my view, be additive or synergistic. That is, they could increase the risk of adverse effects of malathion.

In my view, to conclude that this study in any way proves that the spraying of malathion on urban areas does not result in any adverse health effects or that it does not affect the outcome of pregnancies is totally incorrect. The study is basically unsound. It tries to correlate the levels of exposure of the ground in some residential areas, with a restricted set of anomalies in children born of mothers whose residences lies in those areas. They did not determine the actual levels of exposure of pregnant women, with the outcome of their pregnancies. They diluted the significance of the negative effects they did observe by lumping together a whole group that most likely contains people that were exposed to malathion and some that were not, simply on the basis that they lived in the same area and on the assumption that the ground around their residences had contained the same amount of malathion. But they have no idea of how much they were actually directly exposed to the substance, and how much of it entered their body by any of several possible routes.

I do not know if the report has been submitted for publication to a peer-reviewed journal. I personally do not think any respectable journal would find it acceptable for publication as it is."

Evergreen's Bell 212 on spray run; medfly war was fought at night over 1,300 urban square miles of northern California in 1981.

**Photo from book: "Lift Is Where You Find It," by Joe Stein
Photographer: Joe Melena, Palo Alto, California**



Introduction to Chapter 8



According to Russell Jaffe, M.D., three federal agencies share the responsibility of making sure that the environment and food supply are safe. Experts agree that the existing regulatory process has problems.

Senator Nicholas Petris authored the Birth Defects Bill which will require the manufacturer to test every product. Petris stated, "If the scientists find that the chemicals they are putting out are dangerous to children, and cause birth defects and so forth, we are going to make them take it off the market."

Under Senator Petris a review was written by Bruce Jennings regarding the California Department of Food and Agriculture pesticide registration process. The review documents how agency practices have subverted legislative mandates, including a basic tenet of this age—the public's right to be informed about hazards to their health.

Toxicologist Brian Dolan, (M.D.) wrote an article, titled, "Shock Troops of the Toxics War." In this article Dolan tells the story of California Farmworkers and their long, lone battle to fight for not only their health, but our health as well, in the fight against pesticides.

In an interview with the Editor, Cesar Chavez states he has fought the pesticide battle for 30 years. He claims the only way to get big corporations to stand up and take notice is through boycotting products.

Through Chavez's long battle he has come to the conclusion that electing certain politicians or breaking certain politicians will not affect the goal to reduce pesticides. Chavez believes the only effective way is through boycotting products!

Robert van den Bosch, author of **Pesticide Conspiracy** stated, "...as I studied the documentation, it seemed clear to me that the University (California) was very much a full and willing partner with agriculture and the agrichemical industry in the evolution of this instrument (CEFAPP) designed to maintain the pesticide status quo and thereby thwart the integrated control program being developed by many of the University's most dedicated and innovative researchers."

On a radio talk show, Molecular Biologist Paul McClain, talked about pesticides and the law... "...under Section 18, the Emergency Exemption, it says, "When the applicant, (in this case the state) files for exemption, they must include with the original application, all of the data, supporting their conclusion, that the use of this pesticide will not pose any unreasonable risks to man or the environment and the use of the pesticide will not cause any adverse affects." (Editor's Note: According to the literature I have read the state has never proven malathion safe)!

The talk show host asks Paul McClain a question: "What data did the state supply?" (showing malathion was safe) ...McClain's answer: "As far as we know, none, because none exists!"

16 MILLION AMERICANS ARE SENSITIVE TO PESTICIDES

Three federal agencies -- the Food and Drug Administration, the Environmental Protection Agency, and the United States Department of Agriculture -- share the responsibility of making sure that the environment and food supply are safe.

Experts agree that the existing regulatory process has problems:

- The standard FDA monitoring tests detect only half the pesticides currently in use. There is little data on where pesticides are used and by whom. As a result, there is little knowledge about human exposure to pesticides.
- Only 10 percent of the pesticides on the market have had a complete health hazard assessment, according to the New Jersey State Department of Health. For 38 percent of the pesticides, no toxicity information is available.
- The system is slow. Laws require "old pesticides" to be reevaluated, according to modern scientific safety standards. At the current pace, it will take a decade or more to review pesticides now being used.
- Even when a pesticide is targeted for removal, it takes four to eight years to pull hazardous pesticides off the market.
- Regulatory law is outdated, because it is based on old, outdated science. Pesticides are only being tested for their effect on carcinogenicity and fertility, not for their impact on the immune system.
- Pesticides that were in use before 1977, however, have not undergone testing for carcinogenicity and fertility effects. They still continue to be used.

Alternative methods for pest control are available for both individuals and for agriculture. Individuals can use:

- Herbal Repellents such as cedar and certain natural herbs, spices, and oils that are repugnant to pests.
- Adhesive Pest-Traps based on the old-fashioned fly paper - strips with the added feature of entrapment.

• P R E S S R E L E A S E •

SERAMMUNE PHYSICIANS LAB 11100 Sunrise Valley Drive, Reston, VA 22091

Contact: Russell Jaffe M.D., Ph.D.
(703) 758-0610 (800) 533-5472

**EDITOR INTERVIEW SENATOR N. PETRIS
ON PESTICIDES AND THE BIRTH DEFECTS PREVENTION ACT of 1984,
AS WELL AS THE AERIAL SPRAYING OF MALATHION IN LOS ANGELES, ETC.**

SEN. PETRIS: I have done a lot of work in the pesticide field related to agriculture, and of course I run into a lot of "drions," "dieltrin," "endrin," and others, but I haven't done much on the malathion (urban) problem, but maybe I can answer some of your questions.

EDITOR: This morning I was just going through a book titled, **POISONING PROSPERITY, THE IMPACT OF TOXICS ON CALIFORNIA'S ECONOMY** and you are mentioned. This particular section, (page 63) stated you authored the **BIRTH DEFECTS PREVENTION ACT of 1984...** I will just quote, "This 1984 statute, authored by State Senator Petris, requires the Department of Food and Agriculture (CDFA) to fill the health data gaps in the agency's records for agricultural chemicals registered for use in California. Although certain health data is required prior to the registration of a pesticide, the Act requires additional testing of pesticides for long term chronic toxicity and reproductive effects. Manufacturers of the pesticides must supply the missing information or face cancellation of the registration. The pesticide then could no longer be used in the state."

It doesn't seem that the state is really following through regarding the above bill and aerial spraying of malathion."

SEN. PETRIS: That has been my complaint for the last 25 years.

EDITOR: There is a Paul McClain, a molecular biologist, down in L.A. who is saying that the EPA gave the state the right to spray malathion on L.A. and surrounding cities, but there is a flaw

SEN. PETRIS: Let me tell you about the most recent episode I have had in trying to 'prod' the state along into doing what needs to be done. First, the passage of the bill on BIRTH DEFECTS required an enormous battle. Just by way of background...the first people to come in and oppose it was the Department of Food and Agriculture, and they are just a front for the big chemical companies, and the guy in charge of...I forget his name Van Dam or Von...Dam..he is no longer there..as a matter of fact, he kept saying, "Look, you can take my word for it. don't you trust me..we are going to do this and this and that." I said, "I trust you, I don't trust the tradition and track record of the department, secondly, you are not liable to be around to go around when this law goes into effect and we need to monitor and enforce it. You will probably be in Washington or somewhere else"..sure enough, not long after the bill passed, he was gone. So, I said, "This is not a little personal agreement over a cup of tea, between two individuals, this is institutional and it has to be written into law, not left up to your discretion or anyone else's." Anyway, he actually went around the state stirring up the farmers, and telling them what a horrible threat this was to them.

I saw it in the publications up and down the Valley. I saw reports on his speeches...then he would come to me and he would say, "Look, you have a constituency and I have a constituency, and I have to tell you...the farmers aren't going to stand for this..they are very upset about it." In the meantime he was the one that was doing the stirring up...

When I talked to farmers, to growers, my approach was..."I am really not going after you...you are just a tool in this thing....you are being used by big chemical companies as a shield. against the act, by way of any kind of reform. You are not a chemist. You are out there growing crops, and your mission in life is to improve the production of our crops, and the quality and quantity. So some peddler comes along and he hands you a can of some

poison and he says. "You use this on your crops. it will kill the bugs. and you will have better and healthier crops and you will have more."

So, you say, "Fine". and use it. Then another guy comes along with another one. and pretty soon you have a whole bunch of chemicals. and you don't know what the impact is on any of them. let alone the combined effect when you use them all. You are doing a lot of damage to the soil. to the water and to people. My problem is. not with you, but with the people who put out these chemicals, so why don't you just get out of my way and let me go after them, O.K.?

This BIRTH DEFECTS BILL has to do with the manufacturer's being required to test every product. They are darn lucky we are telling them to test it...the bill should say, "We are going to test it." They are suppose to go to an independent lab and test these products for certain properties: carcinogenic, and other kinds. They are suppose to send these reports into us. We have our scientists check them out.

If the scientists find that the chemicals they are putting out (the ones sold to you and which you are using) are dangerous to children, and cause birth defects and so forth, we are going to make them take it off the market.

So it is a battle of chemicals. It is not a battle of agriculture. They can come up with alternatives. So just get out of my way and let me go after them. Well, some of them understood that. but most of them have felt so closely allied to the chemical companies. which in turn are owned by the oil companies, that they couldn't distinguish themselves from their role as farmers, without always including the manufacturers of these chemical products. Do you see what I mean?

EDITOR: Yes I do.

SEN. PETRIS: I also talked to farmer's wives, who a few years ago started coming to Sacramento pushing for and against legislation. They always came up to oppose mine. So on this one, I sat down, and said, "How many of you are mothers?" Well, they were all mothers. I said, "Haven't you asked yourself what this thing is all about? Don't you know we have such a tremendous data gap in this state... that we don't what in the hell we are putting out there in the fields, that you're children are breathing or eating, through the products. Your children on the farm are exposed to this more then my kids would be living in the city... I don't have any farms in my district."

So I gave them the same pitch, and by golly they helped. As mothers. they saw the danger. But my big problem has always been to try to drive a wedge between the growers and the chemical peddlers, that reduces the size of the target, and removes the shield and makes it a lot better. I haven't been very successful in that; I have been able to do it only once or twice.

They are always together--and the department, regardless of administration. no matter who the governor is, the department is always headed by a farmer, and his outlook is the same as other growers and his identification with the chemical peddlers is very solid. So my battle has been going on since Governor Pat Brown's days. I had big fights with his agriculture guy. I had fights with Jerry Brown's agricultural head. I had fights with Reagan's and Deukmejian's.

EDITOR: You must be a very strong individual!

SEN. PETRIS: I am one of the few who can do what I am doing, because I don't have farms in my district. If I represented the Modesto area I couldn't touch this stuff. They would run me out of office. We can't look to any of our Valley guys to take the lead of this, that

would burn them up. So it has got to be a city boy who is more sheltered you might say, or more insulated from grower pressure. Yet, I represent a hell of a lot of consumers who are exposed to danger as well.

EDITOR: I have to admire you for your stance. It is a lonely battle sometimes.

SENATOR PETRIS: Thank you. Oh it is, I'll say! Anyway...on this particular bill we pushed and pushed and finally got a reasonably good bill, and they stalled, and fought against it every inch of the way, in the meantime, the big pushers behind the bill, were all the medical people. The California Medical Association, the Lung Association, the Heart Association, the Cancer Society, they swarmed all over the capital trying to help me get the votes. Finally after I had made some concessions, which I was forced to make, or I would have lost the bill in the Assembly Committee; The Department of Agriculture finally came around and supported it.

They have a knee-jerk reaction I guess, everytime they see my name associated with anything having to do with agriculture...it has got to be bad, so they just lock-step and move against it. We did get the bill passed but the fighting didn't stop. It was promptly challenged in court by the chemical people, and they won a point because of a mis-interpretation of one section of it by the administrators. So I had to put in another bill the following year to correct that, which we did.

All the time this fight is going on...they are running to Washington trying to get the national administration to adopt regulations or statutes to pre-empt the field totally at a lower standard level, and thereby wipe out our efforts here.

On many of these health issues California has led the nation. We have had the highest standards of any state, and higher than the federal. So people who oppose it try to say, "Well it ought to be a level playing field because people in California have a competitive disadvantage with people in other states, because their laws are weaker, so we ought to make it one national rule," but the problem with that is, they picked the lowest common denominator for that rule, instead of the highest level. So the fight is still going on right now in Congress every year. I write to the congressmen and urge them to be alert on it- (people from my state)...to be alert for this move, to strip our state of the empowering authority to protect the public and to protect farm workers. Fortunately they haven't been able to do it yet, but they keep trying.

EDITOR: According to Paul McClain, Molecular Biologist- who was on KPFK radio and I quote Paul McClain, "...none of the cities had read the **Code of Federal Regulations**, because they assumed that this was not federally registered, and therefore did not come up under federal registration, well, two things, when they filed for the emergency exemption, the 18, and when they filed the written paperwork for the special local need exemption, in both cases, the EPA says, when you file for these exemptions, you must include the data on which you're basing the conclusion, that no adverse affects will occur. Then it goes on to say, "That the administrator, in reviewing such information, shall use as his guiding principle, the burden of persuasion for registration always lies with the applicant. Meaning, it is up to the state to prove it's safe."

Then they talk about suing the different agencies and Paul McClain goes on to say, and I quote, "We should be looking at all the state "Ag" people, the EPA, for giving that exemption, because, as we can tell now, they were not in compliance, they were in violation of due process, when filing the original application, and for the EPA to have given that exemption, and their O.K., even though the data wasn't there, and it also says, "That if the administrator determines that after granting an exemption, or registration that any adverse health affects occur, he may cancel that registration."

So it seems like the state is in violation. or EPA by granting the state permission to use malathion on a populated area...

SEN. PETRIS: Well. I think they are. Another tactic they use of course. is to say, "You don't need this statute. the EPA already covers this." They love the EPA because it is so darn weak. it is so much in harmony with them; they would love to have the EPA take over everything. That is what Governor Deukmejian did in knocking out OSHA and saying, "We are going to save money, after all, we have a federal statute, let the federal people do it."

Well. hell, there is a whole string of carcinogenic chemicals that are manufactured in California. over which the feds have absolutely no supervision, because those chemicals are not in the statute. It is in our statute in great detail, and we had at that time experienced inspectors who could go in and check these things out, and know what the danger was. monitor it, and do something about it...with enough authority in the law. The feds don't even have it on their danger list. So..many chemicals are covered by the California statute, but not by the federal. I don't remember where malathion comes in. you may want to get a hold of the Senate Office of Research Report. we can send it to you...This report was done at my request...I asked the Senate Office Research to look into that very question that you raised. "Why isn't the state doing what it should be doing, or what is the state doing." written by Dr. Bruce Jennings. He has a Ph.D. in this field. He wrote a scathing report showing the dichotomy and the department of health between the scientists. who are top notch. We really have first rate scientists in that department checking all this 'stuff' out, and the administrators and the other branch of the department, who have the last word on carrying out policies. so they cited a lot of instances. in which the scientists said. "This pesticide should not be allowed in California because the company did not supply adequate data to show it is free from these dangers. In other cases, the data indicates that it is very dangerous and should not be marketed. We recommend denial of the registration." The guys over in registration ignore that, and go ahead and issue a registration permit and let them go out and peddle the stuff. That is how bad it is. And this is the mis-administration of BIRTH DEFECTS ACT that we are talking about.

EDITOR: Can't you stop that because it is in law?

SEN. PETRIS: Well...what can we do, you know, we point that out, we raise a lot of fuss, we put the heat on them through publicity...and they come back and have a lot of answers saying, "Well this is exaggerated, this and that..but the evidence is so clear..."

EDITOR: What do we have to do, get a grass-roots organization going?

SEN. PETRIS: Yes, that always helps. So we try to monitor them as much as we can. but it shouldn't even be necessary, the law is there. They opposed the enactment of it, but once it is there they ought to enforce it, instead of that, they subvert it. I call it administrative subversion.

Matter of fact. many scientists quit. they said it was an insult to their integrity as scientists. the morale in their department went way down among scientists. and several of them quit. saying, "What is the point of having this job, if they don't even carry out our recommendations which are based on scientific knowledge, they are not scientists."

EDITOR: When did these scientists quit?

SEN. PETRIS. From 1986 on. all that is in the report. You can reach Dr. Bruce Jennings through my office in Sacramento.

EDITOR: In 1981 when they sprayed Santa Clara area. did you try and stop it?

SEN. PETRIS: Yes. I was one of those opposed to the spraying but there again there wasn't much we could do. except protest. At the time the governor got into hot water because

he wasn't doing enough. The press really gave him a bad time. Now they can look back and see...well, maybe Jerry Brown wasn't so bad after all, because he knew it was dangerous stuff, and he dragged his feet on it, and he didn't want them to spray...and it wasn't until he was compelled by this enormous bombardment from the press and a bunch of other places, that he finally gave them the O.K., but he was against it all along.

EDITOR: Suppose he had said, "No, we are not going to spray." Then a lot of our fruits and crops would not have been transported across the United States. They were going to ban them?

SEN. PETRIS: Yes, but not only that- they claimed there may not be any fruits to transport, because the medfly would destroy them. There is 40 billion dollars at risk here. I can understand that..that is a real problem..that medfly...but there again, between 1981 and this recent outbreak, the Department didn't lift a finger to anticipate another one nor did they get in place, and take some steps to prevent it and be ready when it did arrive. They came under severe criticism for that.

EDITOR: There is a J. Josephson, known as "J.J." who has a San Joachin Helicopter Service in Delano, California. He is on the Pesticide Advisory Board. Would that be conflict of interest?

SEN. PETRIS: Sure would. That doesn't bother the governor. He does that all the time.

EDITOR: He should not be allowed to own the Helicopter Service and be on the pesticide board, should he?

SEN. PETRIS: No, he is in the business! He is biased. No matter how honorable his intentions...it is not fair to him to put him on that job. He has allegiance to not only his own self interest, but to his colleagues in that business. You know, he would naturally tend to think of himself as a representative of that whole industry. I don't know maybe the statute requires that somebody from that industry be on the board, I am not familiar with it. That would have to be checked out.

EDITOR: Could we as citizens of the State of California pay an independent scientist to spot-check drums of malathion (to be aerially sprayed in southern California) for their chemical nature?

The reasoning behind this is... if the malathion that is being used, has in fact been sitting around for any length of time, (or has been exposed to very warm temperatures) it can be changed into malaoxion which is twice as toxic as malathion.

SEN. PETRIS: I don't think there is anything to prevent a private citizen from testing malathion or anything else. There are available, independent research people who would do that actually. I don't see any problem there.

In connection with that helicopter company, many years ago, when I was just getting into this fight, I had a bill that was very modest. It required the farmer to post the fields with a warning notice for the benefit of the employees in two languages, in English and Spanish, that identified the substance they were going to use and instruct them if they got the symptoms of too much exposure, like nausea, vomiting, or whatever, to go immediately to the nearest faucet, wash your body with water, and call a particular doctor. That is all it said. They fought like hell. You would think it was the end of the world! Even the the crop dusters sent a representative to oppose that bill. I sat in committee. This representative of the pilots, along with all the rest of them, apparently have no idea how deadly these poisons are they are dealing with everyday.

It happened that that previous week, a pilot waiting to have his plane loaded with a particular pesticide he was going to be spraying, was fooling around with the nozzle or

something on a barrel: and there was a full barrel of this chemical. This nozzle fell into it. So, he rolled up his sleeve and put his hand into the barrel and retrieved this gadget, (whatever it was), and immediately pulled his hand out. The guy was dead before the day was over.

So I said to the pilot, "I am trying to protect you guys as well as everybody else. You just don't seem to realize what you are dealing with here." Yet, in spite of that incident, they sent a guy in there to oppose this minor little bill about posting. It just doesn't make sense.

EDITOR: Did it go through?

SEN. PETRIS: No, no, it took me 20 plus years to get that passed.

EDITOR: So do they have these signs in the fields now?

SEN. PETRIS: I don't remember which one it was, it was one of the "drins" or andrin", I was trying to put it on the prohibited list, and pointed out at that time the department didn't even have it on the danger list: meaning this chemical is particularly toxic, you have to be extra careful. Not even on the list...They said, well, we don't need a statute, we can do that administratively...and I said, "Well, why haven't you done it? You have been using it for years, what do you mean you can do it administratively...I know you can, but you won't...and without a law you won't do it." Anyhow, that is the kind of fight I have had for years and years on this stuff. They do post the fields now.

EDITOR: I have found there are many studies from the EPA that a senior scientist Gross and many other scientists from all over the world have stated malathion is cancer causing, it also causes birth defects. There has been a lot of miscarriages down in Los Angeles during this spraying, yet the state only gave two studies, saying the spraying of malathion was safe. They kept using these two studies during the Los Angeles City Council Meeting. They are spraying over a million people, and they are going to keep it up. We are going to have another 'Agent Orange' catastrophe on our hands...whereby we are going to have cancer, retardation, birth defects, etc. Many of the environmentally ill people are becoming more ill. They are having to leave town, their own homes, they can't come back, into L.A. This is really getting serious.

SEN. PETRIS: The governor's people claim there is no harm. B.T. Collins you remember in a prior episode, in front of the press, drank a glass full of malathion, and he said it didn't hurt him, he drank it in front of them. This past episode I think he offered to do it again, I am not sure...

EDITOR: Why don't the scientists test to see if malathion is actually in the glass before he drinks it?

SEN. PETRIS: We had a long hearing on Sen Art Torres bill, and I don't know whatever happened to his bill. He is Chairman of the Toxics Committee. He is from L.A. He has lived with that spraying. I don't know whether that bill passed or not, if it does or did, the governor would veto it on the basis of his advisors that tell him, "Don't listen to that, it is safe, it doesn't hurt anybody."

Thank you very much Senator Petris for your most informative interview on these most serious and timely subjects.

REGULATION VS. PRACTICE
A REVIEW OF THE CALIFORNIA DEPARTMENT OF
FOOD AND AGRICULTURE'S PESTICIDE
REGISTRATION PROCESS

Written By
Nicholas C. Petris
Ph.D.
Bruce M. Johnson, Ph.D.
February 1990

Senator Nicholas C. Petris



February 13, 1990

The Senate Office of Research has prepared the attached review, at my request, examining California's pesticide registration process. Even though the Legislature has succeeded in establishing various regulatory measures to protect the public from pesticide hazards, we necessarily rely on regulatory agencies to appropriately implement state and federal laws.

"Regulation versus Practice" provides an important analysis of the pesticide registration process. The review documents how agency practices have subverted legislative mandates, including a basic tenet of this age — the public's right to be informed about hazards to their health.

In recent years, certain scientists with the California Department of Food and Agriculture have endeavored to provide the public with full information regarding pesticide hazards. At the same time, various CDFA officials have undermined the disclosure of pesticide hazards, seeking instead to serve the interests of private industry.

Professionals with a commitment to public health have underscored the importance of an independent state process for reviewing pesticides. While certain persons, most notably the President of the United States, have advocated limiting the state's authority over pesticides, this review illuminates once again the necessity of state regulatory authority. California's scientists, despite pressures to indicate otherwise, may have also identified significant gaps in the U.S. Environmental Protection Agency's regulation of pesticides.

"Regulation versus Practice" provides a compelling argument for the fundamental restructuring of California's regulatory process to assure an independent review of pesticides. The SOR review makes it clear that the state, and especially the Governor, must guarantee that professionals charged with protecting public health are free from the intrusion of manipulative influences in the pesticide regulatory process.

Nicholas C. Petris

California Commentary

Shock Troops of the Toxics War

■ **Pesticides:** Being sprayed with malathion is nothing compared to what farm workers endure. Now, maybe city people will rally to their cause.

By BRIAN P. DOLAN

The helicopters dropping malathion bait in Los Angeles' new skirmish with the Medfly have become a focus of middle-class protest, as reputable scientists raise questions about unknown effects of repeated exposure to small amounts of the pesticide. And still in recent memory is the scare over apples sprayed with Alar, as well as a growing longer-term concern over the use of many chemicals on the food we grow.

While we worry, not without reason, we forget that much of our incomplete knowledge of how pesticides affect humans comes from study of a group far removed from the public eye nowadays—the farm workers. Like many occupational groups working with chemicals, they have been "shock troops," enduring heavy exposure to the pesticides that end up in vastly smaller quantities in our food, air or water.

Pesticides are chemicals that destroy, repel or control pests, including insects, rodents, worms, fungi and weeds, among others. Pesticides are also big business. The United States produces 1.5 billion pounds annually, valued at approximately \$5 billion. About 600 commonly used active ingredients are formulated into roughly 50,000 products, each registered and licensed by the federal Environmental Protection Agency and the various states. About 15 new active ingredients are licensed annually, with hundreds of new formulations.

The basic pesticide chemical is mentioned as "active" on the label and all other ingredients are labeled "inert." Although not harmful to the target pest, the more than 50 "inert" ingredients, according to the EPA, include benzene, chloroform and formaldehyde—all very harmful to humans.

One of the major tasks facing the EPA when it was formed in 1970 was to inventory some 35,000 pesticide products then in use. Virtually no data was available on long-term effects. Today, it's estimated that the majority of pesticides have not been adequately tested. A National Academy of Science report, "Regulating Pesticides in Food: The Delaney Paradox," criticized the EPA's pesticide regulations,

noting that 60% of all pesticides are either known or thought to cause cancer, and that 28 pesticides are particularly hazardous.

In the 1940s, organic pesticides were developed and their use skyrocketed. For two decades, organochlorines, such as DDT predominated. Once they were banned or restricted, the more toxic but less persistent organophosphates, including parathion and malathion, derived from German nerve gas research, became widespread. Initially hailed as the key to increased farm efficiency, their promise hasn't held up.

In 1940s America, 50 million pounds of pesticides were used annually; pre-harvest loss to insects was 7%. In 1978, 600 million pounds were used; crops lost to insects totaled 13%. With less than one-quarter of 1% of the world's arable land, California uses 5% of the world's pesticides. And despite the failure of present pesticide use, we have yet to seize the promise of a new generation of pest control, one based on ecological principles and on maintaining economically acceptable levels of pests rather than rarely possible total eradication.

Most agricultural pesticides used in this country are broadly toxic, including to humans. Many are potential causes of cancer and birth defects. Many have caused neurological and pulmonary disease, skin rashes and other effects on those exposed. The World Health Organization estimates half a million pesticide poisonings annually worldwide, with 5,000 deaths.

With California accounting for 20% of the country's pesticide use, it's not surprising that the state was the focus of a revolt of sorts by heavily exposed farm workers. More than 20 years ago, boycotts by the United Farm Workers, beginning in Delano, led to important concessions, including banning of five toxic pesticides and passage of the Agriculture Labor Relations Act. The strictest controls on pesticides in the nation were passed.

Despite gains in those more liberal times, farm workers now complain that the law is no longer enforced, that laws concerning posting of fields after spraying have been diluted, and that farm workers have the



Los Angeles Times

Farm workers cutting lettuce in the Central Valley.

highest rate of work-related illness in California. Their agenda includes the immediate banning of five very toxic pesticides (captan, parathion, Phosdrin, dinoseb and methyl bromide) and later elimination of other particularly toxic pesticides. They advocate a joint UFW-grower initiative for labeling pesticide residues in fruits and vegetables for sale to consumers.

The last item should strike a chord in all of us. Consumers and farm workers share a similar goal. Less use of toxic pesticides in the fields equals less exposure in consumer produce.

The majority of pesticides have been inadequately tested for safety. Heavy pesticide use has become increasingly ineffective while causing havoc to the environment and human health.

As consumers, we enjoy flawless produce in the supermarket. The price for eradication of cosmetic blemishes may be too high. Perhaps it's time, again, for consumers and agricultural workers to join together for the reduction of toxic pesticides in the pursuit of better health for ourselves and future generations.

Dr. Brian P. Dolan, an internist and toxicologist in Santa Monica has studied farm worker exposure to pesticides

**EDITOR INTERVIEWS CESAR CHEVAZ
ON PESTICIDE ABUSES**

EDITOR: It is correct to say that there are five organophosphates (Parathion, Phosdrin, Dinoseb, Methyl-Bromide and Captan which you are trying to get banned?

C. CHAVEZ: Well, those five organophosphates have changed now because of the pressure we put on the growers. They have started to use less of these particular organophosphates. However, the pesticides they are now using are even worse than the ones we started out to ban.

EDITOR: They are beginning to use more dangerous pesticides?

C.CHAVEZ: Yes. Because of the pressure we brought to bare against Captan they are now using a couple of other fungicides that could be just as bad, if not worse than Captan.

EDITOR: So there are 5 organophosphates that they are using that are worse then the five you originally wanted to get banned?

C. CHAVEZ: No, we wanted to ban 5 pesticides, one of which was a fungicide called Captan, but because of the pressure that we caused by boycotting, the growers are moving away from Captan into a couple of other fungicides, which we are told are just as bad, if not worse then Captan.

For example, the five we targeted four years ago--they are now substituting other pesticides. We are told by Marian Moses, our advisor, that some of these other pesticides are worse than the ones we originally tried to ban. What we are really saying now is that we want everything banned which causes birth defects and cancers.

EDITOR: In other words, you want a total ban on all pesticides?

C.CHAVEZ: That would be great...No, not really, we are saying that we want immediate ban on all pesticides that cause cancer and birth defects...we want those banned immediately. We are moving to that position from the original one because they are now substituting different pesticides that are also carcinogens and they are also teratogens. They are using the new pesticides due to the pressure we put on them about the original five we wanted to ban.

EDITOR: Do you have first hand information on your farm workers that have been poisoned with organophosphates?

C.CHAVEZ: Yes. A lot of them have been poisoned. Very concretely we can point out the damage of the pesticides on the work force and their children. We have more difficulty in pin-pointing the damage to the consumer, although we know that they are ingesting pesticide residue from the grapes. The grapes are contaminated, but we don't have that kind of data on the consumer which we have on the work force.

EDITOR: Do you have any information on the farm workers in 3rd world countries that are fighting to ban the pesticide issue...to ban the organophosphates?

C.CHAVEZ: The movement there is just getting started. However, they have a lot of problems. I don't think they are anywhere near getting things banned yet.

EDITOR: What would you like to say to us on how we can stop their spraying of Malathion in California and elsewhere?

C.CHAVEZ: I have a couple of ideas, Malathion is only the beginning of something much more dangerous which is coming our way because when Malathion doesn't do the job of

eradicating the Medfly, then they will go to more toxic pesticides and more cancer causing pesticides which will effect the population. It will be much worse than the effects of Malathion. That is one of the dangers. The other thing is...is that we are not going to get rid of these pesticides through public policy bodies...we are the victims of their risk/benefit assessment.

In other words, they are always saying "Well, we have to consider the risks, but also the benefits of pesticides." In that shuffle we always take the risk and the pollutor always takes the benefits. So 'public policy' (from what I have seen in all this 30 years of struggle) is not really going to help us. I am proposing that we need to do public action.

To go to the politicians to try and get the growers to stop from polluting the earth and poisoning the workers and threatening the health of the consuming public... to do that... is like a step removed; I am advocating we go directly to those corporations and vote against them. This struggle is not in electing a politician, or in defeating a politician. From what we have seem it doesn't not work. My suggestion is that we go the 'market place' and we vote there. We boycott their products because that is going to bring results rather quickly.

For instance, in 1965 we demanded the banning of DDT in the production of grapes. We were told it was impossible, that they couldn't do it because they couldn't grow grapes without DDT or DDE or Aldrin, or Daldrin, and other related DDT poisons. And sure enough in 1970 there was a boycott which has worked well. They were so anxious to sell their grapes and get the boycott off their back, that they signed our labor agreement. They signed and agreed to not only ban just DDT but related poisons. Again in 1975 we got them to agree (because of boycotts) to give farm workers in California the right to collective bargening, and also to do something about pesticides.

We think of public policy as something almost impossible to accomplish, but we can go elsewhere and that is public action- it is called the 'market place.' By boycotting those products, I think that will give us direct action, and I think give us some results.

EDITOR: So you are suggesting we boycott their products?

C.CHAVEZ: Yes, indeed. I don't think we are going to lick environmental problems with public policy.

EDITOR: You mean with politicians?

C.CHAVEZ: Right. I think it is going to be done through public action.

EDITOR: How do we get this message out to the public.

C.CHAVEZ: Boycotts work very well. We just need to make sure we are boycotting the right product at the right time and so forth. We have been boycotting one thing or another for almost 30 years and that is the only way we have ever made any progress. We haven't made progress any other way.

EDITOR: Do you have any other ideas for us on this subject?

C.CHAVEZ: Well, yes... **boycott GRAPES**, of course!

EDITOR: Of course! So, basically what you are saying is that the politicians can't do it for us. We have to take action ourselves.

C.CHAVEZ: Right.

EDITOR: Thank you very much Cesar for your valuable information and time you have spent with us today..

THE PESTICIDE CONSPIRACY

by Robert Van den Bosch

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SCIENCE FOR SALE

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In 1970 the agri-chemical industry ran up the full hurricane flag as the pesticide tempest gathered force. The national organization apparently decided that the environmentalists were a real threat to the status quo and that it was time to bring in the heavy artillery and rescue the day. Conferences were held and a battle plan was drawn. This plan, which somehow fell into my hands, is too complex and lengthy to detail, but among its facets was a strategy for deep penetration of the scientific societies and the land-grant universities and utilization of those agencies to help tell the "truth" about pesticides.

I am aware of two apparent products of this campaign. One is called **CAST**, an acronym for Council for Agricultural Science and Technology; the other (now deceased) was called the California Educational Foundation on Agriculture and Food Production (**CEFAPP**)

The purported goals of each organization seem noble. CAST's purpose is "to increase the effectiveness of agricultural scientists as sources of information for the government and the public on the science and technology of agricultural matters of broad national concern." CEFAPP stated its purpose as "to begin, and continue, a vigorous educational program on the role of chemicals in modern agriculture and on their relationship to the environment and the demands of the public for attractive, safe, and wholesome food."

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These are high-sounding objectives, but a peek beneath the scab causes one to wonder just what they mean. Take CAST, for example. I first heard of this group through a letter that its organizers mailed to ag-university administrators in 1972. The letter lamented the lack of input from agricultural interests into the legislative and executive branches of government in matters concerning the impact of agri-technology on the environment. Instead of agriculturalists, the letter complained, consumer groups and persons who do not represent agricultural interest were the principal sources of information on these matters. It further stated that the non-agricultural public, in being concerned about agricultural impact on the environment, received its information all too often from persons with little real understanding.

The letter seemed a reasonable argument for the rational inputs by agri-technologists into government and did not arouse my suspicions until, in a late paragraph, there was a suggestion that agricultural scientists take their case to the the agri-business industry and solicit financial support.

One wonders whether signals had been sent out that such seed money would be available for the asking. Whatever the case, CAST has had excellent success in getting industry support to help launch its operations. A glance at its list of supporting members reveals such agri-chemical company names as Amchem Products, Inc., American Cyanamid Company, CIBA-GEIGY Corporation, Dow Chemical USA, E.I. du Pont de Nemours & Co., Eli Lilly and Co., Fike Chemicals, Fisons Corp., Montrose Chemical Corp. Thompson-Hayward Chemical Co, and Woolfold Chemical Works, Ltd. Organizations supplying grants in 1974 included Hoffman-La Roche, Inc., Merck & Co., Inc., and Monsanto Co.

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In fact, the agri-business firms supply about two thirds of the operating capital that helps CAST inform "the government and the public on the science and technology of agricultural

matters," including pesticides such as aldrin-dieldrin, chlordane, heptachlor, and presumably others. For example, during the 1975-76 fiscal year agri-business contributed 64.7 per cent CAST'S \$116,000 budget.

Above and beyond its strong identification with and financial reliance upon agri-business, what is most disturbing about CAST is the open identification of a number of scientific societies with its operation. In fact, listed on the CAST letterhead, which originates out of the Department of Agronomy at Iowa State University, are the following scientific societies, councils, and associations: American Forage and Grassland Council, American Society for Horticultural Science, American Society of Agronomy, American Society of Animal Science, Association of Official Seed Analysts, Council on Soil Testing and Plant Analysis, Crop Science Society of America, Poultry Science Assn, Society of Nematologists, Soil Science Society of America, and Weed Science Society of America. Recently CAST has bagged two additional plums, the influential Entomological Society of America and the Phytopathological Society of America. The hypocrisy of the CAST operation is that it flaunts its "scientific" members on its letterhead but judiciously avoids citing its corporate supports, who plunk down the bread that makes the thing go. The tragedy of CAST is that it has sucked in thousands of good-guy ag researchers to "represent agricultural interests," while in truth they are primarily serving to enhance corporate greed.

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CAST'S MEMBER "scientific" councils and societies are so genuinely involved with the activities, products, and interests of agri-business, that neither their officers nor the majority of their members appear to discern that they are being used to further corporate interests. I do not mean to imply that these scientists are lacking in intelligence or integrity but, rather, that most, as gentle, narrowly oriented, sincere people, apparently never dream that Machiavellian minds are at work to use them.

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As a scientist, I can understand the desire on the part of my peers for the public to know the truth about technical issues, because that is exactly my motivation in speaking out on the pesticide issue. I also know that much distortion has been uttered or published on agri-technical matters. However, the misrepresentations have occurred on both sides of the issue, and it is up to the individual to judge what is right and what is wrong in these cases, and individually to seek a vehicle to express his viewpoint. On the other hand, it is I think completely improper for entire scientific societies to line up in an industry-subsidized club to support pesticides, growth hormones, chemical fertilizers, or what have you and promulgate a pro-agribusiness party line that all is well with agri-chemical practice, while condemning as fools or liars those who dissent. This, in effect, is what the member societies of CAST are doing, and for them to do this is a corruption of the scientific ethic that is both disillusioning and frightening.

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The genesis and modus operandi of CEFAP was as disturbing as that of CAST, and being so close to home, it was a source of deep personal apprehension and revulsion. The prime mover of CEFAP was the then California Farm Bureau Federation president, Allen Grant, Ronald Reagan's appointee as president of the California Board of Agriculture, ex-officio regent of the University of California, political conservative, farmer-cum-land-developer, and staunch proponent of agri-business and the pesticide status quo. Subsequently, Grant was elected president of the National Farm Bureau Federation, and who knows? if RR had won the presidency, Mr. Grant might have been our Secretary of Agriculture.

One can make his own assumptions as to where Grant got his cue to launch CEFAP, but it is interesting to note that the foundation got much of its seed money from agri-business (the agri-chemical industry), just as did CAST, and that its originators and/or initial steering committee, in addition to Grant, included such folks, as Ivan Smith, Lobbyist for the Western Agricultural Chemicals Assn; Mel Wierenga, sales executive with Ortho Division, Chevron Chemical Corp.; Robert Woodward, of the Agricultural Chemicals Divison, Shell Chemical

Co., Max Sobelman, president of Montrose chemical Corp....

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This was some kind of lineup to plan a campaign to "begin and continue a vigorous educational program on the role of chemicals in modern agriculture, on their relationship to the environment and the demand of the public for attractive, safe, and wholesome food."

The formative meeting of CEFAFP were attended by representatives and proponents of the agri-chemical industry and by agriculturists and University of California personnel. I was aware at the time (1970) that an educational foundation on agriculture and food production was in the gestation state and that it would emphasize telling the "truth" about agri-chemicals. I also knew that university personnel were involved, but the names mentioned were not of researchers such as R.F. Smith, C.B. Huffaker, V.M. Stern, H.T. Reynolds, K.S. Hagen, L.A. Falcon, and others deeply concerned with the development of integrated control; instead they were university administrators and extension personnel who had been largely active in rationalizing prevailing pesticide use. The mention of such names as Grant, Jukes, Jones, Hazeltine, Woodward, Wierenga, Ivan Smith, and Jack Pickett in connection with the proposed organization was a further indication that this educational foundation would be dedicated to preserving the status quo.

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I would be wrong to ascribe political motivations to a group, ostensibly concerned with scientific matters, simply because of their political leanings or appointments. But these people have tipped their hand by repeatedly implying that the environmental movement is largely a cover for leftist and radical groups to further their objective of destroying the country's political and economic system.

The following excerpts from the minutes of CEFAFP's formative meeting, held on April 20, 1970, at the California Farm Bureau Federation headquarters, in Berkeley, and attended by agri-chemical industry, agriculture, and University of California representatives, reflect the frightening political overtone of this organization.

...the leftist and radical groups in the U.S. have grasp (sic) the opportunity to sue public concern with environmental quality to promote and further their objective of destroying our system of business, industry, and government...

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...Professors of liberal and leftist philosophies at universities and colleges across the country seem to be able, without fear of chastisement or loss of promotion, to make irresponsible public statements and claims, while professors having a more conservative philosophy and supported by scientific facts are denied the same "Academic Freedom" by their administrative superiors.

The authors of these incredible remarks then went on to suggest that agriculture, agri-chemical industry, and university (of California) interests should develop an aggressive, positive, factual public-relations and information program regarding agri-chemicals. Evidently they had their own ideas about what constituted facts and how to go about presenting them!

These people dragged the politics of pest control into the gutter on the right-hand side of the street, and in doing so called those who ask questions about the impacts of agri-technology some very dirty names.

CEFAFP never accomplished a thing, and it met a well-deserved end in the autumn of 1974, when it passed the baton to the Council of California Growers, a major agri-business PR, lobbying, and political-pressure group. However, despite its lack of impact and its early demise, CEFAPF still worked a corruptive evil. Most disturbing to me was the success of its instigators in associating this ugly founding with the University of California. It seems that, like CAST, CEFAPF needed credibility, and what better banner to wave than

that of a respected institution such as the University. CAST had a whole string of scientific societies to give it respectability, so CEFAFP apparently set out to get respectability too. The vice-president for agricultural sciences at the University of California accepted membership on the CEFAFP board of directors, as did the prestigious chancellor emeritus of the University's Davis Campus. Furthermore, an old acquaintance of mine, a university agricultural-extension specialist, was among CEFAFP's founding group and was later elected one of its officers. I know this man very well and respect his honesty and personal integrity, although I differ with him on many issues regarding pesticides. I prefer to believe that he was ordered by university brass to partake in the CEFAFP evolution, for I cannot believe that he would willingly run with a pack that considered me and many other persons concerned about pesticide use as being intent upon "destroying our system of business, industry, and government."

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As I probed the University's involvement in CEFAFP I became increasingly affected by a feeling of revulsion. At first I had thought that the institution's role was largely symbolic, something forced upon it by the political reality of living with Ronald Reagan and his elitist, pro-establishment credo. But as I studied the documentation, it seemed clear to me that the University was very much a full and willing partner with agriculture and the agrichemical industry in the evolution of this instrument (CEFAFP) designed to maintain the pesticide status quo and thereby thwart the integrated-control program being developed by many of the University's most dedicated and innovative researchers.

...My reaction to the role of the University of California in the CEFAFP affair was also emotional, but in this case, involving as it did an institution, it was one of revulsion and sadness. Revulsion because the University played on the side of an organization dedicated to the protection of a vested interest, at the expense of society. In this, the University not only helped cheat society but played a double-dealing game with its own research scientists. There is no place for this sort of thing in a great academic institution.

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My sadness came in finally recognizing, after rejecting ample prior hints and warnings, that mother University, whom I have always loved and revered as a virtual saint, had indeed been sleeping around with some rather scruffy dudes.

It is terribly frustrating for someone small and isolated to stand by and witness the corruption of a beloved institution. Mostly, one can only watch helplessly while immensely powerful groups and individuals violate her.



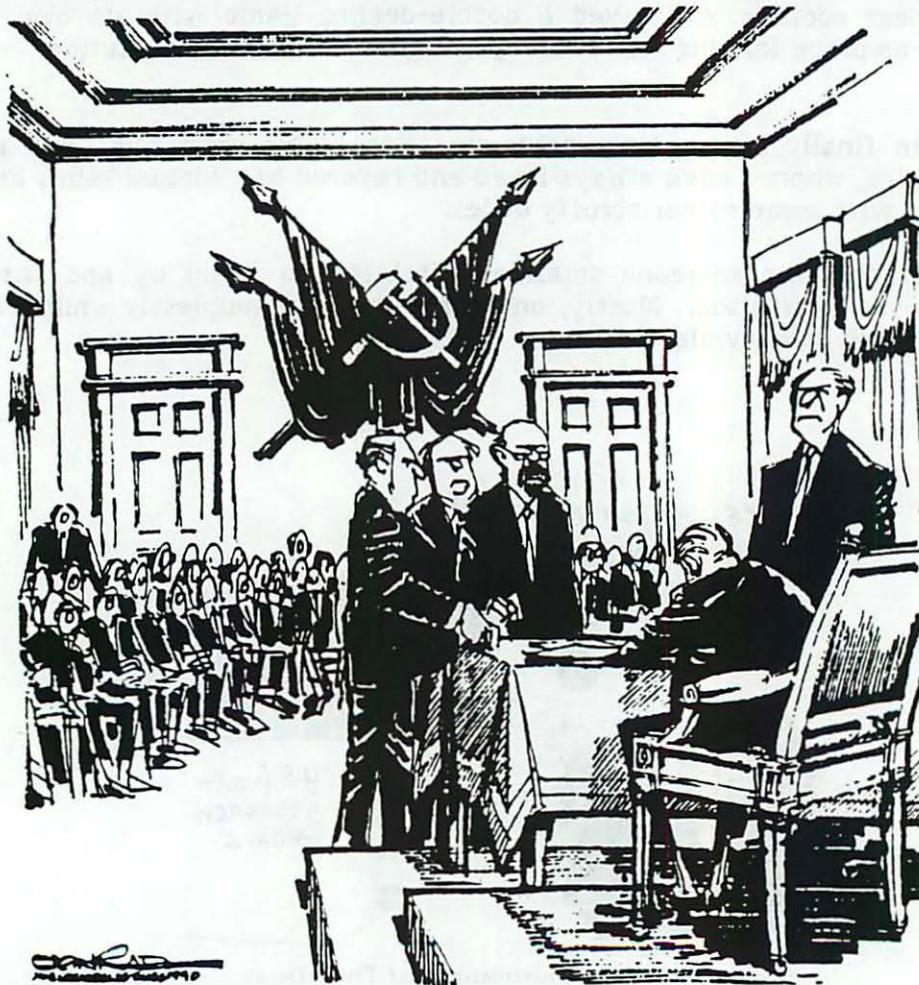
Illustration from Fluoridation and Truth Decay

KPFK RADIO—"THE WIZARD SHOW"
(GUEST) PAUL MCCLAIN, MOLECULAR BIOLOGIST
INTERVIEWED BY
(HOST) BOB NEILSON
AND TELEPHONE CALLERS

PESTICIDES AND THE LAW

BOB NEILSON: Lets review that legal status. We promised you we would. The understanding that we have, that you told us last time, was that malathion could only be sprayed under EPA standards, if there was an emergency situation, and its under this act of emergency that this has been going on.

PAUL MCCLAIN. Yes. This is an amazing issue to me. Again, I am a scientist, not a lawyer, but in doing my research, because I don't like to be embarrassed, I like to do my homework and 150% and know where I am with it. When you look at, first of all, the regulations which the state claims are being exempted, so you start thinking about the fact that the federal government back in 1910 wrote the Federal Insecticide, Fungicide, Rodenticide Act which is the law (these are the federal laws) and the reason was they realized that the people could be harmed by the use of pesticides, fungicides, any of these poisons. So, they wrote this enormous act, they then came up with the Environmental Protection Agency, this whole agency, with huge amounts of money, to protect us. They wrote the national environmental policy acts, they did all kinds of work from the turn of the century, to protect people from toxic substances, so it's just common sense, it doesn't make sense, that there would be any part of that legislation, which could be superceded by any kind of emergency, that would justify putting human beings at risk. That was my



Вз тиз Рэпле, ит ордэ то форм а мотэ perfect union...

assumption. So I went back, because the emergency declaration says, under Section 18, of the FIFRA, The Emergency Exemption, what the state has said, that interpretation is, and the verbage is, "The administrator (the head of the EPA) may exempt any state or federal agency from any provision of the FIFRA. So they took this as cart-blancche, that they could do anything, well...

FLOREANO: That gives the head of the EPA tremendous power over life and death.

PAUL MCCLAIN: Not only the EPA but as we will see, lets just go ahead and talk about ...then the other exemption, is the special local need exemption. 24C of the FIRA. Says, "That the administrator may authorize any state or federal agency to register a pesticide for a special local need within that state. Because, remember a pesticide has to be registered. So, not only does the administrator of the EPA have the power, but he can just give that power to a state, the governor, to the medical people, whoever, if they determine that a special local need exists and they want to use a pesticide, which has not undergone the full safety inspection, and they want to use it for special local need, they can do so.

FLOREANO: So the responsibility has been delegated to a local administrator?

PAUL MCCLAIN: Right. To the state. So the state says, "We have the right to register this pesticide and we can use it under 18 and 24C. Well, that doesn't still quite make sense to me, that the criteria, of being responsible for causing health effects, could be superceded by any economic emergency. So I spent about a month going to the law library and pulling all this stuff up and reading it.

Well it's real interesting, because under 18, the Emergency Exemption, it says, that, "When the applicant, (in this case the state) files for the exemption, they must include with the original application, all of the data, supporting their conclusion, that the use of this pesticide will not pose any unreasonable risks to man or the environment and the use of the pesticide will not cause any adverse affects.

BOB NELSON: What data did the state supply?

PAUL MCCLAIN: As far as we know, none, because none exists. Now, when I took this to a couple of city attorneys after asking them on what grounds they had filed their law suits, how much was medical?...and they said, "none." I was absolutely amazed, because the whole issue that was raised was the health effects, and we thought in our testimony, that the state, or the city governments were asking for data, which supported the contention that yes, it is potentially harmful, and on that grounds we are asking the state to stop it.

BOB NELSON: Let's get into this next area which is the issue of how people are fighting malathion? I have heard some interesting suggestions on a very individual basis and I know that we have individual listeners who take individual solutions and believe that is the end of their problem. People who protest who say we are going to protest by covering our fruit trees with plastic, and so they can't kill the fruit flies on them anyway. I am not endorsing that..action. It is one example of a solution. Another solution, the City of Pasadena has passed an ordinance outlawing the altitude to which the helicopters are flying. Nobody is dealing with the medical issue. Why is it lawyers are preferring to deal with everything other then the medical issue?

PAUL MCCLAIN: My experience, when I called the attorney's, and presented this information, one of the city attorneys in fact, looked at what I showed them in the Code of Federal Regulations. Remember, we are saying Federal. If the state registers a pesticide, then it becomes a state registry, and federal has nothing to do with state, so they assumed, that there was no federal juristriction, but it's interesting, that when you read, the code, 24C, says, "When the state registers the pesticide, it is now considered to be a federally

registered pesticide, and accordingly, is now considered to be under all the mandates, of any existing federally registered pesticide, including the cancellation, modification or suspension of that registration, and the city attorney looked at that, and he said, "Paul, this changes everything." This means, that these exemptions aren't worth the paper they are written on." This was about two weeks ago."

FLOREANO: Is this the City of Los Angeles ?

PAUL MCCLAIN: Well, I would rather not say. Well, I have yet talked to a city, who.. none of the cities had read the Code of Federal Regulations, because they assumed that this was not Federally Registered, and therefore did not come up under Federal Registration, well, two things, when they filed for the emergency exemption, the 18, and when they filed, the written paperwork, for the special local need exemption, in both cases, the EPA says, when you file, for these exemptions, you must include the data on which you're basing the conclusion, that no adverse adverse affects will occur. Then goes on to say, "That the administrator, in reviewing such information, shall use as his guiding principle, the burden of persuasion for registration always lies with the applicant. Meaning, it is up to the state to prove it's safe.

BOB NIELSON: Why was it approved then if they filed petition for an exemption with no supporting evidence, and it was approved, when they had to show proof?

PAUL MCCLAIN: It goes on to say, "The administrator shall issue such an exemption, if he finds, based on the data, that no adverse health affects shall occur, will issue that exemption."

BOB NIELSON: So is that the person's name should be on peoples' law suits?

PAUL MCCLAIN: That is an interesting question.

BOB NIELSON: Whose name is it?

PAUL MCCLAIN: The EPA gave the state the right to register this. So...we should be looking at all the state 'Ag" people, the EPA, for giving that exemption, because, as we tell now, they were not in compliance, they were in violation of due process, when the original application, and for the EPA to have given that exemption and their O.k, even though the data wasn't there, and it also says, "That if the administrator determines that after granting an exemption, or registration that any adverse health affects occur, he may cancel that registration."

BOB NIELSON: You are listening to KPFFK. Los Angeles. This is the Wizard Show. My name is Bob Nielson, my co-host is Floreano, and we are talking with Paul McClain, an expert on the aerial spraying of malathion and he is a diplomate in preventive medicine and a molecular biologist. We are talking about aerial spraying of malathion. We talked about some of the scientific and technical concerns and some of the easy kinds of testing, that could be done, that aren't being done, with monitoring the public for neural behavioral disorders that might result from the spraying, and now we have gotten into the legal questions, which apparently seems to be a hornets nest, that never has been answered, and from what Paul McClain has been telling us, it appears to be a rather scurrilous performance on the part of numerous lawyers and administrators and scientists.

Do you think there would be case against some of the scientists who have been working for the state?

PAUL MCCLAIN: Probably not for the scientist, because the ultimate responsibility lies with the medical officers, and this is why I recommended people file personal suits against Dr. Papanak, Dr. Stratton, Dr. Kirtz, and Dr. Kizer, with the Board of Medical Quality Assurance. And question these people's competency to practice medicine.

INSECTICIDES AND THE LAW BY ROBERT VAN DEN BOSCH*

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*A.B., 1943. Ph.D., 1950, University of California, Berkeley. Professor of Entomology and Entomologist, Department of Entomology and Parasitology, University of California, Berkeley; Chairman, Division of Biological Control; Member, Entomological Society of America, Ecological Society of America

The law bears on many aspects of insect control (1) To the layman, the multiplicity of insecticide regulations probably appears to be an adequate safeguard against the problems arising from pest control and the use of chemical pesticides. But this is not the case. State agricultural codes and federal pesticide regulations are largely concerned with legalistic and technical considerations and essentially ignore the serious inherent ecological shortcomings, there is increasing economic loss and environmental injury resulting from insecticide use.

While many areas of the chemical pesticide control problem merit discussion in legal journals, one aspect of the problem merits special attention because of the appalling financial losses and widespread ecological damage it involves. Due to the methods used in their development and marketing, the modern insecticides tend to cause two devastating, interrelated phenomena in the agricultural environment: target pest resurgence and secondary pest outbreaks.

Target pest resurgence occurs when the insecticide initially destroys most members of the insect population which the user wants to eliminate, but destroys even more effectively the predators and parasites which are the natural enemies of the target pest. After a brief period of suppression and regrouping, the target pest often resurges to greater abundance, causing even greater damage.(4)

Secondary pest outbreaks occur when insecticides applied against given target pests eliminate the natural enemies of previously innocuous species, which then erupt to damaging abundance due to their release from biotic repression.

The resurgence-secondary outbreak problem is not a natural phenomenon, and its solution is not a matter to be left to the ecologists and entomologists to whom victimized agriculturalists often turn for assistance. The problem exists because the law, in failing to adequately regulate the manufacture, labeling and sale of modern insecticides, permits it to exist. Only the law can eliminate it.

L. Among others, there are laws that:

-(a) Relate to quarantine and inspection procedures devised to prevent the introduction of new pests from foreign countries or their spread with the country
-(b) Require the use of such control measures as suppressive spraying, crop residue disposal, and fumigation and eradication....
-(c) Govern the manufacture and sale of insecticides, and prevent their adulteration and misbranding (see, e.g., Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. 135-35k (1964) and in particular section 135a which makes it a crime to sell adulterated or misbranded poisons.
-(d) Regulate poison residues by fixing tolerances of pesticides upon produce.
-(e) Require manufacturers to provide written instructions as to the proper time of use of the insecticide
-(f) Limit insect contaminants in agricultural produce
-(g) Require the examination and licensing of pest control operators and pesticide distributors

4. See note 3 supra. One example of this phenomenon, well known to the public, occurred in Ontario, where the number of blackflies increased 17 times over what it had been before spraying. R. Carson, *Silent Spring* 252 (1962)

I THE MODERN INSECTICIDE

The modern insecticide is a synthetic organic chemical, usually an organochlorine, organophosphate or a carbamate. Typically it is designed to kill a broad spectrum of insect and insect-like species. There are two principal reasons for this: (1) it is technologically easier to develop broad spectrum poisons than those of narrow specificity; (2) consequently, their development is less expensive, and their sale more remunerative.

Insecticide development is a costly affair, and when a new pesticide is in the planning stage a primary consideration is its market potential. For a new compound to be given the green light it must have a reasonably good chance of recouping the cost of its development, often in excess of 4 million dollars, and subsequently earning a profit. When developing a new product, therefore, the thoughts of the chemical industry planners turn to insecticides with broad toxicity spectra, the products which stand to capture the broadest markets.

Since, in the planning and development of modern insecticides, economics and toxological technology are the predominant considerations, ecology is largely ignored. Yet chemical pest control is a serious matter ecologically since its function is to eliminate a substantial portion of the insect population indigenous to the treated environment. From laboratory inception, therefore, the modern insecticide is programmed to cause problems in the environment.

Broad spectrum toxicity is at the very root of the pest resurgence and secondary pest outbreak problems. When the broadly toxic materials are applied, they kill too many species of insects in the treated environment. Many of these insects are predators and parasites which prey on noxious species. Consequently, where broad spectrum insecticides are used the natural enemies of some species are often virtually eliminated. This creates a dangerous biotic vacuum in which either the target species can resurge explosively or the unleashed non-target species can erupt abundantly. The resurgent or unleashed insect populations frequently produce greater damage than that caused by the original target infestation. A retreatment of the area is then deemed necessary, and the farmer soon finds himself on an insecticidal treadmill.

The resurgence-secondary pest outbreak problem is universal. Such insect outbreaks have been reported from literally every place on earth where the modern synthetic organic insecticides have been used.⁽⁸⁾ In California these infestations substantially aggravate problems in many major crops such as cotton, citrus and grape⁽⁹⁾ In cotton, for example, there are clear indications that the lepidopterous pest (caterpillar) problem is greatly aggravated by early- and mid-season insecticide treatments for control of Lygus bug (*Lygus hesperus* Knight). In other words, there is more than passing evidence that much of the overall loss caused by insects in one of California's most important agricultural crops is largely the product of the very insecticides that are intended to bring effective control

⁽⁸⁾ See, e.g., *BIOLOGICAL CONTROL* (C. Huffaker, ed., to be published 1971), in which there are many references to the cited problems.

⁽⁹⁾ See, e.g., van den Bosch, Leigh, Falcon, Stern, Gonzales & Hagen, *The Developing Program of Integrated Control of Cotton Pests in California*, in *Biological Control* 377 (C. Huffaker ed., to be published 1971); Douth & Smith, *The Pesticide Syndrome-Diagnosis and Suggested Prophylaxis*, in *BIOLOGICAL CONTROL*, supra, at 3, 11-14; DeBach, *The Necessity for an Ecological Approach to Pest Control on Citrus in California*, 44 *J. Economic Entomology* 433 (1951)

II LEGAL CONSIDERATION

The resurgence-secondary pest outbreak problem has placed a serious economic burden on California's agriculture and, of course, contributes significantly to environmental pollution.(11) This in itself is cause for concern. What is even more disturbing is that much of the insecticidal treatment that triggers these outbreaks is unnecessary. Vast acreages of our crop lands are annually treated with insecticides even when the crops are not threatened by economically injurious pest populations. This situation reflects one of the most serious loopholes in our laws pertaining to insecticides and their use: inadequate statewide control of insecticide prescription and application.

THE DEFICIENCIES OF INSECTICIDE LEGISLATION

Under prevailing regulations, a farmer may use an insecticide on his crop whenever he chooses as long as he adheres to the applicable state and federal regulations and follows the instructions on the container label concerning its use. But there is nothing in the regulations or on the label which restricts the use of insecticides to situations of real need, and much insecticide application occurs where there are in reality no threatening pest populations. The use of the insecticide therefore creates a threat which did not exist prior to application of the chemical agent. In addition, the irresponsible user is more than a threat to himself: the ever-present possibility of drift creates a recurrent threat to properties bordering on and, in some instances, remote from the treated sites. Thus, any use of these materials entails an implicit threat to the community-at-large which places a considerable moral responsibility on the shoulders of the user.

It seems only reasonable that the use of insecticides should, as a matter of course, be restricted to situations of real need to minimize the hazards to the environment. Such a rational pattern of use presupposes the availability of expert diagnosticians who would recommend the use of a particular insecticide only when its need is readily manifest. In insect control, unfortunately, this is not the case. Under prevailing conditions many of the recommendations to farmers, on insecticide use come from chemical company field men who are primarily salesmen...

III. CONCLUSION

What has been proposed here might seem an unnecessary compounding of an already legally complex matter. Society, however, cannot permit the continued victimization of certain of its members because of a correctable legal loophole. If a complicated legal edifice is needed to protect society and the environment from pesticide injury, this merely points up the ecological complexity of pest control and demonstrates that it is not simply a matter of killing noxious little animals. In the opinion of the writer, an appropriate acknowledgement of this fact is long overdue.

Introduction to Chapter 9

The Los Angeles City Council held a hearing earlier this year under a motion by Wachs-Picus to conduct full public hearings for thoroughly examining the issue of aerial spraying of malathion in the city of Los Angeles.

One of those who was questioned by Councilman Wachs was I. Siddikki Assistant Director of the Department of Food and Agriculture. In a 'freudian slip' Dr. Siddiqui stated, "It seems to be a contradiction here...you are saying that spraying should stop to allow for study...then you are saying that we have not done the study. Because how would you conduct the studies, large field studies like this, you just alluded to, if there was just no spraying...I think what I am saying to you is...you want the spraying to stop, but at the same time you want the study to continue."

Steven Ross, President of the World Research Foundation brought up the fact that Dr. Thomas' study had not been peer reviewed although the state is holding this study up as one of "the" two studies for the safety of aerially spraying of malathion.

Alan Levin, M.D. gave his testimony: Councilman Molina asked, "... Have you treated patients that have had malathion problems, or health problems?" Levin answered yes and further commented that these problems were asthma and hypersensitization. He also stated A.I.D.S. patients, who had been stabilized, went on to die because of the spray. He further went on to say he turned this information over to the state and that the state ignored it.

Dr. Brian also gave testimony. He stated that helicopters were out spraying at 6:15 in the morning in Pasadena when children were on their way to school and boys and girls were out delivering newspapers... people were out jogging, or walking their dogs...

Brian stated one of the Ag Commissioners rules is that only ground applications shall be made in environmentally sensitive areas such as water...however, he notes both Silver Lake Reservoir and Bolsa Chica were aerially sprayed.

According to Brian the EPA shall be immediately informed of any adverse affects resulting from the use of malathion in connection with this program. However, Brian wonders how they would be informed if the County Health Department does not take names, addresses and symptoms, how can they report them, because they have not taken names, addresses and symptoms. We know, because the people that call 1-800 GO TOXIN, to the hundreds, have been telling us about their symptoms, and how sick they are. They said they call the County Department of Health and Dr. Papenak's staff says, "Don't worry about it, look for some other origin."

Again, Dr. Brian states the rules of the state are being broken, because they tell the public one thing and the opposite is true. This is their directive folks. This is their inter-departmental directive. To each other! ...This product is highly toxic to bees. "So the point is, they have lied all the way down the line, they have broken their own directives."

Paul McClain, Molecular Biologist gave his testimony and he stated, that the Code of Federal Regulations 162.10A states "It is a violation of labeling requirements to make claims as to the safety of a pesticide or its ingredients, including statement such as safe, non-poisonous, non-injurious, non-toxic or harmless, with or without the qualifying phrase, "when used as directed." McClain asks the question, "Is malathion registered, and how is it currently being used?" Well, in fact, it basically is not registered. It is only being used under two emergency acts, one of which is typically used to by-pass the regulatory process of pesticides, 90% of these requests are made by manufacturers, and only 2% are made by governmental agencies.

Dr. Gross, senior scientist from the EPA states, "The National Cancer Institute carried out in the late 70's, three extensive studies on malathion..."In each of these three cases that malathion causes cancer, in experimental animals, it is overwhelming, extremely persuasive..."

Dr. Dahlon, Entomologist from Universtiy of California Berkeley gave his testimony and he stated "There are alternatives. Release of sterile flies, stripping of fruit, both non chemical alternatives. He also revealed that in 1980-1982 medfly eradication project in Santa Clara County, fruit stripping...sterile fly releases and spraying from the ground was done over a very extensive area, and was successful, until some unsterilized sterile flies were released.

**A HEARING IN LOS ANGELES BY THE
L.A. CITY COUNCIL ARTS, HEALTH &
HUMANITIES COMMITTEE**

All the experts were asked to speak to the harmfulness or harmlessness of the aerial spraying of malathion. The list included state, county and independent experts as well as health professionals, researchers, entomologists, etc. (Excerpted)



**Councilman
Joel Wachs**

COUNCILMAN WACHS: This is a special meeting which is being heard to consider a motion by (Wachs - Picus), of the City Council, to conduct full public hearings, for the purpose of thoroughly examining the issue of aerial spraying of malathion, in the city of Los Angeles. I might say this is the first non-city council meeting in the history of the city that is being fully broadcast on the city's new cable television Channel 35, and the entire proceedings will be re-broadcast tonight at 7PM.

This hearing is being held because the public has a right to know. People are alarmed, people are confused, people are afraid, they are worried about their health and safety. It is my personal belief, that the government has the responsibility of either proving that what it is doing is safe, or stopping it until it does.

It is my belief, that the single biggest issue that we face with the respect to aerial spraying of malathion is credibility. I purchased yesterday, a bottle of malathion, similar to that which is used in this program, and I too read the directions with great alarm. Specifically, they said caution, harmful by swallowing, inhalation or skin contact. Avoid breathing spray. Avoid contact with skin. Change contaminated clothing. The pesticide is highly toxic to bees exposed to direct treatment or residues remaining on the treated area. The product is toxic to fish. Do not apply where run-off is likely to occur. Malathion concentrate insecticide will permanently damage automobile paint. If accidental exposure occurs, the vehicle should be washed immediately. I think that perhaps, more than anything, in addition to the testimony we will hear by the people who have been affected directly by the spraying, is why there is an issue of concern and credibility. The state and county are here today, to explain to the public, the program and all of the specifics and the basis upon which they have made their decision to continue it. Afterwards, we have a great number of medical, public health, scientific, experts who question those findings, and who wish to give testimony in addition to an enormous number of concerned citizens. Mayors and councilmembers from neighboring cities and counties, who also wish to participate. We intend to give everyone an opportunity to be heard.

It is my belief, that this will be the first of two meetings, that we will have the second meeting very shortly after this, wherein people will have an opportunity to respond to the testimony that has been presented today and wherein the city staff will present us with the full option of courses of action the city might take. I think that this is important to know this is a state and county program. It is not a city program. But, it our belief that the information that we obtain from these hearings, will help us use our considerable legal power and legislative influence in bringing about any changes that are deemed necessary.

CM WACHS: The first few speakers that will be here today (this morning) will be: Dr. Islam Siddikki, The Assistant Director of the State Department of Food and Agriculture. Dr. Paul Papanek, The Chief of Toxic and Epidemeology Program of the County Department of Health Services. Mr. Leon Spogge, the County of Los Angeles, Agricultural Commission. Steven Ross, The Founder and President of the World Research Foundation. Dr. Paul McClain, Clinical Neuropsychologist and Diplomate in Preventive Medicine. Dr. Brian Dobhan, Dr. Alan Levin and Dr. Jack Thrasher. After those people have had an opportunity to be heard, we will go through the cards that you have presented to us, and we will sit here as long as necessary to hear all of the testimony.

As I said, we will have another meeting in a couple of weeks after we have had an opportunity to bring all of the testimony together, and give people an opportunity to respond and then examine the courses of action that we will recommend to the city council. The city council will then act upon our recommendations shortly after our second meeting and I would expect that to be within a couple of weeks.

DR ISLAM SIDDIKKI: My name is Issy Siddikki, I am in charge of the Planned Pest and Quarantine Pest and Program,(all over the state) for the State of California. The medfly problem in California is not new. It was found in 1975 for the 1st time. We have the Department of Food and Agriculture working the Los Angeles County, as well as the U.S. Department of Agriculture. We have eradicated medflies before. One of the biggest medfly infestation was in 1982 in the Santa Clara Valley. It was one of the biggest infestations ever, on the Continental U.S.

The program entailed because in the delay in the sprayings, there was a lot of concerns you have raised right here,(similar concerns). The governor at the time delayed the spraying, and instead of spraying 40 or 50 square mile area, about 1400 square mile area had to be sprayed with malathion bait, for about 2 years. Some of the areas received as many as 33 malathion applications, over a period of about a year and a half.

The reason I am addressing that infestation, it was a lot bigger then we are experiencing here right now. We did eradicate it. Finally, the decision was made to use malathion beta sprays, and from 1982 to 1987, there was no infestation of medfly in California. The reason being, we improved our response, we improved our deduction techniques. So much so that single flies were found several times during this period, but when we put more traps, we did not find any established infestation. In 1987, for the 1st time, after a gap of 5 years, we found a small infestation in Los Angeles County, and here again learning from the 1982 experience, we did not go into multiple aerial spraying of malathion, this was a California first. Florida in similar situations would have used four aerial applications of malathion and then bring in the sterilized flies, which are produced in Hawaii. In California, we tried something for the 1st time, we used one application of malathion bait, and then brought millions of sterilized flies. This program worked in 1987 one time. There were two infestations found in 1988, similar approach, using one malathion spray and followed by 3 or 4 months of releases of millions and millions of sterilized flies. It worked. The public did not even know it. The media will remember this infestations over a period of 2 years which were handled effectively. In 1989 the situation is different, ladies and gentlemen. We have found infestations near Dodgers Stadium on July 20th. This same approach was used and the program appeared to be successful. But in October of 1989, we started finding more and more sterile flies. I want to mention a side story here. The same..in 1989, around Labor Day Weekend, we found an infestation in Santa Clara County also. (Mountain View). That infestation was using the same approach...one malathion spraying, followed by sterile releases. That program appears to be successful. We have not found any medflies in Santa Clara Valley for several months now.

Similarly, a small infestation was found in the Alta Loma, which is near Upland, in San Bernadeno County and again, we have not found any more wild flies there and that program seems to be working. Unfortunately, in Los Angeles County, the infestation in the town of Whittier, as well as Baldwin Park and that general vicinity, we continue to find more

and more wildflies (medflies that is), in October, November and December. Therefore we called in the Science Advisory Panel, which consists of medfly experts from all over the country. These are experts who spend all their professional lives in researching the medfly. These people advised that those 4 areas which were under the sterile fly program and by that time we had exhausted all the supply of all the sterile flies from all over the world. We are getting one hundred million sterilized flies from our lab in Hawaii, and about 40 to 60 million flies from Mexico. All these ? recommendations was, those 4 areas with the sterilized program seems to be working, do not switch that program to multiple beta sprays. So, therefore, the program in Mountain View, the program in San Berandino County, near Upland, as well as the town of Baldwin Park and Whittier, have continued and this area collectively represents about 100 square mile area. They have continued into a sterilized medfly program. The recommendation of the Science Advisory Panel was, if you do not,...since we had already exhausted the supply of sterilized flies, if you do not do anything, the infestation in the spring of 1990, will get so big that the 1980 infestation will look comparately small.

Therefore the need was then in December, to start multiple aerial sprays of malathion over these other areas where we could not have enough sterile flies to go around. And this is the point, on December 7th, the Director of Food and Agriculture accepted recommendations of the Science and Advisory Panel, and brought the program of multiple sprayings every three weeks during the month of January, February and March and every other week, in the month of April and May, and if need be, if medflies are still continuing to be found, every week in the month of June onward. While I am confident that our efforts to eradicate the medfly are working, and will work, I am not sure we can prevent the future infestations of the medfly, or other exotic insects into California and people seem to get confused between the infestations. What it means is to eradicate all insects of the species at the time, but that does not guarantee that future infestations will not take place.

You will ask naturally, what is causing this? In packages where we have larvae or maggots of fruit fly or medfly with it, and therefore we worked this with the U.S. Congress in 1987 and the legislation was passed, which became effective late last year. And that legislation's intent is to make it illegal for the shipment of contraband fruit, in 1st class mail.

The U.S. Postal Service has yet to implement this law. We hope that the U.S. Postal Service will cooperate and therefore prevent future infestations of medfly and other pests. You also have a situation where Californians are travelling in record numbers to Hawaii and other foreign destinations. Hawaiian Islands, as well as other countries of the Pacific rim, are infested with medfly and other exotic pests. While U.S. Department of Agriculture inspects travellers coming back and they intercept thousand of pests, there are still thousands that get out and get established in the state, and this is why one of the examples is here. In the Los Angeles basin. The increase in cargo shipments from 3rd world countries also may be responsible; they are checked but the volumne of shipments which is coming is not 100%. The fumigants which are available to fumigate these shipments before, are no longer available, therefore they may also be leading to infestations.

I am sure you will say why don't you tighten those inspection procedures, but at some point, the inconvenience of the public will become an issue, if there are long lines at the airports, there will be public complaining about ...so USDA has to draw a line between profiling those passengers who fit the profile and only inspecting those ..but I am sure some of them are getting away. So, I think, we have a need for is more public information, this is where we have failed... trying to connect between an innocent act of someone bringing in an apple or papaya, or guava or mango, and not being aware that some of those exotic looking fruits may have maggots, which may lead to infestations which will cause apprehension among the public and cause millions of tax dollars.

You say, why don't you use X-ray...the mail packages. The constitutional guarantees against illegal search and seizures, make it difficult for U.S. Postal Service to allow all the packages to be profiled and inspected and we are still working in resolving this constitutional issue; where you can draw a balance, delicate balance, where all the constitutional guarantees

are met, and still you can stop, and those packages, which may be carrying illegal, contraband fruit.

The City Council is concerned about the adverse health effects of malathion and Mr. Councilman, you read the label instructions. Malathion is an insecticide. It is designed to kill insects. I would not pretend it is not toxic. But the dosage that is being used in the medfly eradication project, this data has been extensively reviewed by medical experts, not only in Food and Agriculture, who will be circumspect in this case, but the Department of Health doctors, at the state level, county level, as well as independent experts. The conclusion of all these health experts is at the dosage malathion is being used, it does not cause adverse human health effects.

You say, why are we asking the public to go indoor at the time of spraying. (Audience starts to cough) I also have a cold, and I am also suffering, so I hope you understand....I can also cough....but the question comes that the dosage which is there..this is what I want to emphasize, but we added precaution, we recommend that the people be inside, rinse off fruit. Malathion is used in malaria abatement in a number of states, (about 4 to 5 million pounds of malathion is used for malaria control and mosquito control) in this country. And I will tell you that the dosage that is used in mosquito abatement is about 100 times more strong then it is used in the medfly project.

C WACHS: Do you have any published studies which conclude that malathion in the dosages you are using, in the program you are using, are safe?

DR. SIDDIKKI: This is a state law, and I could not deviate from that requirement even though even though it is part of the...

CM WACHS: Can you tell me what studies there are...I have been trying to find them I would like you to tell me what studies have been published that come to the conclusion that it is safe?

DR. SIDDIKKI: SB950 the birth defect prevention act...requires that all pesticides used in California and registered, have to be reviewed for carcinogenicity, teratogenicity, mutanogenicity and all other...

CM WACHS: I am not asking you if they have to be reviewed, I am asking you scientific studies which have been published which conclude that they are safe?

DR. SIDDIKKI: The answer is yes. I think I am telling you the process we went through and I have all this information, I was expecting... After the 1982 project....

CM WACHS: Wait...was there any studies to indicate it was safe when you made the decision to spray prior to 1982.

DR. SIDDIKKI: Yes, there are 100s and 1000s of published studies on malathion Mr. Chairman, and they are all with the Department of Food and Agriculture.

CM WACHS: Is there one study that was published that indicates that the program that you embarked on was safe.

DR. SIDDIKKI: There are more then one study sir, which are indicated as safe. Every study has to address a differernt aspect of adverse health effects. What I am saying is last week, at the court hearings, under deposition, I will pass on to you, which was testified by (toxicologist) who works with the Department of Food and Agriculture, under oath, that we have malathion (which was reviewed by Food and Agriculture) does not present any health risks.

CM WACHS: Dr. Siddikki, I really need some help. I know you have reviewed it. I don't

even question that you would review it. My question, as I have been searching and researching, my question is what study have you conducted, that you have published, that indicates or that concludes that aerial malathion spraying program is safe?

DR. SIDDIKKI: We have two California studies which I was alluding to when I started talking and you interrupted me sir....after the 1982 project, the California Legislature appropriated \$875,000 under Senator Diane Watson's bill, which allowed for a study by the California Department of Health; it monitored 25,000 child births, in the Santa Clara Valley. Some of those monitored births were within the spray area, which was sprayed 2 years prior to, and others were outside as a control. And the conclusion of that study by independent doctors was..there was no significant difference between birth defects within the spray area, and without the spray area...

CM WACHS: Dr. Siddikki, I have that study before me and I read it. First of all, that study only discusses the relation between low dosage aerial malathion exposure and the prevalence at birth of conjenital and anomalies and low birth weight, which is important, but not the only issue that people are concerned about, and secondly that study itself, as I read it, which is only a two page study, it says there are several misclassifications in the outcome of the data and these limitations should be kept in mind when interpreting the results. And it is a study that indicates gaps, and only relates to one issue, and that is the low birth rate, which is important, but there are many people who have concerns other then those relating to conjenital anomalies. My question is, in addition to that study, which only relates to that one topic, and which states its own limitations, of what other studies, ...you mentioned there was a second study...

DR. SIDDIKKI: The second study which has been done again, Dr. Ephram Kahn, who use to be Deputy Demological Toxicologist with the State Department of Health. Before the malathion spraying was allowed in 1981, Dr. Ephram Kahn, reviewed all the data, on the hazard assessment of malathion. His projection was, that a six month old child was exposed to malathion spraying and again that study is also in the thick package I handed to you. He again concluded there was no evidence of adverse health effects.

CM WACHS: I also have that study. Which I think was completed in 1980 prior to your decision in 1981. And..could you respond to two things from me. First of all that study is nine years old, and secondly, and correct me if I am wrong.....on that specific study it is my understanding that the original author of the report was a Dr. Mark Lappe who refused to sign the final version, charging that it had misrepresented his findings in stating under oath that the potential adverse chronic health effects from exposure to malathion was suggested in several studies, and these risks include teratogenicity, induction of genetic changes in germ cells, and perhaps the long term effects on the nervous system, and this was written in 1980 and we are now nine years later. Secondly, it is my understanding that that report as I read it and read it several times last night (several occasions) made reference on contraindications to National Cancer Institute study, that was prepared prior to that and that a Dr. Melvin Reuber who was then with the NCI, (Frederick Cancer Research Center) re-examined all the slides used in the original study, and concluded differently from the study that the pesticide behaved as a carcinogen in mannals. The point I am asking is...the 2 studies you mentioned were in 1980 which has been discredited by one of its authors, and in 1982, which simply examines the birth defects in Santa Clara County. We are now nine years later, what studies, what thorough studies has the department made and published, that examine the nine year effect of aerial spraying of malathion in the State of California? Have they been made, or are you continuing to rely on the existing studies that you mentioned?

DR.SIDDIKKI: If I may add, there was no program of repeated malathion spraying between 1982 and 1989, as I said, those two doctors, Melvin Reuber, and Marc Lappe, I have heard of them. They presented an extremely minority opinion, and it is not supported by all overwhelming scientific evidence.

DR. WACHS: You have heard of him....It is my understand that Dr. Marc Lappe, who we will try and have here was actually the original author of the first study and refused to sign it.

DR. SIDDIKKI: I cannot address that. I think you have to ask him. Dr. Ephram Kahn, who was a reputed scientist and worked at the time with the Department of Health, he is the one who authored the study.

CM WACHS: Let me simply ask you a direct question. If you made a study in 1980 that was reputed by its author, and you have a 2nd study in 1982 that limits itself to one small aspect (although important aspect) of the project, and you are now nine years later, making the decision to spray every three weeks for three months and every other week for 2 months, and every week as is necessary thereafter, and you now have the opportunity of measuring the impacts over a long time, doesn't it behoove the state to make a current, independent, thorough study before it precedes with such an extensive program?...It just simply seems that if you want to convince people that what you are doing, is safe, you would do that kind of analysis to prove it, because it is in your interest to do that...I can't understand why that hasn't been done.

The EPA study that you are also talking about, and the EPA study which I understand is going to be redone, because of gaps in the study clearly indicate (and I am quoting from you); "Additional data required to assess the neurotoxic potential of malathion, that the agency is unable to assess the potential for malathion to contaminate ground water, because the environmental state of malathion is largely uncharacterized. There are data gaps and because of those data gaps, they are going to make a new study. All I am saying to you...I don't know the state, ...you are telling the state, "If the city government were to engage on a program like you are engaging in, it would do the study before it makes a decision to go ahead. It always seems to me, that the whole purpose of environmental laws are to ascertain and to make a thorough study prior to going ahead with it. If you are now willing to make that study, I think all of us would appreciate that. Maybe ...just let me ask you the second question...**Would you be willing to halt the program until you make the study? Who has the burden of proof, who should have responsibility, why should the people prove that it's not safe. Why shouldn't the state first have the responsibility to prove that it is safe? It is a simple matter of burden of proof.**

This is the kind of thorough study, I believe, is needed. and I think most reasonable people believe it is needed before they make a decision. In fact, it hasn't been since 1982, and I think that there is nothing that convinces me that you shouldn't go ahead immediately, immediately and begin to bring together the independent experts who can make that kind of comprehensive study today, that is needed.

DR. SIDDIKKI:...It seems to be a contradiction here...you are saying that spraying should stop to allow for study...then you are saying that we have not done the study. Because how would you conduct the studies, large field studies like this, you just alluded to, if there was just no spraying... I think what I am saying to you is...you want the spraying to stop, but at the same time you want the study to continue.

CM WACHS: I don't want the spraying to begin, until I am sure it is safe. ...The last thing in the world,(it boggles my mind)...if you think you are going to spray people so you can do a study on them afterwards...geese...

DR. SIDDIKKI: I think I sense there seems to be here in this hall, at least, a concern that the data we have reviewed is not complete, and I can assure you again, Mr. Councilman, that the decision made by Food and Agriculture is based on scientific evidence on malathion's safety, otherwise, we would not be using malathion in urban areas.

CM WACHS: I must say that if I were a judge, I could not say you met the burden of proof on that. I really don't. I have to tell you, quite honestly, I don't think most members of

the council have their minds made up. I certainly didn't. I am new at this subject, and I sat and spent three days pouring through all these documents to see, just, not to make myself an expert, because that is impossible, to just use my judgment as a legislature, of whether or not I have the data, that makes me feel comfortable, that what I am doing is right, and it is from that basis that I have the concerns I have today. I simply couldn't find the data, and you have not given me knew data, that makes me feel that this is proven safe. It may be, I can't say it's not. I certainly am not going to put myself in a position of making those kind of independent studies, but people who make decisions that affect the public interest, have the responsibility of making certain in their minds, not because they want to do something, but because the data is there, that bears them out, that what they are doing is correct, and particularly when it affects public health and safety, and if I were a legislature, and had to be called upon to vote on it, there is no way in the world I would feel comfortable I was doing what was right. And when people's health and safety is involved, you got to be darn certain, much more certain...

CM MOLINA: I don't know that much about it I have been involved in this debate for a long time, the state has very clearly determined that it is safe. I think the state has done a poor job in convincing the rest of us that it is but, the issue is, that you owe responsibility to the public, as much as I do, and that is to provide those kinds of assurances, and I think that is the question Mr. Wax is asking.

Right now the City of Los Angeles as well as the state is spending an awful lot of money to eliminate asbestos from all of our buildings. That got placed there, at one point and time, with assurances from somebody like yourself that we were not to worry. And now we are told, we must worry. It is very, very dangerous. So...our concern, this committee's concern, as well as your concern, is that I think there is a responsibility, to let us know to study extensively, more then anything else, to let us know when you're going to stop this. That is your responsibility and my responsibility. We can't continue to say that the agricultural economy is much more important and significant then responding to these questions from the public. I don't think it is fair enough to say to Mr. Wax, "You tell me what's going to convince you that it is safe." I think your responsibility is to find that report, that data, that information, and you have a responsibility to convince us that it is safe.

C. GETTS: I agree. I would like though in defense of asbestos. That is a very poor example because I know that it was done deliberately with knowledge that it caused adverse affects but a business industry that had no conscience.

CM MOLINA: No different from this committee. The one that produces this stuff?

C. GETTS: I am a Deputy Attorney General for the State of California. I am here as an attorney for the Department of Food and Agriculture to answer legal questions that may arise.

The Director of Food and Agriculture has a general statutory obligation, under the provisions of law, to eradicate where feasible, any exotic plant, animal or pest brought into the state. Now medfly is an exotic pest that just means it's not indigous to California.

C WACHS: Like to recognize Councilman Alatore who has brought this issue to the City Council on two occasions... represents part of the area. And I know that Councilman Alatore who has really brought this to our attention, wants to make a statement as to the proceedings that are going on this morning.

CM ALATORE: Thank you very much Mr. Chairman and members. Let me first of all commend the Chairman and members of the Committee for the hearing that is being conducted here this morning. Obviously the question of the medfly is a serious threat to agriculture. I don't think there is anybody in this room or anybody that is familiar with this issue, would not look at it as a being a threat to the industry. The unfortunate part

There are not thousands and thousands of studies as we have heard.

In reviewing these studies we have come across certain important facts, and I will elaborate on a few of them. This information is coming from the Center of Human Genetics, University of Lovin, in Belgium. Department of Biochemistry, Institute of Biochemistry in Poland, The Institute of Genetics, in India and the Laboratory of Experimental Hematology and Radiation, Yale University School of Medince.

Malathion has been directly and strongly linked with inefficient of human bone marrow, wide stem cell colonies. Its effect on human lymphocytes includes cell survival,

is, that the state has made a fundamental decision, and the fundamental decision is that fruit is more important than the lives and health and welfare of people in the southern California area. But something is seriously wrong, Mr. Chairman and Members, when the state and the manner in which the state has responded to this crisis. The state showed extremely poor planning and judgment, in terms of the problem with sterile medflies. And there is no evidence that the state has even considered alternatives to massive aerial spraying. Many of us question the method by which the state currently decides the use of pesticides like malathion. Why for example, doesn't the state Department of Health have a role in this process? For all the medical experts the state is claiming that malathion is safe. There are equally restricted medical experts who will tell you that it is not safe, or that at the very least, we do not have all the facts at the present time.

We all have bad memories of other wonder chemicals that we were told were safe.

MALATHION: TOXIC TIME BOMB

chromosome aberrations, nucleic acid effects.

Malathion has induced decreased content in RNA and DNA in cultured cells. It has inhibited RNA synthesis in cultured lymphocytes, and regardless of the dose applied, the same type of chromosome aberrations which are shifts, appear in human lymphocytes. No correlation was found between the increase in the frequency of aberrations and the dose. Comparison of sister chromosome changes and cultured human cells after single and double exposure, demonstrated a cumulative effect of malathion. Now the interesting aspect of this data, is when we heard the comment that only one scientist, or one voice, may disagree of the findings, with these people in the agriculture department are alluding to. I had sent these studies to the agricultural department as well as the governor. And I am going to read some of the statements in just a few moments, but I want you to be aware at the end of these research studies that I have read, the findings of the individual researchers..

From Poland- "The obtained results confirmed the existing data that organophosphates compounds, malathion, can pose a long term genetic hazard to man." "Our results indicate the importance of mechanistic and long term, low dose studies, of the haematotoxic effects of organophosphates." -Yale University, School of Medicine. "We believe malathion that should be considered a potential mutagen and should be further evaluated." from -Belgium.

What we are finding is that there isn't any data, what we are finding that there is data, that quite a few different doses and all of these researchers are calling for further long term studies. We believe again, that it is very irresponsible because the information we have is exactly the same information that is available to the agriculture and the state officials.

The two big areas, we feel that have to be addressed, is the potentiality for birth defects, and long term genetic hazards. If we go by the EPA report, which is the pesticide fact sheet, from 1988, January 1st, which we have been told is the latest finding, and was alluded to earlier. We find the following comments in regards to toxicity.

Data gaps with teratogenicity for the rat; reproduction data gaps. Mutagenecity data gaps...(now this is from the EPA from 1988). We have a very interesting statement by J. Shrader, a staff toxicologist with the State Department of Food and Agriculture who says, "The state looked at the studies the EPA had found inadequate, and filled the data gaps."

Well, I find that rather interesting, considering information put out by the agricultural department, to Mr. Jim Wells from Edwin Tinsworth, that they have been referring to. This is dated 3 days after Shrader's statement says, "We have an acceptable rabbit teratology study, however, developmental and maternal toxicity were noted. A rat teratology study, which demonstrated no evidence of maternal and fetal toxicity, was judged to be inadequate and must be repeated. A three generation rat reproduction study was unacceptable. Well, for any plain thinking individual, that does not sound like any data gaps were filled.

The information I have read to you about the different studies, I submitted to several agencies including a face to face presentation with Leon Spogge, who told me he was not qualified to discuss scientific studies.

I sent a packet to the governor's office and three days ago received this letter directly to myself from the Department of Food and Agriculture under the letterhead of Governor Deukmejian. "Data gaps still remain in the areas of reproductive toxicity and teratogenicity in rats, a replacement reproduction study is required."

Well, we are having a little bit of difficulty here understanding what these people are talking about. The data gaps are filled and they are content. But we have from the EPA that there are data gaps. We have from the state, saying, they believe the data gaps are filled. I then have another EPA letter saying, the data gaps are not filled and then a letter directly

from the governor's office saying, "There are still data gaps in exactly the areas of our concern," ...which is reproduction and possible long term genetic effects.

We feel again that the state and the agricultural department is fully aware of this information and to this time has decided not to act upon it.

Another area of our concern is whether or not there is a factor of safety. And we believe in the areas we have tried to bring out here, that is reproduction, birth damage, what has the state done to guarantee that it is safe? Over and over, through our fax machines we continue to receive this two page study, that was done (including Dr. Kizer) on the exposure to aerial malathion, and the most famous quote we have seen, "No biologically plausible pattern of association was found."

Well, I think we should all go a little bit further in this and we should be very well aware of the last paragraph in this study. This is one of the primary basis of the state's contention that everything is safe.

Potentially as many as 10 to 15% of exposed births were misclassified, thus reducing the possibility of finding an effect from exposure. Only about half of all structure anomalies are identified at birth. In addition spontaneous abortions in many neurological endocrine conditions could not be studied.

I guess, unless common sense has completely evaporated, from our society, this sounds like a very soft study to us. Especially in the areas that are the greatest concern. Statistically a 10 to 15% mis-classification by any statistician in the country would be very big.

We also have another study that has been brought up to us by Dr. Thomas at USC. While it may be an interesting study, it has not been subjected to any peer review in this country. and I would like to stress very strongly now, what peer review means in this country. It means that scientists or medical researchers put out information and other scientists and researchers have opportunities to comment on the scientific validity.

We feel, based on the information again that we have, which is the studies we do not find any studies at exactly these doses under exactly these conditions, which is part of the protocol of the medical community in the United States.

There is a peer review process, there is a 3 phase system of safety in this country for drugs, that are suppose to be for our benefit, a rigorous system. Where it is tested on a limited amount of people, and judged whether or not it is safe or not to go on to other phases of investigation.

Now if this is done for drugs that is suppose to be for our benefit, would not a prudent individual, assume that a substance by its nature which is a poison, would have to undergo a more strigent amount of studies? We have found it has not. We have challenged the different departments to produce for us the actual studies so that we can see what has been done at exactly these doses, under these conditions, to human beings.

We do have studies here that were done in vitro to human lymphocytes and cells and we know there is a problem. So the best solution to that would be, there should be studies that show it isn't a problem. And we cannot find these studies anywhere in peer reviewed literature around the world.

CM WACHS: Mr. Ross, does your foundation make studies? Or do you simply bring together the data that exists from other studies?

STEVE ROSS: Our organization accumulates information, again from world wide sources, we do not emanate, we do not conduct the studies ourselves, but we have an extensive

network that allows us to basically scan all the information in the world.

CM WACHS: Have you made a written analysis of the studies that exist, in so far as they apply to the safety of an aerial malathion spraying program of the type, and with the doses currently being used by the state of California?

STEVE ROSS: No, we have not put anything together, for the simple reason that you need something in order to analyze and the only piece of paper we ever been given is the study of "births after."

CM WACHS: To your knowledge of all the studies that you have information on in terms of their existence, (I am going to ask you the same question I asked Dr. Siddikki). Other than the two studies that I questioned him about, are there any studies which have been made, which have been published, and subjected to peer review, that conclude that the aerial malathion spraying of the type and with the dosages and in the method that is currently being used, are safe?

STEVE ROSS: We have been able to find no studies in that regard.

CM WACHS: Are there any that indicate it is not safe?

STEVE ROSS: There are numerous studies that show at the doses that have been studied that it is not safe in the genetic area. But there are no studies which will allow us to determine at the very low doses.

CM WACHS: So basically, neither side really has the study. We basically need the studies, is what you are saying.

STEVE ROSS: I believe that is our contention, and what we have been looking for again, and the reason I brought it up the normal procedure here of approval, is that you test at the doses being used or even thousands of times higher for drugs, and we can't find this.

CM WACHS. But basically, is it fair to say that the studies do not exist, that say either it is or is not safe.

STEVE ROSS. At exactly at these doses?

CM WACHS: At these doses and in this manner. Eventually you have to take all the information and out it together in so far as it effects the program that exists. And what we are trying to get to, and I think what the public wants to know, is it or is it not, and I was not satisfied that the people who made the decision to spray, have the studies that indicated that it was. I am asking you if there is a study that exists that would conclude that it isn't. Or, rather in fact, what really needs to be done is the study now needs to be made.

STEVE ROSS: The studies need to be made and additionally every one of the studies done at higher doses in the genetic area, called very strongly, for low dose test, because they felt that this was damaging from all over the world. This was not a single voice or two voices, so to answer your question, what I believe you are looking for is, ...there is not enough information here to make the assessment that it is safe, but there is more than enough information at slightly higher doses, to show it might cause genetic hazard. I would like the thrust of the investigation to not be as concerned about the carcinogenic aspect, which I believe is definitely a problem, but to focus on an area, that is, I think, much more important, these are the future generations and long term effects, which these papers has noted that even in three generation rat studies that there were significant problems that continue to develop. So..I know exactly what you are looking for, and I know what the state would like to have, and they don't have it. They do not have peer reviewed studies of exactly this dose and these conditions. But, I would like to interject this, the other

statement that is constantly made is- "dose" is everything. Dose is everything, and at these small doses, there isn't anything to worry about. I would like to recall our toxicologist and ask him about our friend the bee, and ask him why two people can get a bee sting, and one person dies, and the other person just has a slight discomfort, isn't that just the same dose? The real statement is: "Dose is everything for each individual, and therefore in a program like this, where you have literally millions of people, elderly, young, depressed immune systems, nobody can say what the safe dose is, just from the example of the bee. Malathion is a poison that has been developed to destroy biological organisms that is its nature.

ALAN LEVIN, M.D. I am a Board Certified Allergist, Immunologist. I am a Board Certified Pathologist. I am Board Certified in Emergency Medicine I was a lead witness in the Agent Orange case. I make my living by making people feel better, I am not academically paid. I am not paid by the state. Although I was a member of the Board of Medical Quality Assurance for about 10 years. I came down here at my own expense, because I think this is a problem.

I had a prepared statement, but I am not going to use it. I'll say as a "hands-on" physician, malathion is unsafe. I have treated dozens of patients who have been made ill by malathion, both acutely and chronically. The evidence is overwhelming in the literature that malathion is unsafe, and given what Dr. Siddikki says, there is evidence in the literature that doses a 100 thousandfold less, then what's been sprayed on Los Angeles causes damage to the immune system. There is absolutely no question whatsoever, malathion is dangerous.

CM WACHS: To your knowledge, ...I guess I will ask you the same question I asked Dr. Saddikki and Mr. Ross. Are there any studies which have been published with respect to an aerial malathion spraying program, exactly what is be used in California, and did it conclude that it is not safe?

ALAN LEVIN, M.D.: I know of none.

CM WACHS: O.K. And you also , I assume dont know of any that conclude that it is safe, we haven't been able to find one of those either.

ALAN LEVIN, M.D.: This is a very important issue here. You got to recognize that I make my living making people feel better and couldn't pay my rent if I didn't make people feel better. I don't get grants, I don't get contracts, I am not on the state's payroll. ...Malathion is unsafe. If it pits the paint on your car, it's unsafe for your child, I don't care what state doctors tell you.

CM WACHS: Alright...

ALAN LEVIN, M.D.: I will also tell you that the credibility ...of the public health department

CM WACHS: We just ask everybody that comes here the same question cause I have been curious whether or not there have been any studies, I haven't found any, other then the ones we talked about.

ALAN LEVIN, M.D.: There are many studies that show that doses lower then those used in the spraying of Los Angeles, are dangerous to the immune response. If you talk to the average practicing clinician and gave him immunity, he would tell you that malathion is unsafe. Recognize that the average family doctor is in fear of his license if he says bad things about pesticides or herbicides in the state of California.

I can go to any hospital in the state of California and give five flourouracil to a colon cancer patient and kill him. I'll be practicing the standard treatment of care. I'll be re-imbursed by the insurance companies, and I can show you 20 articles in peer reviewed medical journals that fluorouracil does not work.

I can hang a bottle of intravenous Vitamin C on that same patient, and I'll risk losing my license. Physicians, up until very recently have been intimidated by the Board of Medical Quality Assurance about pesticides and herbicides. The Society for Clinical Ecology, The American Academy of Environmental Medicine has been intimidated by the California Medical Association, about their stance on pesticides and herbicides. November 21st of last year, the California Medical Association completely rescinded its position statement on Clinical Ecology and now their statements regards the low dose environmental stressers is in line with that of the American Medical Association, which has always endorsed Clinical Ecology. The Clinical Ecologists recognize that pesticides and herbicides are dangerous to humans.

CW MOLINA: You (to Dr. Levin) said you have treated patients that have had malathion problems, or health problems.

ALAN LEVIN, M.D.: Yes Maam.

CW MOLINA: In what area?

DR. LEVIN, M.D. In Santa Clara Valley.

CW MOLINA: What were the problems?

ALAN LEVIN, M.D.: Asthma, hypersensitization

CW MOLINA: Asthma that was created because of the malathion?

ALAN LEVIN, M.D.: Asthma patients who got very, very ill

CW MOLINA: Because of the malathion?

ALAN LEVIN, M.D.: AIDS patients, who were stabilized, who went on to die when they... cancer patients...

CW MOLINA: Wait a minute, wait a minute... AIDS patients that went on to die?

ALAN LEVIN, M.D.: AIDS patients who were stabilized, then became ill and died after malathion spraying. Cancer patients whose tumors began to grow faster, after malathion spraying. Any number of patients

CW MOLINA: In each of these patient studies that you have done, what do you do with them once you have made this determination?

ALAN LEVIN, M.D.: You mean treatment wise?

CW MOLINA: No, I mean you should be concerned as a doctor, what do you do, turn the information over to the state?

ALAN LEVIN, M.D.: I try

CW MOLINA: And they?

ALAN LEVIN, M.D.: ..Ignore it.

CW MOLINA: And they ignore it?

ALAN LEVIN M.D.: Correct.

CW MOLINA: The gentlemen or the person who had AIDS, and was stabilized, and then

after malathion spraying it intensified, they ignored that data?

ALAN LEVIN, M.D.: They did.

CW MOLINA: And the person who had a tumor, who it was enlarged, when you submitted that information, to the health department, they ignored it.?

ALAN LEVIN, M.D.: In fact, Dr. Ephran Kahn in 1983 specifically complained to me in secret documents, complained about me to the California Medical Association....

CW MOLINA: Sir, on each of these patients that you have, have they filed a law suit? against the state?

ALAN LEVIN, M.D.: No they haven't

CW MOLINA: Why not?

ALAN LEVIN, M.D.: There have been a number of law suits ...

CW MOLINA: I mean why not? That would be....

ALAN LEVIN, M.D.: They didn't have money. Justice costs money.

CW MOLINA: There is no one that could file a law suit on that?

ALAN LEVIN, M.D.: There have been law suits...regards the malathion issue, yes.

CW MOLINA: Thank you sir.

M. BELL: : O.K. I am pretty radical on this. I don't want aerial spraying. I don't want ground spraying. I don't want animal testing, I don't want no malathion in the urban areas. I want no malathion in my fruit, so that is where I am coming from.

First of all, I have in front of me a really interesting piece of paper. I have a Quarantine Exemption from the Department of Food and Agriculture, dated December 8, 1989 to all County Agricultural Commissioners: This is their protocol. It explains what malathion is, to some degree, the firm names they deal with. The location, the crop side commodities, and regulations for the workers who spray the malathion.

First of all the crop site and commodity. I was curious, very curious to learn that the crop site & commodity is all spice bananas, chopote, chiole, cherimoyas, custard apple, eugenia fruits, kiwi lichi, logan fruits, loquats, mulberry, olives, upunchia, persimmons , pineapples, guavas, sept , sepulta, star apples, tomatias, tomatoes, fumellos, not a "freggin" orange in the lot.

That's what they are spraying for. What we can't live without! This is what they have stated people will be dying for across the country, and who will be starving if we don't provide it to them.

I know, I have a letter from Mike Antonovich, to that effect. Now, I have lived with out tree tomatoes and pamellos for a long time, I don't know about you. Actually, the medfly is interested in stone fruit, peaches, apricots, cherrys and plums, They have a very difficult time with oranges. Right now is not peach time, plumb time, apple time, or cherry time...it is not the time now, why are they spraying now? I don't want them to spray at all, but that is the question I would like to ask.

After you get past the dilution rate method of application, frequency and timing, worker safety, re-entry interval. This is for their workers. "Do not enter treated areas until spray residues have dried." So it is safe for the general public, but not for the state worker,

how do you figure that out?

That's their directive. So the chopper pilot has a gas mask on, and the fellow that walks on ground to make sure everything is O.K., is wearing some sort of outfit, in suit, and boots and gloves. But not the kids, standing out at 6:15 in the morning in Pasedena on their way to Muir High School, the boys and girls out delivering newspapers at 6:15 in the morning; people were out jogging; walking their dogs; people on their way to work, mothers and their young on their way to childcare; and the copter sprayed them. We have witnesses to that fact, but, Mr. Spogge says, "no." Fine..on to number #3. Other requirements to spraying.

I am jumping a few..Only ground applications shall be made in environmentally sensitive areas such as water. Would that include Silver Lake Reservior, which was sprayed? Would that include Bolsa Chica area which was sprayed? They have just broken their rules. Their ground rules were broken by them.

This gets better. It's just amazing the things they don't follow. Paragraph #6. Prior to this initiation program, and notification should be made through the public media as to the time and areas to be treated.

Assuming everybody watches television and listens to the radio, I guess that is O.K. but, individual property owners should be contacted and advised of the treatments and appropriate precautions. **How many of you as individual property owners have been contacted personally and apprised of the appropriate precautions? How many of you speak English? Is it your native tongue? What languages do they print this in. Do they call you in another language? Do they call the private schools, do they call the nurserys. It is never done, another directive they have broken, that they say they follow.**

At the very moment, right now, my wife and I are working out of the Discovery School in Reseda because it is so close to Panarama City, and we have asked them to cover the sand boxes due to the maloxin which of course we know now, thank you, that it biodegrades that malathion biodegrades to maloxin, 10 thousand times stronger then malathion, so we say listen, you got to cover the boxes, you have got to cover this, you have to cover that, you have all these things...

They sent us a letter since we informed all the parents of the school, that they were not interested in getting that kind of propaganda sent out to the other parents in the school and they were going to sue us. They feel we are embarking upon a political problem and and it is not a health problem. So, that is how we are dealing with our school. So you see what is happening down here. So, now we are getting educated, so, which is what they were not in Santa Clara This is #7 Only ground applications should be made when treating areas adjacent to endangered species habitats. Didn't happen to Bolsa Chica.

If it is so safe, why the concern for endangered species? Are not homosapiens considered rare enough for safety precautions? I guess not.

#8. The EPA shall be immediately informed of any adverse affects resulting from the use of malathion in connection with this program.

Now, if the County Health Department does not take names, addresses, and symptoms, how can they report them? And they have not taken names, addresses and symptoms. We know. Because the people that call 1-800 GO TOXIN, to the hundreds, have been telling us about their symptoms. and how sick they are. They said they call the County Department of Health and Dr. Papenak's staff says, "Don't worry about it, look for some other origin." and Dr. Papenak comes out there, and I have been to several city councils. This isn't one of my first, I have been to Norwalk, I have been to Orange County, I have been to Downey. And they get up there and they say, we've only had four people report to us. Obviously you all mis-dialed. And got us by mistake.

#10 This pesticide is toxic to fish, aquatic invertebrate and aquatic life stages of amphibians. Do not apply directly to water or wet lands. There we go again, i.e., "Swamps, bogs, marches and pot holes", but you notice it doesn't say anything about pools, you realize they are going to spray. Obviously we are not going to get the GRO tonight. We know they are going to spray the Valley tonight they are going to spray the Valley Thursday. They are going to spray the Valley all week long as it appears at this moment. All the way out through Glendale. They got like two to three sprayings. They start spraying through summer through spring and summer, the only thing in the air are going to be choppers. You are not going to see any birds, I am telling you that now; we are getting calls at the 1-800 GO TOXIN about dead birds, in people's back yards. People want to know, so they bring it down to us. Well, no, we are working out of someones house. We don't want a house full of dead birds, but its there and its going to happen through spring, during the gestation period. That's whats going to happen to us. and not only that you are not going to go in your pool now that you know in June and July, are you? But what about the people who don't know? Who will not watch this show? That have not gotten the information? And all that malathion after 20 some odd sprayings is settled in their pool. What about them? Are they going to be taking a petri dish bath? The big orange has become the big petri dish.

Now No. 11. This product. This is their directive folks. This is their inter-departmental directive. To each other. This product is highly toxic to bees. I got to tell you. I sat in Orange County and sat in Garden Grove and listened to Dr. Papenak (not him particularly-but a representative) and the Department of Agriculture up there saying it was not toxic to bees. This is not toxic to lady bugs, this is not toxic to praying mantis'. This is not toxic to spiders or butterflies. They have said time and time, again. I watched them say it. This directive says otherwise...He said because this bait has to be eaten, to destroy the creature it is meant for. It can only be ingested. We know better, don't we? We know it is dermally absorbed. Well we feel better, don't we? We know it is dermally absorbed, that much we know. We know better then that, but we also know it kills all those other good creatures. What could be the purpose behind that? Well Oscar Singer will tell us what the purpose behind that is...his assumption. and I think he is possibly right. So the point is, they have lied all the way down the line, they have broken their own directives, I am not sure if this if grounds for a suit, I don't know, I am not an attorney. God knows I have been getting calls from all kinds of attorneys, from the 1-800 GO TOXIN number. But I think we are on our way to that, and in the final analysis, it says the department shall be immediately informed of any adverse affects resultinlg from the use of this exemption. Well, how can they be informed if not body takes it down? The good Mr. Bogge says the only way to destroy the medfly is with malathion. Apparently in Florida they had not heard that information. They used arsonate of lead 4 pounds, later reduced to 2 pounds, and crude brown sugar, 25 lbs water 100 gallons. I am not interested in the eradication of the medfly, but I just want to touch that point, that there are other ways to reduce the medfly population.

Is there indeed a disaster? We keep hearing different numbers, as to this disaster. I have to tell you my favorite. I got a Board of Supervisors County of Los Angeles Letter from Michael Antonovich who said, "We must take an aggressive approach to rid our communitis of these flies. Ignoring this issue would lead to the destruction of over 2 billion dollars worth of produce used to feed people throughout the world. So, we have have gone from 10 million in 81 to 200 million to 2 billion. They are great with numbers. Since it is our money. They never seem to settle, like the medfly. They keep coming up with new numbers. How can we believe them? Lets go a little a little further. He says, "Malathion is proven a safe method for eliminating the medfly. (Which he reiterates what Deukmejian says) the dosage being used is as safe as laundry detergent. Would you want to wear his underwear folks? When you get a politician ...it is O.K. to wash your kids head with malathion...Malathion has been used for years in Europe by physicans in the treatment of head lice in children. We have case studies in front of us, of a child that died, 8 years old, 1978 from having her hair treated with malathion. Low dose, once again low dose. She died 5 days later. We have a child that was born deformed, because the mother in

the second week of her pregnancy, washed her hair in malathion. Somebody gave her the advise. The child was born deformed and died a short time later. I've got these stacks here. One of the problems is that we can't lie. Cause we are on the defensive. One lie will sour a hundred truths. So we can't afford to lie. They can afford to lie, because that is their job. That's the difference.. They are so busy trying to keep their job up there. that they are not doing their job. Well, that's fine. I am living in Encino, I'm not getting sprayed. But I visited the sprayed areas. I was in Norwalk the other evening, and I got sprayed. So I have got this thing now. So I can join the ranks of the victims. We are not overrun by the medfly. We are overrun by the vested interests of the agricultural industry. Thank you.

PAUL MCCLAIN: My name is Paul McClain. I have done undergraduate and graduate in clinical neuropsychology, as well as the biological sciences. My research background includes NASA, MERCURY, and GEMINI PROGRAM, Cardiac De-Conditioning, Bone Physiology. I have been at M.D. Anderson Hospital at the Cancer Research Institute in experimental anaesthesiology and surgery, Cystic Fibrosis research with Texas Institute of Rehabilitation and Research, and I do have a diplomate in preventive medicine as I stated, which is a one year Post Doc award, in epidemiology into these process...

In looking at this thing from that view point, what creates a condition and the fact that we have not addressed what is safe. Let me address one issue, that's the definition and the use of the word safe, which has been bantied around here.

In the Code of the Federal Regulations (CFR) 162.10A, states, "It is a violation of labeling requirements to make claims as to the safety of a pesticide or its ingredients, including statements such as safe, non-poisonous, non-injurous, non-toxic, or harmless, with or without the qualifying phrase, "When used as directed." Whether this compound is safe by federal regulation is not an issue, because it is defined as safe. It is a class 3 toxin. It 's a toxic substance, and toxic substances are defined as biologically active agents which poison living organisms both plant and animal.

There is no question that the word 'safe" doesn't belong in this discussion almost. It is forbidden by law. It's a relative risk assessment, that we are after. It goes on to state, "Pesticide labels merely indicate the degree of toxicity. Based on lethal doses of one brief exposure, and do not take into account cumulative effects of long term exposure delayed effects, such' as nervous system damage, immune suppression and genetic damage.

It goes on further, The National Environmental Protection Act, which includes the federal agencies we are talking about, states, that, "The use of pesticides must review the validity and implications of the available safety data, as well consider, this is a mandate, as well as consider the implications of the lack of necessary data before deciding to go ahead with pesticide application programs. This is Federal Register. I don't know what we have been debating. It states very clearly in the Federal Regulations CFR 162.10, these issues. And further it goes on..."Pesticide registration is not intended to be a safety judgment. The Federal Insecticide, Fungicide and Rodenticide Act, which is the law establishing EPA regulation and pesticide makes clear, that pesticides to be registered must not pose any unreasonable risk to man or the environment. The EPA further states because pesticides by their very nature are designed to be biologically active and kill pests, weeds, we speak in terms of relative risks, rather than safety. The introduction of toxic chemicals into the environment does create both known and unknown risks to human health and the environment. (that is the statement) If we take that further...and we asked about the registration of malathion. Is malathion registered, and how is it currently being used, well, in fact, it basically is not registered. Is is only being used under two emergency acts, one of which is typically used to by-pass the regulatory process of pesticides, 90% of these requests are made by manufacturers, and only 2% are made by governmental agencies. And let me find for you what those state.

There is a letter from the state, actually that says, "That the application of malathion is being done under Article 18, of the FIFRA Act and Article 26. Article 18 that also

requires monitoring, and we have not seen any monitoring reports.

The second way this is being used is under a special local need. This is section 24C of the FIFRA. And this says...and if we determine basically that a need exists..we can by -pass standard regulation. EPA has 90 days to intercede. If they don't intercede, in that 90 days, the registration is good for 5 years. Although it has not been through rigorous testing. Now you have heard testimony also made by this state, and I can read their exact words, if necessary, claiming and using the words, "safe" 'non-toxic', EPA approved, EPA backed, unquestionable data," bare face lie. I would submit that the state has been totally negligent. irresponsible, unethical and definitely misleading, and not only to the lay but to the medical community as well, because we are seeing people reporting to their doctors, clinical symptoms, which the doctors have been assured by the state cannot be malathion, when in fact they are malathion poisoning. So we are not getting accurate reports, due to these misleading statements made by the state. So we come back to the fact, is this a safe compound? And you heard in reading some of these things, that what "safety" is defined by, is no adverse health affects. No unreasonable or unacceptable health. does it produce chronic effects? Does it produce any harmful effects? What are the risk factors? I submit that the toxicological approach, addresses virtually none of these issues especially in the acute phase of low dose. We're seeing statistically to many common symptoms reported in 3 years of epidemiological literature that says there are, adverse, unreasonable, unacceptable, chronic, affects of a harmful nature and that is what this law strictly forbids, so again, I don't know what we are doing here, because these issues were clearly defined in the Federal Regulations. EPA pesticide fact sheet, No. 152, from the EPA, the most current available, signs findings: Technical malathion is a mildly, acutely toxic pesticide, which is posed in toxicity category 3 based on oral, dermal, and inhalation routes to exposure. Now the dermal route, the skin route, is a highly absorptive route. And the state doesn't talk about that. And if we talk about that, we will get into bio-degrading studies later, which will show that the amounts of this that can build up and be available through contact exposure, who knows? We are saying the solution dates are 1 to 7 days. So if some body goes out and plays in an area, contaminated, over several days, we have no idea what they are getting.

There are many areas of adverse side effects, well defined, adverse side effects. Now, can we study these? Of course we can. We need to start out in numerous animal models, and animal models that are indicated for the type of study. Some animals have no response to some things. Why use them in the study, unless you are trying to prove negative results.

We need to look especially at the immunological factors. And if you think about the fact that immunology is not a word you are going to find in a medical dictionary 10 years ago. This is a new field, and what it takes to create an immune response, has nothing to do with cholinesterase levels. And yet immune responses can eventually organ damage by auto immune development, in terms of thyroid, kidneys, the heart and virtually any organ in the body. It affects the vascular system, leading to all kinds of vasculitis and epithelial damage, mild cardiac infarctions, there is all kinds of perimeters that immune stimulation can cause. We need to look at the hematological effects. We need to look at something other then the cancer teratogenic toxicological perimeters. And if we find what we are defining as adverse affects other systems of the body, what is acceptable to us, it is very very easy to set up tests, which those can be multiplied by.

DR. GROSS: I mentioned before, I would form an opinion here on the safety of malathion. I would like to say that what I have to say represents a conclusion, rather than an opinion. and that the conclusion is based on the examination of results on the cancer causing potential of malathion by the National Cancer Institute in Washington.

The National Cancer Institute (NCI) had carried out in the late 70's, 3 extensive studies on cancer project propensity of malathion, and they published their results and all I did was analyze their results in scientific fashion, (statistical analysis) and concluded that each of these three cases..well. two sets were carried out with malathion, and one with malaxion, which is a toxigen (?) of malathion. In each of these three cases that malathion causes cancer, in experimental animals, is overwhelming, extremely persuasive, I also carried out a risk analysis, a form of risk analysis and concluded that hazard, risk of cancer, as a result of malathion in the diet, is unacceptably high. Now I should say that this would be true, even if there were no aerial spray of malathion against the medfly. This would be true for just the malathion in the diet of every American. But EPA (Evironmental Protection Agency) does not recognize malathion to be a carcinogen. However, I should add, that they have never independently, reviewed the results of the National Cancer Institute. They didn't review them systematically. As I said before, these studies were carried out in the late 70s, they haven't done thisto this day... and that's all I have to say.

CM WACHS: (to Dr. Gross)...Are you aware of any independent expert study which would conclude the aerial spraying with malathion is safe?

DR. GROSS: No I am not, sir.

CM WACHS: Are you aware of any study which conclude any independent study which has been published and subject to peer review from scientists that conclude that there is no unreasonable health risks from the aerial spraying of malathion?

Dr. GROSS: No sir.

CM WACHS: Dr. Dahlson would you tell us whether or not you believe whether there are sufficient non- pesticidal alternatives, that could be used during the harmful spraying of malathion, to avoid potential disasterous consequences to the agricultural industry, which has been used as the reason for the current spraying program?

DR. DAHLSON: Let me just make a couple of introductory statements first, so you will know exactly what I do. I actually specialize in working with insects that invade, under the division of biological control through the University of California; Invasive species can be handled in two ways, they can handled in biological control techniques, or can be handled through eradication techniques.

Small infestations perhaps can be eradicated. And I say perhaps, 'can' because there is no scientific proof that there is any other eradication project. You can't have an eradication project because scientific in the sense, because there is not check plots, in other words plots for air spraying. So you never have a control or check to know whether you are successful or not. Just as they don't occur in traps, and the trapping techniques are not efficient.

There are alternatives. Release of sterile flies, stripping of fruit, are both non chemical alternatives. Spraying malathion bait on the ground is also an alternative that can be used. When the program gets to the point that they feel they can't handle it, exceptt by application by air, I think this then approaches the point of being irresponsible, so, I am firmly opposed to any project that gets this large, where they contend the only way to handle it by aerial application.

I should add, that based on the experience that I had in the 1980-1982 medfly eradication project in Santa Clara County, which is up north, (near Berkeley), **fruit stripping..sterile fly releases and spraying from the ground was done over a very extensive area, and was successful, until some 'unsterilized' sterile flies were released.** That is a big contention, again that is another one of these points, there is absolutely no scientific proof, one way or the other, it's **circumstantial evidence** and I feel that my opinions are just as good as the next.

THE JOURNAL OF INDUSTRIAL HYGIENE

Archives of
INDUSTRIAL
HEALTH

Human Exposures in Populated Areas During Airplane Application of Malathion

PAUL E. CAPLAN, B.S. (C) M.P.H.,
Los Angeles
DWIGHT CULVER, M.S.
and
WILLIAM C. THIEL

During the summer of 1955 a joint study was undertaken by the California State Department of Public Health and the U. S. Department of Agriculture to determine the feasibility of using aerial applications of malathion on populated areas to control adult mosquitoes.* Because such applications would mean community-wide exposures to organic phosphate insecticide, we were given the responsibility for determining the magnitude of the exposures involved in this type of operation.

Malathion was applied over the small community of Planada (population, 1500) in the Central Valley of California. The

On the basis of our findings we can state that application of malathion in amounts used in this study constitutes no hazard to the normal human population.



Fig. 1.—Light aircraft showing spray boom and angular orientation of nozzles—Planada Study, 1955.

Submitted for publication April 17, 1956.
California Department of Public Health.
Presented at the 17th Annual Meeting of the American Industrial Hygiene Association, Philadelphia, April 27, 1956.

* Gjuillin, C. M.: Report on Toxicological Studies of Mosquito Adults and Larvae in California in 1955: To be published.

spray material, containing 7.5% technical malathion, 4% S.A.E. No. 40 motor oil, 22% Shell solvent No. 2, and 66.5% medium grade diesel oil, was applied at the rate of 0.46 lb. of malathion per acre from an altitude of 70 ft. It was discharged through No. 4 spray nozzles from a boom under the wing of a light airplane (Fig. 1).

Methods

Three methods were used to determine the potential exposure of people in the path of the spray: (1) Surface-deposit papers were attached to the ceilings, floors, and indoor walls of buildings (as shown in Fig. 2) and to the horizontal surfaces



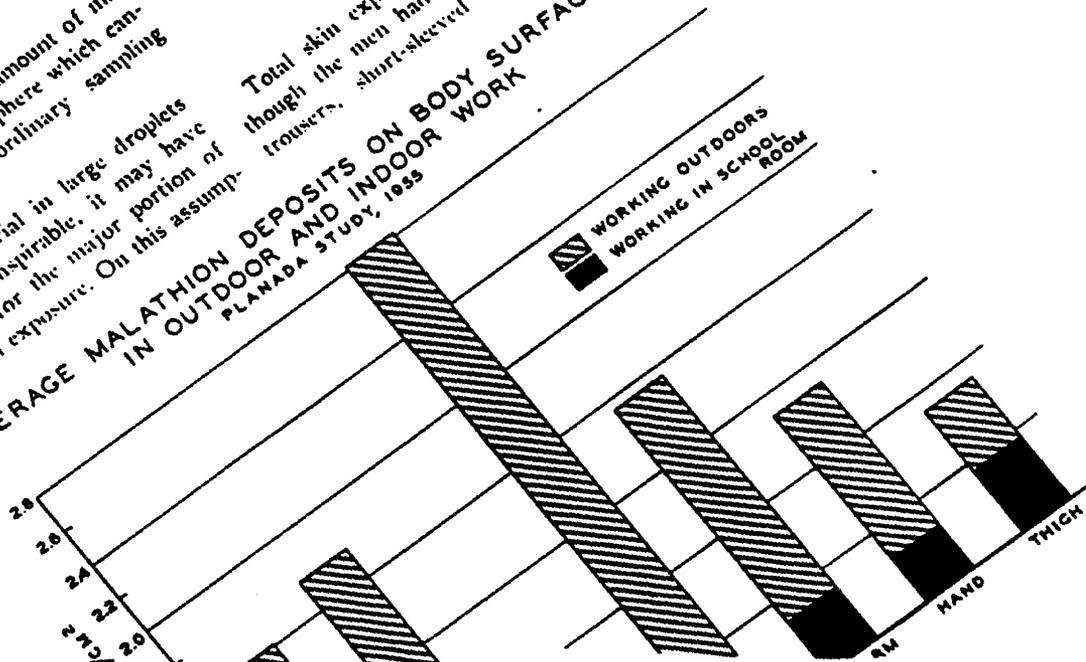
Fig. 2.—Surface-deposit papers attached to ceiling and wall of building—Planada Study, 1955.

of exposed outdoor locations; (2) to represent areas of possible skin exposure, alpha-cellulose pads† were attached to the head, neck, shoulders, forearms, hands, and thighs of each person working on the project, and (3) atmosphere concentrations of malathion were measured.

† Purayonier-P, manufactured by Kaymer Corp., New York.

Thus, we have a very large amount of material in the outdoor atmosphere which cannot be measured by ordinary sampling instruments. Although this material in large droplets was probably not inspirable, it may have been responsible for the major portion of the outdoor skin exposure. On this assumption Total skin exposures were calculated although the men had been dressed in long trousers, short-sleeved shirts with open

AVERAGE MALATHION DEPOSITS ON BODY SURFACES IN OUTDOOR AND INDOOR WORK PLANADA STUDY, 1955



A. M. A. ARCHIVES OF INDUSTRIAL HEALTH

MALATHION EXPOSURES IN PLANADA STUDY, 1955

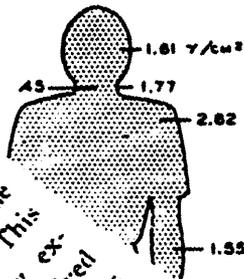
AIRPLANE APPLICATION

WORKING OUTDOORS

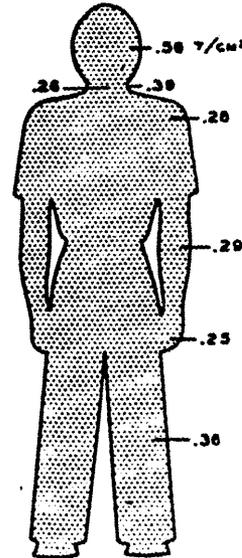
IN SCHOOL ROOM

Summary
 Measures of human exposure to malathion applied at 0.46 lb. per acre by airplane were made by air-sampling and surface-deposit measurement techniques. These measurements were made in the open and inside buildings. The spray had a median diameter of 109 μ . Comparison of air-sample measurements with surface-deposit measurements indicates that air sampling measured only 12% of the insecticide present in the outdoor atmosphere. This 12% probably represents inspiratory exposure. A man working in the open received an inspiratory exposure about five times greater than that of a man working inside.

American Cyanamid Company Report, 1955. 331



AL EXPOSURE
 INSPIRATORY = 109.2 γ
 SKIN = 3556 γ



TOTAL EXPOSURE
 INSPIRATORY = 23.57 γ
 SKIN = 9847 γ

SPRAYING THE NORTH IN 1980-1981

Sierra Club Malathion Controversy Asks Halt to Spraying of Malathion

By ASHLEY DUNN TIMES STAFF WRITER

In the latest escalation of public debate over Mediterranean fruit fly eradication methods, the California division of the Sierra Club petitioned state officials Monday to halt aerial application of malathion over Southern California neighborhoods so that more research can be done on the pesticide.

Sierra Club California, the state's largest environmental organization, with 14 chapters and 150,000 members, stated that it has not taken a position on whether the

MEDFLY SPRAYING MAP: B2

pesticide is safe but only that enough questions have been raised to warrant a stop to spraying until there is conclusive proof.

"We wanted to give the agriculture industry a fair chance," said Joyce Coleman-Maginn, spokeswoman for the club. "But there is nothing we have been able to find out that says whether it is safe for aerial spraying. We just don't know enough."

State and county agriculture officials who have been battling the Medfly in Southern California since August, maintain not only that the spraying is safe, but that its continuation is crucial to the effort to rid California of a pest that could devastate the state's farm industry.

In a statement released Monday, the club called for new research on the short- and long-term effects of aerial spraying or of communities. In doing so, the influenza fraud organization lent its voice to what appears to be a growing movement of people

Malathion Controversy

Your article ("Man Behind Malathion Safety Study Disavows It," Part B, Feb. 6) leaves the impression that the only transgression of California officials who altered the Medfly risk assessment that I co-wrote and directed was to make an "insignificant" change in one portion of our calculations. In fact, the change made was consistent with the wholesale exclusion of the major portion of our conclusions regarding the uncertainty which existed (and still exists) over the long-term safety of such a spray operation. By fudging the numbers on our cancer risk assessment so that the apparent risk was no more than 1 in a million, it was possible for the populations, may lead to exposures which are cumulative in their effects. Obviously, what is needed is a fresh look at the entire spectrum of the mixture of chemicals. In the original report, the major sections had to be limited to pure malathion, not the commercial grade which is currently being used. It is this grade which has the greatest proclivity for producing damage—and it is widely known that its toxicity is greater (depending on the extent of contamination with more noxious alkylating agents) than malathion alone. The decision to convene a panel of such experts is long overdue.

In the meantime, it is worth asking what the response of any governmental agency would have been if experimental data and conclusions were altered in the manner that my report was in 1980. Such manipulation of data and distortion of clearly stated conclusions regarding residual concerns and safety might well be labeled

MARC LAPPE Prof. of Health Policy & Ethics, University of Illinois, College of Medicine

Man Behind Malathion Safety Study Disavows It

By ASHLEY DUNN and MAURA DOLAN TIMES STAFF WRITERS

In a potentially embarrassing blow to the state's aerial spraying campaign to eradicate the Medfly, an author of a 1980 study used to demonstrate the safety of malathion has disavowed the report's findings, saying the pesticide may pose a danger to infants, the elderly and the sick. Marc A. Lappe, a professor of health ethics at the University of Illinois at Urbana-Champaign, said he found in 1980 that every cause six extra cases of cancer in what the report officials

MEDFLY SPRAYING MAP: B2

about the possible health hazards of spraying. While six cancer cases in a million suggest a relatively low hazard, Lappe said, the public has been ramrodded into accepting this without their basic rights resigned his state post in 1981 because the changes made to the report. "It could be quite dangerous to infants, the elderly and the infirm."

Federal policy generally assumes that one-in-a-million risk is insignificant. But state regulation puts the enforcement of Proposition 65, the 1986 ballot initiative that requires businesses to warn people

Introduction to Chapter 10



The aerial spraying of malathion lasted in Northern California from June 1980 to September 1982. Helicopters and planes sprayed 2 million homes in 8 counties; the state treated 6.4 million acres by helicopter, and 3.6 million by plane.....

The state paid to staff \$9 million; \$2 million in ground spraying, \$11 million to trap bugs. USDA spent \$21 million. Direct costs were almost \$100 million.

The state also spent \$18.4 million on air spraying. Evergreen Helicopter Service was paid: \$7,722,379; San Joaquin Helicopters Service \$8,496,642; Globe Aviation (airplanes) \$2.4 million. \$2,000. per flight hour for helicopters, plus stand by time- this added up to \$144,000 for one night of spraying.

In 1981 the California Health and Safety report stated, "No information would lead to any reasonable suspicion of a potential adverse public health impact under the proposed malathion use conditions."

The report also stated ..."That in addition to the literature search contacts were made with individuals in the Federal Environmental Protection Agency, the Center for Disease Control (CDC) in Atlanta, Georgia, and the California Department of Health Services." Indirect comments were received from the John Muir Society, the Sierra Club and Citizens for a Better Environment. After careful review and analysis of all available information, no public health hazard risk was identified in association with the proposed bait application program as submitted."

According to the state's point of view, these organizations were in agreement with the state, when in fact, they were not; see letter (this chapter) from **Citizens for a Better Environment** to Honorable John Vasconcellos, voicing their doubt regarding the safety of aerial spraying of malathion.

In 1980 Marc Lappe headed **HAZARD EVALUATION SYSTEM AND INFORMATION SERVICE (HESIS)** in Berkeley. He was given the responsibility of writing a report regarding the safety of aerial spraying malathion. In his original report he stated the aerial spray of malathion must be limited to pure malathion, not the commercial grade. It is this grade which has the greatest potential for producing damage and it is widely known that its toxicity is greater (depending on the extent of contamination with more noxious alky-lating agents) than is malathion alone. He also completed the report on the (safe) crawl area of a child for aerial spraying of malathion.

His figures for the crawl area were changed, and his recommendation for pure malathion *was ignored*. He was told to change his report, when he refused, he was fired....

In a newspaper article Lappe asks the question, "It is worth asking what the response of any governmental agency would have been if experimental data and conclusions were altered in the manner that my report was in 1980? Such manipulation of data and distortion of clearly stated conclusions regarding residual concerns of safety might well be labeled fraud."

EDITOR'S NOTE: See following pages for details on Marc Lappe's position and report at the time of the spraying in northern California.

Dr. Beverlee Myers, Director (1980) California Dept of Health Services signed a report stating it was declared safe to aerial spray malathion over a large urban population in northern California

(Continued Next Page)

The report listed chronic affects of malathion and acute effects. These effects prefaced by numbers from 1-15 of referenced medical journals and personal communications.

According to this report (by Myers) these journals confirmed the safety of aerial spraying of malathion.

As the Editor of this book, I looked up the journals listed in the referenced section and many of journals gave negative conclusions regarding the safe use of malathion for living beings.

Number 3 in the Reference section was listed "Y. Iwata", U.C. Riverside. In Iwata's reply to Myers regarding malaoxon: "Indicates that insignificant amounts of this material would be present especially in relatively cool months, but we recommend that thearea be monitored in order to be certain.

Editor's Note: After reading many journals regarding malathion and malaoxon, plus reading Epidemiologist, S. Epstein's court testimony on malathion, and malaoxon, I have learned that the breakdown product of malathion is (malaoxon) is much more toxic then malathion.

My question to you the reader is why were not the journals consulted rather then one lone chemist from the University of California through a private communication?

memorandum

To: Richard Rominger, Director
Department of Food and Agriculture
1220 N. Street
Sacramento, Ca 95814

Date: December 16, 1980
Subject: Health Hazard Assessment
of Aerial Application of
Malathion in Santa Clara
County

From: Office of the Director

Attached is our staff's report assessing the health risks associated with the proposed malathion application for the Mediterranean fruit fly eradication program. ~~As you can see from the summary we find after careful in-day~~ *memorandum* evaluation that there will be no significant health risks.

As I understand it, our stated recommendations to insure public safety address the public's concerns are points that our staff has already ~~with your Department and OREGA and general agreement on this has been~~ *memorandum*

Beverly A. Myers
Beverly A. Myers
Director

cc: Mario Obledo
Governor's Office
Kuey Johnson

From: Marc Lappe
The Keeper

Date: December 15, 1980
Subject: Myers Letter on '80-2
to Yoccoz/Colton

We have reviewed Myers letter on Malathion and suggest changes to the tone and content that might better convey the present state of our knowledge. The principal issue here seems to be one of degree of certainty. We believe that on the issue of Malathion's possible chronic toxicity, a prudent approach would be to acknowledge the absence of definitive data regarding carcinogenicity and mutagenicity. The fact that the data do not reach "criteria" for these endpoints should not imply that the substance is negative for these effects. On the contrary, the data suggest that Malathion may actually have the adverse properties only imperfectly studied to date. In the present situation, where newly developed data show possible level of anticipated toxic properties for a substance previously thought to be "safe", a more prudent policy for the Department may be to imply that uncertainty exists about the ultimate safety of the pesticide when used in the proposed manner. To our view, the final report could better convey this sense of uncertainty. As written, it may give the erroneous impression that all of the data are in fact and thus inadvertently give a complete "clean bill of health" to a substance whose chronic toxicity is currently being evaluated. To me it seems preferable to have the Department be "definitive" about substances that were truly negative on all the battery of tests to which they had been subjected. In particular, for Malathion definitely negative alternative substances may very well exist. The Department's position could thus be to urge that they be sought.

**THE CONTROVERSY OVER THE 1981
AERIAL SPRAYING OF MALATHION
AND THE SUBSEQUENT FIRING OF
OF THE HESIS DIRECTOR MARC LAPPE, Ph.D.**

**EXCERPTED WITH PERMISSION FROM
FOUNDATION FOR THE
ADVANCEMENTS IN SCIENCE AND EDUCATION
PUBLICATION
CHEMICAL SENSITIVITY AND PUBLIC HEALTH POLICY
The Clinical Ecology Debate
by Shelley Beckmann, Ph.D., Joan Hansen, J.D.,
Racquel Skolnik, Patricia Ullman, Ph.D., Robert Warner.**

"HESIS has had a turbulent history. The unit was established in 1979 following the discovery that workers in three major chemical manufacturing companies had become sterile due to chronic exposure to the soil fumigant dibromochloropropane (DBCP). Legislative hearings discovered that while information on the effects of DBCP exposure to animals had been published as early as 1961, there was no governmental system to collect this data and alert workers, unions, employers and other state agencies to potential health hazards. The California Legislature established HESIS to carry out this function.

State files, however, reveal the existence of a number of internal problems which undermined HESIS' ability to effectively carry out its mandate. A report (unreleased to the public) prepared by the HESIS Advisory Committee in May of 1986 states that "certain staff have actually refused to work on hazard alerts and fact sheets" and that one staff member "spent a majority of HESIS time working on individually funded research." The unit was required by Section 147.2 of the state Labor Code to "provide reliable information of practical use to employers, employees, representatives of employees, and other governmental agencies on possible hazards to employees of exposure to toxic materials or harmful physical agents." A HESIS publications list, however, shows that the unit issued only five "Hazard Alerts" and eight "Fact Sheets" between 1981 and 1986, with a budget of approximately \$6 million.

Looking earlier still in HESIS' history, state files suggest that there was considerable internal opposition to those who adopted a cautionary attitude or voiced prevention-oriented public health concerns over the potential low-level health effects of some widely used industrial compounds.

The first Director of HESIS was Dr. Marc Lappe.* Among the first items on his agenda was the preparation of a report on the herbicide 2,4-D (dichlorophenoxyacetic acid). Lappe's team produced a "Hazard Alert" which warned of possible links between exposure to the herbicide and peripheral nervous system damage. (2,4-D has since been linked to cancer of the lymphatic system.) Lappe claims that when he sent his analysis to Dr. Donald Whorton, then head of the HESIS Advisory Committee, Whorton proclaimed it so flawed as to require Lappe's resignation if released.

Whorton's objectivity as a HESIS advisor, however, was soon called into question. Lappe says he received a copy of a letter from attorney Peter Weiner (then a special assistant to the governor on toxics matters) citing a disturbing conflict of interest. Concurrent with his effort to have Lappe's "Hazard Alert" pulled, Whorton's company, Environmental Health Associates, had been preparing its own report on 2,4-D for a private industry, the National Forest Products Association. This report, entitled "Potential Health Effects Associated With the Use of Phenoxy Herbicides" (available from the NFPA's Washington, D.C. office) concluded that "data from valid scientific inquires appear to support the safety of continued use of this herbicide (2,4-D) when used as directed."

*The unit, established in 1979, was initially known as the Hazard Alert System. The "Alert" part of the name was later removed and replaced with "Evaluation."

THE MALATHION CONTROVERSY

In late 1980 Lappe again voiced alarm over a possible toxic hazard. This time he reported on the potential dangers of aerial Malathion spraying for "Medflies" over 115 square miles in urban Santa Clara County. In a complex, multi-step analysis of the planned operation, Lappe's staff computed the likelihood of a child contracting cancer as a result of the spraying.

The group concluded that the risk was approximately five cancers in a million, five times higher than the acceptable threshold of one in a million. They based this upon many factors, including a child's potential exposure to the pesticide while moving about an area of 30 square feet, the size of a large playpen. Lappe then sent this computation to his immediate superior, and member of the CMA'S Subcommittee on Clinical Ecology, Dr. Ephraim Kahn.

Kahn returned Lappe's assessment with this handwritten memo: "Note that we've cut the infant's crawl area to 6 ft. square [approximately the size of an open newspaper] - this brings the risk to approximately 10^{-6} " (a reduction of precisely one fifth, which brought the risk to within the acceptable limit). Lappe says that when he objected to this seemingly arbitrary calculation, he was told "that's just the way it's going to be."

When asked about this memo in a June 7, 1989 telephone interview, Kahn initially stated, "There are no such memos." When told of the existence of the memo, however, Kahn argued that the analysis showing Malathion's safety had been based on "one after another worst case assumptions" and that the analysis therefore showed that the spraying operation would be safe.

According to a record in state files, on December 15, 1980, Lappe and Dr. Kim Hooper sent a diplomatic memo to Kahn voicing their disagreement with the position the department had taken on Malathion.

"We believe," the two wrote, "that on the issue of Malathion's possible chronic toxicity...the data suggest that Malathion may actually have adverse properties only imperfectly studied to date. In our view, the final report could better convey this sense of uncertainty. As written, it may give the erroneous impression that all of the data are in, and thus inadvertently give a complete 'clean bill of health' to a substance whose chronic toxicity is currently being evaluated."

Despite Lappe's and Hooper's concern, the Health Department issued its final report, with Health Services Director Beverlee Myers asserting that the operation would involve "no significant health risks." The decision to omit Lappe's warning is especially important in light of the HESIS mandate, particularly section 429.11 of the Health and Safety Code:

"Whenever the repository [of information on commercially used chemicals] receives a request about toxicity information on any other chemical, in addition to providing available information about the known toxic effects of exposure to the chemical, the repository shall also notify the requester of any determination by any state agency or federal agency that the chronic health effects testing data on the chemical is inadequate or incomplete."

When interviewed, Kahn offered a different assessment of the circumstances surrounding the Malathion spraying operation. He stated that the Health & Safety Code section governing HESIS would not apply to a large aerial spraying activity, claiming that this code

pertains solely to **occupational** health exposures "which are of an entirely different magnitude."*

Kahn stated that Lappe and Hooper "were not in the business of evaluating projects of this type." Curiously, Kahn also said that it was he who assigned Lappe and Hooper to evaluate the Malathion spraying operation.

Kahn believes that the public was confused about the Malathion spraying operation and that people felt there was a clear-cut division between the "good guys" (farmworkers, environmentalists) and the "bad guys" (pesticide sprayers, manufacturers, the agriculture industry). Lappe simply "could not see himself in a position of being on the wrong side" and had typed up the memo (disagreeing with the department's position on Malathion) "so that he could make it part of the public record and so to disassociate himself," says Kahn.

Kahn claims that Lappe told an environmental group, Citizens for a Better Environment (CBE), that such a memo had been prepared "so that they could [under the public records act] come and say they wanted to see that memo."

Upon the release of the health department's report on Malathion, CBE did file a public records request for the agency's files on Malathion. Documents obtained from CBE state that Dr. Ephraim Kahn twice refused their request. Kahn denies having refused the request, although he states that there were some working drafts of the Malathion analysis and report which he felt were "legitimately" not part of available records. CBE files show that the group then approached Lappe who turned over the files. Approximately two weeks later, says Lappe, Kahn walked into Lappe's office with a memo detailing a letter Lappe was to write and sign.

"I was to write a letter which would recant and say that I did not believe that there were any substantive differences between what I actually wrote, what our risk assessment was, and what the Department interpreted it to be," says Lappe, who now teaches clinical ethics and health policy at the University of Illinois at Chicago. "Kahn gave me the specific points the department wanted me to include in the letter and told me to write it and sign it. I refused. A few weeks later I was fired."

Kahn categorically denies Lappe's charge, stating that he never asked Lappe to sign any such memo and that it was not he who urged Lappe's removal, but "people above me. Lappe, said Kahn, had been "A little bit like a loose cannon."

*It would appear that Kahn is incorrect on this point. Section 147 of the state Labor Code states that one function of the HESIS repository of information is to "Notify the Director of Food and Agriculture of any information developed by the repository which is relevant to carrying out his or her responsibilities under Chapters 2 (commencing with Section 12751) and 3 (commencing with Section 14001) of Division 7 of the Food and Agriculture Code. Chapter 2 deals with "economic poisons," defined in Section 12753 as "any substance or mixture of substances which is intended to be used for...preventing, destroying, repelling, or mitigating any and all insects, fungi, bacteria, weeds, rodents, or predatory animals...which may infest or be detrimental to vegetation, man, animals or households, or be present in any environment whatsoever." Chapter 3, Section 14001, et seq., provides for "the control and regulation of the use of restricted materials hazardous to human beings, animals or crops..."

NOTE: The complete booklet, **CHEMICAL SENSITIVITY AND PUBLIC HEALTH POLICY-THE CLINICAL ECOLOGY DEBATE**, may be purchased through:

FOUNDATION FOR ADVANCEMENTS IN SCIENCE AND EDUCATION
Park Mile Plaza, 4801 Wilshire Boulevard, Los Angeles, California 90010
(213) 937-9911, Price: \$5.00

20 January 1981

Honorable John Vasconcellos
State Capitol
Sacramento, CA 95814

**CITIZENS
FOR
A
BETTER
ENVIRONMENT**

Dear Assemblyman Vasconcellos:

I am very concerned about an apparent Department of Health Services cover-up of the potential public health impacts that may occur as a result of aerial malathion spraying for control of the Mediterranean Fruit Fly in Santa Clara County.

In early December, Citizens for a Better Environment provided the Department of Health Services with information used in performing their aerial malathion health risk assessment. ~~The Department's entire assessment was completed less than one~~ week from its inception. When we attempted to review Department files and staff analysis on malathion, Dr. Ephraim Kahn denied us access to these public files (see my December 12 letter written after Dr. Kahn verbally denied us access). On December 15, Dr. Kahn again denied CBE access; however, Dr. Marc Lappe complied with our hand delivered request to review the Department's malathion files. One of the documents contained in these files was a staff memo expressing concern over the tone and language of the Department's analysis. Another staff memo states that "our short time frame precluded an exhaustive survey" of malathion's potential effects. This contradicts Director Myers 17 December letter to CDFA Director Rominger in which she states that a "careful in-depth evaluation" was performed. It is my understanding that the Department has since forbidden their staff from commenting on the memo or the contents of the Department's report.

CBE contends that the Department performed a hurried and misleading assessment of the potential health effects that may occur from aerial malathion spraying. Dr. Robert Ginsberg, CBE's Staff Toxicologist in our Chicago office, has reviewed the report and I've enclosed his December 23rd letter to Congressman Don Edwards which includes his assessment of the spraying's potential public health effects. In addition to inappropriate conclusions based on the scientific facts, Dr. Ginsberg is critical of the report's failure to even consider the most likely health effects from such blanket spraying--severe asthma-like allergic and neurological effects.

It is apparent that the Department has caved into political pressures; performed a hurried and factually unwarranted assessment, and given aerial malathion spraying a "clean bill of health" instead of fulfilling its charge to act as an advocate of the public health. This posture may be contrasted with the Department of Food and Agriculture's very vocal advocacy of California agriculture. We remain concerned that the decisions on this project are not being made on the basis of the facts, but are instead a hysterical response to the grossly exaggerated estimates of potential damage which are being made by the agricultural interests and their agency representatives.

Sincerely,



Steve Dreistadt, Research Associate

Enclosures

cc: Assemblyman Art Torres, Chairman
Assembly Health Committee

25 First Street, Suite 600, San Francisco, California 94105 (415) 777-1934

Introduction to Chapter 11

The El Cajon trial was indeed...a 'land-mark case!' It was the first time Malathion has gone to trial with live witness testimony! Renowned Toxicologist, Samuel Epstein, M.D., Professor of Occupational and Environmental Medicine-School of Public Health, University of Illinois, Chicago; and President of the Rachael Carson Council, gave live witness testimony in this trial held in California (El Cajon) regarding the aerial spraying of Malathion over urban areas.

Not only quoting from the journals, Epstein also spoke out in no uncertain terms chastising the State of California for its blatant irresponsibility regarding health hazards presented to all citizens by the aerial spraying of Malathion over urban areas.

Dr. Epstein's testimony will become the classic format for all other cities and states (across this nation) seeking to fight the aerial spraying of pesticides over urban areas. The testimony (excerpted) is presented in this chapter.

As the Editor I interviewed Steve Eckis, Deputy City Attorney for this case. A bright, knowledgeable young man, Eckis was able to lead Dr. Epstein through the trial with great ease, having Epstein bring out the most important health hazards of Malathion as well as all organophosphates.

I was also able to interview the Mayor of the City (El Cajon) who helped bring this case to trial. Mayor John Reber said that Governor Deukmejian demanded only scientists from California testify and only those designated by him. These scientists were to be from University of California San Diego or San Diego State University.

According to Mayor Reber, both of these schools are state run and indirectly the governor pays these scientists their salary...and paraphrasing Reber, 'who would want to go against the governor..?'

When none of the scientists from these California State run schools became available to testify, it was only then the well known Dr. Samuel Epstein was brought in to testify.

According to Attorney Eckis a new bill is in the works in Sacramento, whereby not only will the Department of Food and Agriculture be involved in making decisions regarding aerial spraying of pesticides over urban areas but also the Department of Health Services will become involved in this decision. In other words, if the bill passes, the aerial spraying of malathion issue, would then become a public health issue as well.

Heretofore only the Department of Food and Agriculture was involved in this decision as it was strictly considered a farm issue. If this bill passes, aerial spraying of malathion over urban populations will become not only a farm issue but a health issue as well.

**EDITOR INTERVIEWS MAYOR OF EL CAJON, CALIFORNIA
AND THE CITY'S DEPUTY ATTORNEY- STEVE ECKIS, AND
ATTORNEY LISA BAUGHMAN IN COURT TRIAL OF
MALATHION.**

EDITOR: Was this the first time the malathion issue has ever gone to trial using live-witness testimony?

ATT. BAUGHMAN: It was a trial with live testimony... live witness testimony. Huntington Beach was able to go to trial based on the same statutes that we were, but they were not allowed to get any live witness testimonies, so they weren't allowed to have experts come in and testify the way we were.

In terms of general overview I can just say L.A. went to court with this yesterday, to get a temporary restraining order, and I do not know what the outcome of that was.

As far as we know, out of the 9 cities that have tried to stop the aerial spraying, (I guess ten including us) nobody has won a court order stay, so hopefully Los Angeles can do something.

INTERVIEW WITH MAYOR REBER

EDITOR: Who is your attorney for the City of El Cajon?

MAYOR REBER: Steve Eckis is our Deputy City Attorney, and if there is a better attorney in the U.S., I don't know where he is.

EDITOR: Your initial reaction was that you would be able to stop the malathion spray?

MAYOR: Right. We thought we could, and Steve Eckis (Deputy City Attorney) and I talked it over, and he said, "You know, no one has been successful in stopping the spraying." After he researched it and talked to attorneys in Orange County and Los Angeles County, he came up with what I thought, was legal findings to approach the judge and hopefully we would get a ruling; at least a stay, to postpone the spraying. The one legal argument we thought was excellent was, "They are not going by the law of the State of California. That was our biggest argument right there.

EDITOR: How did you go about getting Dr. Epstein as a witness...do you know him?

MAYOR: No, we had a hard time finding expert witnesses, in fact, Governor Deukmejian said, he would not listen to any political rhetoric. He said he would only listen to scientists in the State of California that were knowledgeable on this subject, but only the ones that he designated. He said, "I will listen to a group of scientists from University California California San Diego, or San Diego State University."

You have to realize that all these people work for the State! So they are not going to testify against the Governor who controls their salary, basically. Then you go in front of a judge that is trying to become a Superior Court judge, and he is not going to go against Governor Deukmejian.

EDITOR: This judge hopes to be promoted to Superior Court judge?

THE PERSONS OF OUR PEOPLE
MAYOR: Yes.

Steve Eckis came to the counsel and said, "Look, I am having a hard time getting people to testify that malathion is harmful to the environment, to human beings, and whatever else." He had to go out of the state to get Dr. Epstein to testify. Epstein did an excellent job I thought, and Steve did an excellent job.

Even the judge said this is a 5 to 6 week case and we tried it in 3 days. If it had run 6 weeks we would have a bill of (attorney's fees alone) \$250,000.

EDITOR: This trial was held before the first spraying?

MAYOR: Yes, we tried to stop the first spraying. We had about a 7 to 10 day period... We tried for a stay right away, in front of the same judge that had the trial. He denied it, so we went that afternoon to the 4th district Court of Appeals, and filed an appeal and asked for a stay there and we were denied; so that kept the trial dates open. So Judge Bollman set the trial for 3 days....He made his ruling the day of the spraying, so we were in trial Wednesday, Thursday and Friday, and the judge said I will make my ruling Monday morning (the day of the spraying) That is when we went and appealed it again, filed the appeal Monday afternoon, but they still sprayed; and then at the Appeals Court, there were three judges there and...

After his (Bollman) ruling we appealed it again, and they had three judges on the Appeals Court and we got a 2-1 vote; so one judge voted for us and 2 voted against us to continue the spraying. That evening at 9PM they sprayed. That was the first spraying.

EDITOR: How many sprays have you had down there?

MAYOR: Three.

EDITOR: Is that all?

MAYOR: Yes. Well, I was on a T.V. program with Routhier (this was his project-he is with the Food and Agriculture and also represents San Diego County which made him in charge of the spraying of El Cajon.)

Routhier stated on a T.V. program: "In the L.A. area we have sprayed sometimes 30 times or more." And I said, "Wait a minute, wait a minute...Can you guarantee me that we are only going to get sprayed three times? We could get sprayed 30 or 40 or 50 times in El Cajon." He said, "I can't guarantee you that you won't be sprayed more than 3 times."

Then in the trial Betsy, they found 7 Mexican fruit flies in Southeast San Diego. So...Mr. Eckis said, "Well, if you have found 7 fruit flies in southeast San Diego, why did you not spray there, then and there?" He says, "Because we have a sterile fly program going on at that time in that area, and if we would have sprayed we would have killed the sterile fruit flies. Steve Eckis jumped on that...like a hawk looking after a mouse....that was the case there..."

I kept saying to the press, "Put some sterile flies in here (meaning El Cajon) and we won't get sprayed! Because they don't want to kill the sterile fruit flies--so why didn't they do that to begin with?"

You know this is a metropolitan area and people just have a couple of orange trees in their back yard and they find 3 flies and they go crazy.

If government says you are going to be sprayed then you are going to be sprayed, and you have no say--so whatsoever. I think that is the bottom line...and now there is a bill in Sacramento, (Steve Eckis was invited to testify in front of the Assembly Judiciary

Committee) and he came back and told me that the bill (if it passes) will require an environmental impact report plus public hearings before they can spray.

EDITOR INTERVIEWS ATTORNEY STEVE ECKIS

EDITOR: This is a landmark case!

ATT. ECKIS: Well, it is.

EDITOR: Mayor Reber also said you were just called to Sacramento to give testimony.

ATT. ECKIS: Yes, I went there and testified on a bill that is known as AB2644. The legal authority, the statutes that let the Department of Food and Agriculture to engage in these pests eradication processes expires on December 31st of this year. It will be of no further force or effect, so if they are going to be able to engage in these types of activities in 1991, they are going to need some new statutes in effect. They had introduced a bill earlier this year that basically would have extended the existing law; only in my opinion, the law was even worse than the existing law. That bill had been assigned to a subcommittee of the Assembly Judiciary Committee, and I was asked by the attorney for that subcommittee to come to testify on that bill. I think that the new bill that comes out of the legislature this year will be a much better bill in two respects: there will be acknowledgment for the first time, that this is as much a **public health issue** as it is a pest eradication issue, and that will be evidenced by requiring that the Director of the Department Health Services, be involved in this process in a very high profile way, before the decision is made to spray. That has never been the case. The Department of Food and Agriculture made all of these decisions, and DHS wasn't involved at all. That is a big change. The second change will be a procedural change which will require the Department of Food and Agriculture and the Department of Health together...the Department of Food and Agriculture would issue a notice of intended decision to spray and would be required to file all documents supporting that intended decision with the city clerk of the city that is going to be affected, and then hold a hearing open to the public, to receive public testimony of concern, before a final decision. It would give people like me, (who represent cities) an opportunity to put on a case that there are other alternatives; that there are better courses of action.

Then the decision, if incurred by the Department of Health Services would then become a final decision, but we would still have the final opportunity to challenge a decision in format that would enable us to call witnesses such as Dr. Epstein, in an effort to convince a judge that this either is unhealthy or in some way violates the law.

The other big change in this new bill, would be to require what's called a Concurrent Environmental Impact Report at least in certain circumstances, and one of those circumstances would be for a jurisdiction which is being sprayed for a second time. That concurrent environmental impact report doesn't have to be done before the project begins. Most environmental impact reports have to be done before whatever the project is that is going to create the impact commences.

It could be done during and even after the eradication project was over, but at least, it is the first step towards requiring the Department of Food and Agriculture to document the environmental impacts of these kinds of projects. When they have to do that, and when they have to involve the Department of Health Services and the Director of that Department has to make a finding that there is no health risk, involved here, we are on the road to giving this issue exposure in the correct light. When the issues become the environment and public health, then we are on the road to a solution, to what I consider

THE POISONING OF OUR PEOPLE
to be a serious problem.

As long as this continues simply to be viewed as "pest" eradication, we are going to make no progress because, I think the outcome in our case demonstrates that the courts are going to be very reluctant to upset a decision which they perceived to be the Governor's decision, because an 'emergency' exists.

Sometimes the governer who has appointed that very judge to office, (although I am not suggesting necessarily in this case), has an impact. It is tough, it is very tough, for a judge to tell the Governor of the State of California that he wrong. That..." I am a judge and I am smarter then you and I know an emergency when I see one Governor, and this isn't one." That is a tough order...to ask some Superior Court judge in San Diego County, Imperial County or Klamath County, or wherever...that is a tall order for a judge to have to issue so..

EDITOR: According to Mayor Reber, the judge is being considered for Superior Court judge.

ATT. ECKIS: It is my understanding he would like to become a Superior Court judge. He is presently a Municipal Court judge.

EDITOR: So this trial was in Municipal Court?

ATT. ECKIS: No, it is kind of a funny deal. It was in Superior Court, and he is a Municipal judge signed to act as a Superior Court judge to handle this case.

EDITOR: Dr. Epstein feels this testimony will be widely read, because he said they are spraying in different parts of the United States, not only California.

ATT. ECKIS: When they begin spraying malathion over heavily populated urban areas, the issue is really a different issue, and Dr. Epstein was a very articulate advocate of the point, that we are really talking about a public health issue, and we should really be thoroughly comfortable with the notion that what we are spraying here has no significant effect at all; and his point (to some extent he is saying) that it does have a significant effect. But even more importantly he is saying, "We don't know, and the studies have not been done in a number of these areas, and there are some indications of carcinogenicity and other things that deserve taking a look at this just as we would look at any other public health issue. We are not looking at this as a public issue. We need to do that. It would be irresponsible not to do it." I agree with Dr. Epstein.

EDITOR: What do you think is behind all this?

ATT. ECKIS: What drives this...is a multi billion dollar agricultural industry. There isn't any question about that, and the influence that the industry has on state government, because this industry is important to the State of California. I understand that. We do need to do what we can to protect this very important agricultural resource that we have in this state from damage, whether from this source, or some other source.

It is understandable why there is concern about this, and for those somewhat politically attuned, it is understandable that that industry involves a big amount of money, business interests are very concerned about it, and legislators listen to people like that and so does the Governor of the State of California, whoever he is...former Governor Brown was not unconcerned about this problem. He was just reluctant to use aerial spraying. Governor Deukmejian believes that was a mistake and the answer to the problem is to get in and spray aerially at an earlier point and time. That is what drives this issue, at the very least that is what drives the issue. The real cynic the real skeptic, would say just plain old dollars drive this issue, and there are just people reaping financial and political advantage from

supporting this industry. I don't have anywhere near enough facts to start making those kinds of allegations, but at the very least, we are talking (in terms of dollars), a very large industry that is very important to this state. To this date the importance of the industry has been allowed by the legislature, and by the courts, and by the Governor to overshadow the public health aspects of this issue, and that needs to be turned around and I think that real progress is being made at least in the legislature now, with this bill that is coming forth. It doesn't look like we are going to get much help out of courts.

EDITOR: Who sponsored this bill?

ATT. ECKIS: I believe it is Assemblyman Waters' bill. The key vote in the subcommittee was Assemblyman Phil Eisenburg's vote. He represents Sacramento and is a very influential member of the Assembly. He was very receptive to a number of the concerns I had as a trial lawyer. He is a lawyer himself. And really addressing all these points I discussed in terms of the major changes, both opening up the public process and also opening up the focus of these projects to the public health issues. He is receptive to all of those things, and also receptive to wanting more environmental review done on these things. He has so far been a critically important person in the legislative process this year, and course we don't know what final form 2644 is going to take, but he is very knowledgeable on this issue and I find him very open, very receptive and very understanding of our concerns, in that this is more than just pest eradication.

EDITOR: Mr. Eckis, if people want to get a copy of the court testimony where do they write?

ATT. ECKIS: We have a few copies of the transcript and have the ability to have more copies of them printed. We have taken the position that we will provide them to anybody who asks at the cost it costs us to have them prepared.

If someone would like to write for the testimony by Dr. Epstein, they may write to : Attorney Steve Eckis, Drawer 1466, El Cajon, California, 92022. Please ask for San Diego Superior Court Case No. EC 002333 and enclose \$15.00 for xeroxing and mailing.

The date of the trial was Wednesday May 30th, continued on 31st and June 1st and was completed on Monday 4th of June. Testimony and argument were completed Friday the 1st, about 6 or 6:30 in the evening. The judge took it under submission and he announced his decision on Monday June 4th. The case actually went for 3 days and the case itself was completed, testimony and argument were completed at the end of the day on the 1st.

EDITOR: The Mayor said it was amazing ...that usually a case like this would take six weeks... you wrapped it up in three days.

ATT. ECKIS: That is something to take some pride in, although real trial lawyers would not particularly take pride in that. I was under the gun to get that case tried again before the second spray which was going to take place on Monday night 4th. If I had my drothers, I would have proceeded more like Los Angeles has... more the traditional way. File the law suit... you do a lot of discovery, you get well prepared to try the case, you go in and you try the case and it takes 3 or 4 or 5 or 6 weeks, or whatever, and you don't just call Dr. Epstein, you call Dr. Lappe, you call 5 or 6 other people, and the other side calls 5 or 6 other people. We had a choice, we could have done it that way, that is what L.A. did. But, meanwhile they sprayed L.A. time and time and time again. We wanted to avoid being sprayed, so we had no choice, we had to get in there and we had to create a format where we could get the case tried within just a few days. And...that we did, and some would say, "That was a dumb thing to do, and proof of that is is you lost"....but, what we did was we felt it was more important to take a shot at it, at a point and time when we might avoid being sprayed, then to litigate the law suit a year or two later, when you have already been

~~INTERVIEWING OF OUR PEOPLE~~
sprayed, so what if you win, big deal. So, that coin has two sides to it. But we did the best we could under the circumstances. The court and Judge Bollman is to be commended, I mean he could have set that case for trial in the fall, or in the spring of next year. He didn't do that. We asked him for an immediate trial date, and he assigned us a trial date, one week later.

He gave us every opportunity, every reasonable opportunity to put on as much of a case as we could put on under very very difficult time constraints, and I applaud him for that, I am disappointed in his decision, (I really am), but in terms of the judicial system, giving us an opportunity to be heard, this was extraordinary, and this is why I doubt Huntington Beach actually went to trial, because most courts, would start laughing. You would say "I would like a trial days," in 7 days or 10 days and the judge wouldn't be able to stop laughing. I said that to Mike Bollman, and Judge Bollman said, "How about next Wednesday." That truly is extraordinary.

That is one of the things, frankly, that the Department of Food and Agriculture relies upon. They know that most courts can't possibly get a case like this on their trial calendar fast enough, and they can get in and get the spraying project in and over with before the case ever goes to trial, and they know that...that is a huge advantage for them. We made them work in El Cajon. They may have won, but they knew they had been in a real fist fight, even though they won that trial.

Some of those guys from the Food and Agriculture... one of those guys spent about 2 hours on the witness stand being cross examined by me and I know he went back to Sacramento and told his boss, "Look, I don't want to have to do that again."

EDITOR: Who was that?

ATT. ECKIS: Rex McGee. He knew he didn't want to deal with me anymore when we were finished. As It turns out, Henry Voss, is the Director of this Department. The law says that the Director shall sign a statement of decision which sets forth the facts and the reasons why the eradication project is going to go forward.

Mr. McGee indicated, during cross-examination that to his knowledge Mr. Voss has never underlined, signed one of the statements of decision. Mr. Voss is smarter than that. He gets Mr. McGee to sign them, or someone else, so that if these things are ever litigated, it is not Henry Voss who is on the stand being cross-examined by some city attorney like me...it's Rex McGee who gets to come down and gets to put up with somebody like me. So Voss has never signed one of these. When I subpoenaed Voss to testify, the Attorney General called me and said well, first of all we are not going to produce him, and we will resist it, but second of all, you don't want him anyway, he didn't sign that decision, McGee did. And I looked at it, and he was right, and it wouldn't have done me any good to have Voss down here, I wanted to beat up on the guy who had signed this decision, so I agreed that we would accept McGee in lieu of Voss.

There seems to be a feeling in the legislature that the next governor whether it's Wilson or Feinstein will be much less willing to declare these emergencies that Deukmejian has been willing to....

That doesn't mean that we still won't have pest eradication projects, but it will create a situation where it is truly us against the Department. When you face off against the Governor, these courts are just real reluctant to tell the Governor that he is wrong. I think they will be much more inclined to tell the Director of Food and Agriculture, whoever he is, that you are wrong here...we are going to do it this way. I think that is probably right, I think that either Wilson or Feinstein will take a somewhat different view of these projects, then Governor Deukmejian has taken.

**SAMUEL EPSTEIN, M.D., EXPERT WITNESS IN A COURT OF LAW
AGAINST THE AERIAL SPRAYING OF MALATHION
IN EL CAJON, CALIFORNIA (Excerpted)**

Q. And by whom are you presently employed, Doctor?

A. University of Illinois Medical Center and the School of Public Health of Chicago.

Q. And what other educational training do you have?

A. I have about a half a dozen odd degrees in Toxicology, Tropical Medicine, Public Health; advanced degrees in Internal Medicine.

Q. Could you identify those for us one by one and indicate from what institution you received that degree?

A. I have a diploma in pathology, which is equivalent to Boards, from London. Tropical Medicine and Hygiene from London, M.D., which is an advanced—we qualify in England in universities with a degree called M.D.S. Bachelor of Medicine and Bachelor of Surgery. And the M.D. is the highest degree which you can get in England with an advanced degree in internal medicine and experimental medicine. And so these are the degrees I have.

Q. That degree was from London University as well?

A. Yes. I have some honorary degrees in this country by the way.

Q. Do you have a particular area of expertise that that you focus upon Doctor?

A. Yes. I'd say for about some three years I've been involved in the whole area of toxic chemicals in air, water, food and the work place with particular reference to a wide range of adverse effects, including cancer, birth defects, genetic abnormality, enzyme deficiency and included among these toxic chemicals as an emphasis on pesticides. ...I came here largely to set up, first of all, the first laboratory of environmental toxicology in carcinogenesis in this country which I did at Harvard and the Children's Cancer Research Foundation in Boston in the early '60's.

Q. For what period of time were you with Harvard University?

A. About ten years or so.

Q. And you were connected in that regard, I take it, directly with the medical school at Harvard?

A. Yeah. My major affiliation was with what's called the children's Cancer Research Foundation, but I had affiliations with the Children's Hospital Medical Center and also Harvard Medical School.

Q. Do I understand that your primary emphasis during those years was in cancer research?

A. There was a major emphasis of cancer research, but there were a wide range of other areas involved too.

Q. Could you share those with us, please.

A. Toxicological effects of a wide range of toxic chemicals including effects on enzymes, including genetic studies, wider areas than just narrowly defined carcinogenesis.

Q. In connection with the focus that you have indicated, I take it that you've done your own research in toxicological cancer areas both; is that true?

A. Correct.

Q. And have you been published with respect to any of those research projects?

A. I have about some 300 odd scientific publications.

Q. Could you summarize for us some of the subjects of those publications?

A. Anywhere from problems of cancer in humans, pathology of cancer in humans, to carcinogenicity testing on pesticides and toxic chemicals, to genetic effects, to enzyme effects, to a wide range of matters in the interface between science and public policy and the regulatory area and in the policy making areas. But the emphasis has been largely on scientific research in these areas. And I should also mention when you asked about publications, I have about half a dozen odd books too in these general areas.

Q. Are any of your publications in the area of effects of pesticides on human health?

A. Yes, I think about forty or so.

Q. And over what period of time had those papers been written?

A. Oh, I started publishing certainly after the moment I qualified in about 1950.

Q. You indicated a moment or so ago that you have also worked in the Public Health Field. Can you describe for us what activities you've engaged in in that respect?

A. Well, the object of Public Health is to translate scientific information into sets of options which decision makers can make—can make—can make appropriate—develop appropriate policies.

And to give you some examples of these in the late '60's the Senate Committee and Public Works asked me to be their consultant on toxic chemicals. And I worked for them for a few years and drafted the first—prepared the first draft of the toxic substance control legislation in this country. I was asked by them to investigate unpublished industry data for its validity.

I've also acted as a consultant to other congressional committees. Drafted legislation for other MRAK commission and frequently invited Congressional Testimony. On the Executive level I was appointed by HEW Secretary Finch who was the HEW secretary in '68. And he created a Blue Ribbon Commission on Pesticides in their relation to the environment and health. And he appointed me to this commission and to chair several panels, to key panels, on genetic effects, birth defects. And I was a member of other panels.

In addition, the Environmental Protection Agency asked me to be their key expert witness in a suspension cancellation hearing on various pesticides including Aldrin and Dieldrin in 1972; Chlorodane and Heptachlor, '73, '74. And also I sat in the EPA Committees including the Environmental Health Advisory Committee for nearly ten years and the pesticide subcommittee for five or six years.

In addition, I was asked by the Department of Labor, Occupational Safety and Health Administration to develop in 1973 the first regulations for Occupational Carcinogens in this country to include all kinds of toxic chemicals including carcinogenic pesticides.

In addition, I've acted in the state level. I was on the Massachusetts State Pesticide Board, and in addition I've also (under particular idiosyncratic conditions) acted in an independent fashion.

A recent example of this was in relation to the Agent Orange and the Veteran's Administration. The Veteran's Administration had denied any causal associations between Agent Orange exposure and various cancers in Vietnam Veterans. And I was involved in

putting together a Scientific Task Force which reviewed a vast body of literature. And we came to the conclusion there was a basis and causality and on the basis of this, Dimenti, The Cabinet Minister for V.A. Affairs, reversed its position and is now awarding Vietnam Vets with certain cancers a compensation.

In addition to that I've served on a variety of expert bodies. The founding member of the Environmental Human Information Center which was an organization which was to be set up in '67, '68 to draw attention to the Genetic hazards of pesticides, from chemicals and pesticides in the environment.

I was the President of the Society of Occupational and Environmental Health which was a society which brought together government, management, labor and academia in an effort to resolve in a nonconfrontational way issues relating to toxic chemicals.

And I've served on expert bodies such as the International Agency for Research on Cancer which is a branch of the world Health Organization responsible for compiling and interpreting data on carcinogenic efforts of cannibals.

Q. Is the correct term for a professional engaged in these activities the term "Public Health Professional?"

A. That seems to cover it as well a anything else.

Q. I take it, then, that you have substantial experience in reviewing the research and data developed by others, assimilating that research and data, and providing expert analysis or testimony to the variety of recipients that you've testified to including the Senate and EPA; is that correct?

A. That is correct for some 25, 30 years or so

Q. How do you divide your time these days amongst these various types of activities?

A. I would say about 55 percent research, about 35 percent is what I would call public service activities to relate to and include the investigatory type of activity, and about 10 percent of time consulting.

Q. Now, in the course of the career that you've briefly described to us, have you had occasion to be exposed to the literature regarding the use of Malathion?

A. yes.

Q. Can you tell me what your history of the exposure to that literature is?

A. Certainly. Well, in the '60's—in the late '60's as a member of the MRAK Commission, this Blue Ribbon Commission, we reviewed a wide body of data in relation to different aspects of a wide range of pesticides including organophosphates in relation to the acute effects, the chronic effects and effects on humans.

Q. Is there a substantial body of literature regarding the effects of malathion on human health?

A. Indeed there is.

Q. Generally speaking of what does that consist? That is, is it primarily research done in this country? Is it done—has it been done in other countries? What sorts of subjects have been researched?

A. Well, it's an international—The data is international, although I would rank America as probably leading the world in this research. And it includes a very wide range of areas from the acute effects, from the delayed effects, from the effects on nervous system behavior, reproductive effects, genetic effects, effects on cancer.

It's really a very, very wide range of areas including also questions of the persistence of organophosphates. But far more importantly on contaminants in organophosphates this being a very growing body of data on the critical nature of contaminants in organophosphates as determinants of their biological and their toxic effects.

Q. Are you familiar with the history of the introduction of malathion into commerce in this country?

A. In very general terms. ...to the best of my recollection it was introduced into commerce about 1950 following registration of the United States Department of Agriculture...In 1970 with the initiation and creation of the Environmental Protection Agency, the Environmental Protection Agency inherited pesticides, a large number of pesticides, which had received prior registration under the United States Department of Agriculture on the basis of—on the basis of the data base which in some instances was questionable or grossly inadequate.

And as you, I'm sure are aware, the current law has decided (which is FIFRA) which is called Federal Insect Fungicide and Requirement Act...the efforts of FIFRA, among other things, is mandating the Environmental Protection Agency to Re-Register pesticides which they inherited from the USDA and to insure that a data base for the registration is adequate for this purpose. And Malathion falls into this category. It was registered by the USDA about '50. Inherited by EPA in '70, and re-registration of Malathion is currently in progress.

Q. That is the re-registration is now pending before the EPA.

A. Yes. Well, some substantial documentation has already been reviewed, but the re-registration process, has not been — a decision has not yet been made as documentation is not yet complete.

Q. Are you aware of any anticipated completion data for the procedures regarding re-registration of Malathion by the EPA?

A. As I believe I may have an opportunity to indicate the Environmental Protection Agency has specified a very, very wide range of what they call data gaps. That's areas of deficiency of information, and I will itemize these for you. But with particular reference to one aspect of this may be the carcinogenicity studies. There was a due date of April 1992. These carcinogenicity studies are currently in progress.

Q. Is at least one element of that re-registration process the issue of what information is needed before a pesticide can be safely used?

A. Correct.

Q. Can you share with us what information is necessary before a degree of comfort could be developed that a pesticide can be safely used?

A. Yes, certainly I can summarize this. I should mention that as a member of the EPA Pesticide Subcommittee of the Health Advisory Committee, I play a role in drawing up and delineating some of these requirements.

First of all is the data efficacy on the pesticide. Obviously it has to be useful.

The next is the question of the composition of the pesticide. Even although the Environmental Protection Agency still does not request disclosure of information on ingredients other than active ingredients, there are general requirements for disclosure

of information on the total ingredients in a pesticide. And I should explain at this state we divide ingredients in pesticides in so-called "Active ingredients." By "Active" we don't mean active as far as nontarget organs like humans are concerned, but active as far as the pesticides are concerned, as far as the pests.

And then there are other ingredients called inerts. Now, inerts aren't—are ingredients which are inert in relation to pesticidal activity but which, in fact, can be much more important than the active ingredient from the point of view of effects and humans. And inerts can include asbestos, benzene, carbon tetrachloride, propene oxide, dioxane. A very wide range of ingredients which in general—whose presence in general is not disclosed and whose presence in fact is critical because the toxic effects in humans may be far more dependent on those undisclosed ingredients.

And in the case of Malathion, I would say secret ingredient. And I'll provide the basis for the term "Secret Ingredient" at the appropriate stage in this colloquy.

And the question of the inerts, namely, the additives, the contaminants, is a matter of paramount public health significance. There has been serious discussion in Congress on the necessity of complete ingredient disclosure.

Just to give you an example, for instance, Malathion. There is a —some pesticides called Chlorodane and Heptachlor which until recently have been widely used for eradication of termites. Now, to the —when you look at the label, you just see Chlorodane and Heptachlor. You don't see on the label any reference to 45 other ingredients in this formulation.

The next is the physiochemical characteristics of the pesticide. What are the vapor pressures? What is the volatility? What is the solubility? What is the stability? What is the stability of the active ingredients? Will, in fact, they persist in the environment? Will they accumulate in the environment? And how is this information derived?

In addition, what is the stability of the inerts? Again, I'll give you an example. For Herbicide 2,4,5-T, which is 50 percent the component of Agent Orange, 2,4,5-T degrades rapidly in the course of month in the environment. And after a few months you see pretty little of it; however, there is a contaminant. There's a series of contaminants in 2,4,5-T, Dioxanes, which will persist not for years, but for decades. So the question of stability of the pesticide has to take into account, besides the active ingredient, the so-called inert ingredient.

I emphasize, again, the word "inert" relates only to the effect on target organ species. It has no relevance whatsoever to toxic effects to humans.

Now, the next physiochemical contribution is the binding properties. Does it bind to soil? Does it bind to articulates, and what are the degradation products in the body? Will these pesticides—will the active ingredient change or degrade into something which is very much more toxic both in the body and in the environment? And that's a highly pertinent question as far as malathion is concerned, which we'll come to.

Then the next is the question of the method of application. The method of application is critically important because it has direct bearing on questions of human dosage and uptake. How is it going to be applied? Is it going to be applied aerially? Is it going to be applied by local spray, by certified pest control applicator? Is it going to be just for agricultural products or domestic products? And are there going to be baits and traps?

Then in general one wants to go into the questions for this pesticide of the information on the routes of human exposure. Are the routes going to be by skin, by inhalation, by ingestion in our food stuff? And based on this information, it's possible to develop theoretical information on the uptake of absorption of the air and water and food and the —and maybe the dosage which you or I will get from the use of this. And also what we

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call the metabolism. How this compound will behave, this pesticide will behave in the body. And its breakdown products, and its contaminants, and its additives.....the question of ingredient identity is critical and inerts are critical to the assessment of safety.

Now, let's move on to more substantial issues, namely, the question as to what are the adverse effects, the toxic effects? First of all, as far as the toxic issues in general, what information do you need before you can make any comments on the safe use of pesticides?

You need what are the acute effects, effects at high dosage, and you study these in two or three species of rodents and dogs. You find out the dose required to produce fatal effects by different routes, by injection route, by inhalation. You find out dose, the lowest dose, from which you can detect LOEL, The Lowest Observable Effect Level, and NOEL, No Observable Effect Level. And you try and then determine from that the ADI. It's a concept developed by the World Health Organization or the Acceptable Daily Intake.

Now, of course, you also study these things in humans. You base the information on humans on the experimental data. You also go into questions of sensitization and allergic effects, and also you take into account any information you have had on accidental poisoning.

Now, the information on acute toxic effects of pesticides has to be qualified by information on potentiation. Will other pesticides magnify and potentiate and increase the effects of that pesticide? Will there be synergistic inactions between this and other pests and other chemicals?

In other words, if you have two chemicals, one producing an "A" effect and the other producing a "B" effect, and if you put the two together, will you have "A" plus "B" to the power of "A"? In other words, will it be a multiplication of the effects? You also look for cumulative effects to see whether the material will accumulate.

Then moving on you look at subacute effects. These are effects at lower doses over longer periods of time. You look at chronic effects, long-term exposure both in experiments on the animal and in humans. You look at these, characterize them in relation to the dosage to the organs in the humans and animals, and to how reversible these effects are.

And now you come to a specific subset of chronic effects, and these include neurotoxic or neurobehavioral effects. These are effects on the nervous system relating in a wide range of problems which we can discuss specifically in relation to Malathion behavior: abnormal learning, reproductive effects, birth defects, miscarriages. are there any genetic abnormalities which can result in the genetic propagation of adverse genetic diseases?

And some genetic effects can also be related to cancer. If you produce genetic effects in body cells, what we call somatic cells, this can be associated with carcinogenic effects. If you produce mutations in germ cells of the testes, then you can induce effects which will propagate to the next generation.

And of course, you get carcinogenicity, the experimental study of cancer in experimental animals.

Then after the pesticide has reached commercial use, you do the surveillance and ongoing considerations of safety. Embrace what's happening to the general population.

And then all in all as a final comment on information of which you need before you can safely use a pesticide, there are certain factors which make you extremely stringent and extremely cautious in your requirements for this information. And that is if the pesticide is going to be used in such a way as large bodies of the human population are going to be exposed.

If they're going to be exposed in manners which are poorly predictable and for which you don't have adequate dosage—dosimetry data for particular pesticides; where you have aerial

application; where it's difficult to identify dosage and uptake data and also problems of drift.

That in a large nutshell is the kind of information one needs to have before one can safely talk about the safe use of a pesticide.

Q. You spoke of the need to have different or additional information if the pesticide is to be used over more heavily populated than over essentially agricultural areas.

A. When you're dealing with very large populations and with large exposure of the large populations, one elevates one's concerns into a much higher order of magnitude.

Q. Are you familiar with the fairly recent, that is in the last several years, use of malathion in more increasingly urbanized areas of this country?

A. Yes.

Q. Is it correct that prior to perhaps at least speaking very generally the 1990's pesticide or malathion was not used in urbanized areas to anything like the extent that it is today?

A. You're referring to the United states, I presume?

Q. Yes.

A. Well, in fact, there's been large-scale aerial application of malathion on organic phosphates in Japan since about 1957. And studies in Japan from '57, ...have clearly demonstrated a wide range of serious optical damage, damage to the eye, which I will review for you at the appropriate stage.

And as a basis of this in the early '70's the Japanese government banned the aerial application.

Q. Are you familiar with the literature concerning the exposure to the dosage of aerial malathion spraying in California in the fruit fly eradication efforts?

A. I think in general, yes.

Q. Is it your understanding that at least recently the application has been of approximately 2.8 fluid ounces per acre in a malathion-bait spray that is admitted from helicopters?

A. My understanding was that it's somewhere between 2.4 and 2.8 ounces per acre. I'm not quite sure which of the two it is, and I calculate that to about 1.6 milligrams per square foot.

Q. Why is that important, 1.6?

A. Well, you know, you and I don't go around in an acre. At least I presume you don't. You know, when we—it's more easy to understand exposure in relation to more limited areas in which we operate on.

So in other words, if you want to talk about your exposure from skin contact, I think it's easier to comprehend it in terms of square foot than it is to an acre. At least it is to me. I just find that helpful to think of it in terms of one half milligrams per square foot.

Now, it's my understanding that in 1981 when we were dealing with the early eradication programs, and I remain to be corrected in this, that we were talking about 91 percent, 92 percent pure malathion. Although I really stand to be corrected, now I believe it's the 95 percent pure. So we are talking about 95 percent pure and about 2.4 to 2.8 ounces an acre. And I understand that the current program calls for a minimum of three applications.

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Q. Now, this addresses the issue of exposure to malathion itself; is that correct?

A. That's the malathion formulation.

Q. Now, does malathion breakdown into a different or related toxic that also is worth inquiring into?

A. Yes. In fact, when we go into the questions of acute toxicity, I'll point this out. But essentially when you talk about exposure dosage, you have to take into account three factors. One is the malathion itself. Two is a breakdown product called malaoxon which is much more persistent and very much more toxic than malathion. And then you have a series of impurities in the malathion which loosely we can call thioates, T-H-I-O-A-T-E-S, which about eight thioates are present in the Malathion.

And it's my understanding on the basis of documentation that I've seen, that the presence of these impurities had been kept secret from the Department of Health Services by the California Department of Food and Agriculture. That is in spite of repeated references in 1980 and '81, documentation by DHS to the need for such information, but that's another point.

So when you're talking about dosage and exposure, you want to know, one, what is the malathion level at any particular time. What's the malaoxon level, and what are the thioate levels. And you need to have this information in air, in water, in food and in the work place. In correction I should mention in review of DHS Documentation in 1980, there was the belief, the unsubstantiated belief, that exposure to malaoxon is insignificant. I have data to prove to the contrary; that exposure to malaoxon is highly significant, and we are dealing with a material which is 25 to 40 times more toxic.

Q. Well, doctor, let me understand this. The danger, to whatever extent it exists, of exposure limited to being, in effect, struck by this droplet on its way from the helicopter to the ground?

A. Well, that's one of them. Any one of them. The others include, of course, skin contact with areas which have been contaminated by sprayed droplets, and the skin contact not only on soil but also on impervious surfaces and road where the stuff may land. And also skin contact from swimming pools where the malathion will be rapidly oxidized to malaoxon by the clear reason of the water.

Essentially when you drop this stuff from helicopters, you're producing a toxic fog, an atmospheric fog of malathion and malaoxon which is generated from sprayed droplets and mass fallout deposition.

And the gas phase pesticides is of extreme importance. In fact, you can identify the gas-phase pesticide in all areas monitored including flagged hospitals. And in any attempts to eliminate certain areas from the aerial spray, I can only say minimally successful. And in addition, you can demonstrate high pesticide values in shallow stagnant pools in dry stream beds, et cetera.

Now, I should point out that when you spray the malathion from the air, in addition to the cutaneous route of exposure, that's the route which I believe is the predominant route, there is also very significant exposure by inhalation. And if you compare—if you do monitor outdoor air and indoor air, you see that over a three-day period—those are the only data I have—you get a gradual decrease in the air of the toxic fog in the air of the malathion level. But with a sharp increase of malaoxon, which is the derivative, which is 25 to 40 times more toxic.

And you find much higher levels, of course, outdoors than you do indoors, ratio of about eight to one. The levels outdoors are about eight to one. ...But I emphasize that the implication...from reports, ...namely the stuff just sits on the ground. And the only problem

is if you have contact with it. I would say that's highly misleading. There are data, clear data, which show that there's gas phase malathion and malaoxon in the area which is generated from spray droplets and mass fallout deposition.

I should also point out that this information is consistent with some studies going back to the 1967 studies by Wolf in 1967 in which he studied exposure levels of people outdoors during aerial sprays and people indoors during aerial sprays. He did analyses of dermal exposure and skin exposure and really found substantially high levels.

Now, so while in fact we are, as I repeat again, I think the evidence shows that the predominance of exposure is cutaneous for the malathion—and we don't have good data on malaoxon, but I presume it's the same for malaoxon. We have no data for Thioates. We have no data that I am aware of on the rate of degradation of thioates after spraying. And in general I would say there are some substantial data gaps on degradation on malathion, malaoxon and accolating impurities and in water, soil, impervious surfaces and food not so much under model conditions, but under representative spray conditions.

There are data which suggest that malathion is more persistent than has hitherto been considered. Now, one of the major problems in this area is that in which I find somewhat strange, is that in spite of the large-scale use of malathion in aerial applications for the last ten years, there's been no attempt—or if there has been any attempt at these data I've missed data, or they haven't been published—there's been no attempt to actually measure the exposure and uptake of different members of the population under representative spray conditions.

These aren't difficult matters. You can take blood or urine and you can measure the level of metabolites. To the best of my knowledge this hasn't been done on any scale. To the best of my knowledge there's been no studies done on the uptake of the accolating impurities. I want to come back to accolating impurities because these are extremely toxic. We're not talking about something—there isn't—these accolating thioates impurities are the major determinants on toxic adverse effects.

I find it difficult to comprehend why over the course of a year such minimal information on symmetry uptake and exposure seems to be unavailable. Now, I should point out that in 1980 DHS did attempt to make estimates of cutaneous exposure, skin exposure.

Q. Clarify what DHS is?

A. DHS is the California Department of Health Services.

I was saying that attempts were made in 1980 by Dr. Mark Lappe, who is the Director of the California—the first director of HESIS (It's an agency that was set up by the California Legislature following revelations that industries, Dow, Shell, Occidental had been using a fuel called DBCP which has sterilized—which has successfully sterilized most of the workers in the plant unbeknownst to themselves even though the industry had information on its sterilant effects going back to 1955.

And as you can well imagine the legislature wasn't entirely impressed by these circumstances and set up what the legislature called HESIS which Mr. Mark Lappe was the first director. And Dr. Lappe did attempt to develop some stats on skin exposure but that matter is not the point.

The important point is ten years after the aerial application started here, I am just talking to you in terms of estimates, in terms of attempts, to give you a reason to answer to how much uptake from air and from exposure, and I find that a surprising state of affair.

Q. Well, doctor, how important is this? How important is it that we don't seem to have the body of data with regard to exposure that you just testified to?

A. Well, the fundamental premise of toxicology and Public Health is that a chemical in a bottle may be highly toxic, but its toxicity, its carcinogenic effects may be totally irrelevant to the population. It's when you let that chemical loose on the population that the trouble begins. Then you want to know how much are people being exposed to.

And here we have large-scale aerial application of a pesticide which I believe raises very critical questions of public health in which I am unaware of good information on dosimetry, although I do hope that I'll be advised about this. ...California Department of Food and Agriculture will come up with some definitive studies and uptake and associated with exposure to malathion, malaoxon, accollating impurities from air, from water, from food, from the work place, under conditions of model studies and under a wide range of representative spray areas. And I sincerely hope that such information would be made available to the court if they have it.

Q. Dr. Epstein, what does your review of the literature indicate with regard to the acute toxic effects of malathion?

A. Well the pure malathion, has relatively—has relatively weak acute toxicity. ...When you look at the technical malathion, the technical malathion containing the impurities, the wide range of impurities which we briefly discussed, there you have toxicity which is about 25-fold higher. Various estimates, but 25-fold higher for the technical as opposed to the pure.

Q. When you speak of "technical," of what—malathion, what purity do you speak?

A. That's about 95 percent purity, and that's —the technical stuff contains, as I say, thioate impurities whereas the 95 percent or pure stuff contains very little of these accollating impurities.

Now then, you have an additional factor to consider which is namely the malaoxon which is the breakdown product of malathion. The breakdown product both in the environment and in the body and malaoxon is much more toxic.

The malaoxon is very much more toxic than the malathion. It's about 40 times more toxic. So as malathion gradually breaks down into the malaoxon in the environment, you're dealing with a material which is more persistent and which is more toxic. And you're dealing with a wide range of impurities in the —in the technical malathion which the toxicity of those can be up to a thousand-fold in excess of the toxicity of the parent malathion.

Q. Now, with respect to malaoxon, is that a problem regardless of the purity of the malathion?

A. Yes, they are unrelated issues, with one exception.

Q. Pure malathion breaks down in part into malaoxon and creates the very problem the impure malathion creates?

A. Yeah, but there is a little wrinkle on this, and I hesitate to complicate matters further still. The impurities will influence the rate of breakdown and degradation of malathion and of the malaoxon. See, in the body the malathion and malaoxon are broken down and degraded by a series of enzymes called carboxyl esterases. And the impurities will inhibit the breakdown, and in this way accentuate the toxicity of the malathion and malaoxon.

Q. Are there other factors which impact the sensitivity to malathion or to malaoxon?

A. Yes, there's wide range of factors which you can divide into so-called exogenous and factors which are inherent to the individual. As far as the exogenous, the ones that are external to the individual are concerned is, first of all, accollating impurities. These will influence the toxicity of the malathion/malaoxon and exposure to other organophosphates

such as food stuffs.

And as you know, there are organophosphates in foods or other exposures to other organophosphates in the environment you can get an inactive effect will increase the toxicity of the malathion, and we call this potentiation.

In addition, there's a group of sensitive subgroups of the population that include the infant, the fetus, the elderly, the malnourished, that have deficiencies. Particularly infants have deficiency in the coestraoids, the enzyme that activates the malathion. And there are deficiencies in the carboxyl esterases in certain groups of the population particularly caucasians.

I've seen figures saying that up to 50 percent of the caucasian population has deficiency in this malaaxon carboxyl esterases. ...I just know that it is cited that certain number of caucasians do have deficiency in this. But I do not have firsthand information as to what percentage the average caucasian population has deficiency in these enzymes. And deficiency in enzymes will enhance the toxicity of these pesticides.

Q. Are you saying that there are certain segments of the population that are more sensitive?

A. Correct.

Q. —To malathion than other segments of the population?

A. Yes, correct. Now, it's interesting to examine the questions of the acute toxicity in relation to there effects. A lot of the attention has focused on what level of the malathion and malaaxon will produce acute toxic reactions and make people sick. That is an important area to consider, but it must be recognized that when you go to exposures very, very much lower than these, you can detect other serious public health—adverse public health effects. ...you can demonstrate impairment in learning after a time after you've given the rats these very low doses of the malathion that the rats forget what they have learned.

Again, we find that if you do genetic testing in mice at levels below the acute toxic effects, you can get evidence of genetic abnormalities in body cells and also in germ cells And furthermore, I think we have to realize the acute toxic doses are very much higher than the doses which the Environmental Protection Agency has determined are the so-called lowest effect level doses or the no effect level doses. That is the dose of which the lowest cases of which you get no effect in the animals.

The Environmental Protection agency has not set an ADI, acceptable daily intake, but I'm going to throw another acronym out, A P A D I, A PADI. PADI is a provisional acceptable daily intake, and they say provisional because no data on chronic effects—there aren't data on chronic effects of malathion. And if you relate this to the exposure estimates of a child, say, the estimates by Lappe in 1980, you find in the exposure estimates for a child somewhere is in the range—I don't know—of thirty times higher than the EPA PADI is. So the EPA Padi's which way look at this level...it's acceptable at the .02 ADI that is only a daily intake. Here we have estimates for exposure of infants which are thirty times higher.

Q. Exposure of infants under what circumstances?

A. Just playing around in a small playpen, for instance. That's even ignoring, and it's being extremely conservative, just based on assuming that only 10 percent of the stuff they contact is absorbed. Ignoring the inhalation exposure. Ignoring the contribution from malaaxon. Ignoring the thioate impurities.

So essentially what we're saying is the EPA has set a figure for acceptable daily intake which is very, very much lower than estimates of exposure—from estimates of exposure from people such as Lappe and others.

Q. What are the symptoms of acute toxic effects?

A. Well, there's a fairly wide range and they're divided into different pharmacological types. Essentially you can have symptoms ranging from, on the one hand, most extreme is myosis which is narrowing of the pupil of the eye. You can have involuntary defecate, anorexia, nausea, vomiting, sweating, salivation, twitching and central nervous system effects and uneasiness, restlessness. The affidavits from the homeless show typical organophosphate poisoning effects.

And in this connection I should point out that in 1980 DHS, Department of Health Services, recommended that after spraying there should be acute surveillance. In other words, the population should be examined to see whether there was any evidence of these acute effects particularly looking at the homeless people; particularly looking into data on emergency admissions to hospitals, to doctor offices and to hotlines. And to the best of my knowledge this hasn't been done in the course of the last decade.

Q. Is there any other discussion in the literature of other acute toxic effects that you've not told us about?

A. I think I mentioned before the Pakistani endemic about Pakistani workers with different formulations of malathion. And those formulations with the highest impurities produced death and acute sickness. So there's fairly good correlation between the presence of the impurities and the adverse effects. ...But the point about it is that given the fact that a group of workers performing basically the same function, some of whom using dirtied malathion—and I would characterize with due respect the malathion used by CDFA as dirty malathion—using dirty malathion, there were a lot of toxic effects; when purer formulations were used there were little or few toxic effects. This really raises the question of the toxic impurities, and to the best of my knowledge the toxic impurities in the commonly used malathion are somewhere in the region of about 3 percent.

Now the operating impurities, as I mentioned before, they potentiate the acute toxicity of malathion by inactivating certain enzymes which are responsible for the breakdown. They've been incriminated in the endemic poisoning in Pakistan, and they've been incriminated in the mutagenic effects in studies in mice.

And I should point out that we're dealing with a massive data gap here relating to the persistence and stability of the thioates in air, in water, in soil and surface, and in foods at essential intervals after spraying. And here we're dealing with extremely toxic materials.

Assuming we do have good monitoring data for malathion/malaoxon after spraying—and it's my impression we don't have such data—assuming we had such data, what's the relevance of that to the acute toxic impurities? We need information on the persistence of the toxic impurities. There may be a buildup in the environment. We have no idea.

Q. What needs to be done in that regard?

A. What needed to have been done at least ten years ago would have been to have monitored the environment for the presence of these impurities and to have monitored people who have been exposed minimally. We don't know whether they die or accumulate. We don't know.

There is some suggestion, some data, that when you weather malathion, you will increase the levels of thioates. So in other words, when you have a layer of malathion in the soil and when the sun hits that, you'll increase the levels of thioates. Now, has this been looked into? To the best of my knowledge with the exception of a paper written in about '67 or some early stage—I can try to check the exact date—it hasn't been looked into. So we don't know how much the thioates have been taken up by humans. We do know that there is a paper going back to, I think it was in '83 showing that some of thioates impurities are highly toxic to the lung.

So we are dealing with a vast area of ignorance which has been allowed to remain in this state of ignorance for well over a decade in spite of warnings, in spite of requests for information, and in spite of substantial literature building up on the importance of these impurities.

Q. Let's move on, doctor, with that to the neurotoxic effects on the extent of the literature in that area.

First of all, perhaps you could begin by distinguishing the acute toxic subject from the neurotoxic subject. What's the difference?

A. Acute effects are the acute carboxyl esterases poisoning in which I described some of the symptoms before. The irritability, the anxiety, the sweating, the salivation, et cetera.

In addition, there's whole patterns—there's whole series of effects, neurotoxic effects, which are delayed for different periods of time, and we called these delayed neurotoxic effects, and I'd like to discuss some of these with if I may.

Starting off from 1957 a Japanese called Ishikawa produced a series of publications on what is now known as SAKU, S-A-K-U, disease. And essentially what SAKU disease is is information on problems of serious ophthalmological problems in particularly in school children occurring about a year after episodes of aerial spraying of malathion and other organophosphates.

And essentially what they are, it's a complex of myopia, what we call retinopathy or irritant effects in the retina particularly of the optic nerve. As you know, the optic nerve is an extension of the brain leading in some cases to blindness.

...You inject rats at very low doses of malathion, at such a low dose that you don't get any impurities of the esterases. You produce abnormalities in previously learned information learning seems to suffer. Have there been any studies of schools of learning disabilities in children after spraying episodes? The answer is no. Is this new information? Did CDFR know about this? Certainly.

Apart from the Ishikawa literature going back to '57, the U.S. articles and literature on learning effects in rats going to '76, The Department of Health Service in 1981 warned of the need for these tests. EPA in its pesticide fact sheet in 1988 said there's a data gap. We don't have enough information here. California Department of Food and Agriculture in a toxicology summary from '86 to '88 said quote data gap. No study even on file.

Q. Are there effects evident upon blood indicated from the literature?

A. Certainly.

Q. What are they?

A. Again, DHS in 1981 warned about the need to be careful for hematological problems. And the major data gap here is we haven't had any single follow-up studies of population who have been sprayed to look at acute problems such as anemia and delayed hematological effects such as aplastic anemia, which is anemia from the toxic effects on bone marrow which has a high fatality rate. About 35 percent of people die.

There was a publication in 1981 of a series of children exposed domestically to organophosphates including malathion with results on aplastic anemia and leukemia in the open literature.

There are recent studies and effects of extremely low levels of malathion and malaoxon on the ability of several cells in the bone marrow to form colonies which result in the

formation of red blood cells. It's what we call colony formation or the technical term is burst-forming units, erythroid. In other words, these are early cells that develop into red blood cells and other cells that develop into white cells. And malaoxon and malathion are clearly in very, very low concentration very toxic to these, shown to be very toxic in these studies.

Q. What needs to be done in terms of the study of this effect? What would be involved in an appropriate study?

A. Well, what should have been done at least ten years ago would have been to have developed surveillance programs for people exposed, children and others exposed, to have looked at a very wide range of effects which are being clearly documented in the literature including the neurobehavioral effects.

And frankly, as a public health professional, I'm disturbed that in spite of the warnings of DHS that I think in 1980, '81 took a very responsible position in this area, CDFA apparently was not sufficiently persuaded to develop or to organize the development of such information and to proceed with mass aerial spraying in the absence of this information.

Q. Let's move on to the area of reproductive effects that you mentioned in your summary.

A. Again, DHS in 1980, '81 warned of the need for surveillance of reproductive effects, the monitoring of the local hospitals, spontaneous abortions, birth defects.

And there has been one study, in fact, in California on birth defects and on miscarriages. The birth defect data showed really no effects. The miscarriage — the birth defect data show, I would say arguably effects, arguably to minimal. I didn't find them very impressive or persuasive.

However, CDFA in 1986 to 1988 stated that there are data gaps in this area; that we don't have adequate information in this area as indeed to the EPA fact sheet of 1988. So there is general recognition of the need for more information in this area.

Q. Doctor, you've indicated that there is data which establishes concern regarding genetic effects.

A. Well, again, DHS in 1981 based on the detailed review of the cited literature stressed the need for more studies for uncertainty in the area and for detailed review.

Now, by 1983 the International Agency for Research and Cancer recognized even then that there was, and I quote, "Limited evidence of genetic abnormalities including chromosome aberrations. Following evidence of chromosome damage, following admissions to aberrations, about a few years later the EPA pesticide Fact Sheet talked about data gaps here. And we now come to the very important study by Saldory in 1988 in 1988 that showed that you take mice and put malathion on the skin at levels at which you don't get coesterases inhibition. But you can get damage, chromosomal damage to body cells, bone marrow cells, and also to germ cells.

And Saldory emphasized the role of the thioate impurities, the accolating impurities, because he contrasted—he used technical malathion in his study, and he contrasted his studies with earlier studies in mice in which they used pure malathion in which they didn't find these effects.

CDFA in 1986—in 1988 joined with the EPA in admitting that there were data gaps in the chromosome study...EPA again in '88, the toxicology review of EPA and malathion stressed the need for more information on genetic effects.

And most recently Hooper, who is the —Chairman Hooper of DHS who is the chairman of the State Public Health Effects Advisory Committee Review which issued its report in April 1980 recognized that malathion produces chromosomal damage in a wide range of systems, and quotes—and if I may quote from him, it's disquieting to have these results. He stressed the potential for malathion to be far more harmful than previously suspected.

Q. Before you go to summary, I am going to show you a document which we've marked as 19, which I believe you've had a chance to review. It was obtained through my office from the Department of Health Services. This is the report of that department from the committee chaired by Hooper from April of, I believe, you said in your testimony 1980, but

A. April '90.

Q. Speak to us a moment, if you will, about the concern expressed in that report that gives you the most pause about the safety of malathion insofar as genetic effects are concerned.

A. Well, I have basically said that the technical malathion is the material that damages chromosomes as studies in animals and cell cultures. That review of the literature shows that commercial malathion can produce these effects in humans although direct evidence from epidemiological studies is lacking.

He pointed out that there's very clear evidence of the genetic damaging effects of technical malathion in several studies in animals in which administration by skin application or by injection produces significant chromosomal damage to bone marrow cells and to cells in the testes and so on and so forth.

There was an interview by Dr. Hooper in the Los Angeles Times, and I have the copy of the Los Angeles Times, which quotes from Dr. Hooper saying: "It's disquieting to have these results. The existing studies indicate a potential for malathion to be more harmful to humans than previously suspected."

Q. Doctor, let's turn to the carcinogenic effects of malathion and the state of the literature as you have reviewed it. Is there clear evidence in the data that you have and the literature that you've reviewed regarding evidence of carcinogenicity from malathion?

A. The major 'carcinogenicity tests that have been done so far were conducted by the National Cancer Institute in 1978 and in 1979 on malathion and malaoxon. These carcinogenicity tests found what one could describe as highly suggestive evidence of carcinogenic effects.

For instance, in the 1978 study of malathion they found a statistically significant increase in thyroid tumors in the female rats and an excess of liver cancers in the male mice. In the 1979 study on malathion they found an excess of rare adrenal tumors in the rats. In 1979 with malaoxon there was similarly an excess of statistically significant excess of thyroid tumors in rats; however, the National Cancer Institute categorized these as no evidence of carcinogens or not carcinogenic.

About 1984 a pathologist working for a branch of the National Cancer Institute called Melvin Reuber examined the histology of the actual sections. He didn't do a paper review of the National Cancer studies. He re-examined the actual sections and came to the conclusion that there were gross deficiency in the report and the National Cancer Institute study. And, in fact, there was a high incidence of cancer in many of these studies.

Now, Reuber's report was criticized from a varieties of grounds one of the grounds being that it hadn't been accepted for a peer review in any reputable journal. Lo and behold towards the end of '84 he submitted his publication to a highly prestigious journal called Environmental Research which has teams of peer reviewers. And I got the study by Reuber to review towards the end of 1984. ...and I recommended its publication, and it was published in 1985.

That set in train a motion of other events including the fact that they Environmental Protection Agency by 1988 in its document relating to the registration standard called the pesticide fact sheet talked about—referred to the findings of the National Cancer Institute as being questionable and said that new studies were needed.

Similarly, California Department of Food and Agriculture in its summary of the toxicological data talked about the carcinogenicity tests in mice being inadequate.

Similarly, in 1989 the chief toxicology reviewer of EPA challenged the prior claims. Claims it was—NCI claims it was negative and emphasized the need for new data.

Similarly, Dr. Tinsworth, who is in charge of the special review and registration section in Modesto, California, Department of Food and Agriculture stated the carcinogenicity studies of malathion in the rat and malaoxon in the rats were not acceptable, and these are now being retested. And, in fact, the National Cancer Institute has recognized the inadequacy of these studies, is retesting malathion and malaoxon for carcinogenicity, and the tests are in progress. The due date of April 1992.

So the data gap is as follows: We do not have reliable carcinogenicity tests on Malathion and Malaoxon, both technical and pure and on the thioate derivatives. And we do not have satisfactory long-term epidemiological studies on organophosphate workers. So to be minimally conservative, to be minimal and to be conservative, one could say the jury is out on carcinogenicity of malathion/malaoxon, and we not have more definitive data until April 1992.

There are mildly suggestive data from the Reuber publications and elsewhere and to consider, let alone implement, large-scale aerial spraying of a compound or set of compounds for whom the carcinogenicity data to be charitable is just—well, is to my mind flies in the face of all basic tenets of public health.

Q. Doctor you've reviewed for us at length a number seven, eight, nine, something like that, principle areas of concern that you have about the existing literature and existing data as well as what you have described as substantial data gaps.

Based upon the work that you have performed on this subject, have you formed an opinion with regard to the risk to the Public Health of engaging in an aerial program of the spray of malathion-bait of the type which has now been conducted once in El Cajon and is proposed for at least two more applications?

A. Well, based on some thirty years experience and as advisor to decision-making bodies and at executive and legislative levels, and I'm choosing my words with caution, I can only characterize this program as demonstrating reckless irresponsibility.

I say this for some reasons which I've given already, and all the more so in view of the fact that warnings, explicit, unequivocal warnings on the need for information in many of these areas was clearly articulated by the Department of Health Services in 1980. Substantial literature has grown up since 1980.

Both CDFA and EPA fully admit the existence of data gaps, and this—on the one hand. And on the other hand to contemplate—it's not as if we're talking about small-scale spot applications in one narrow area. To contemplate large-scale aerial applications of this compounded by the lack of exposure and dosage and surveillance data, compounded by the lack of any informational system for surveillance for acute effects for looking at the chronic effects, compounded by the suppression of information by CDFA from the DHS of highly toxic impurities, I think that I can only restate my serious misgivings in this area, and to restate that I believe it reflects, and I hesitate to use harsh words of this kind, reckless irresponsibility.

SOUTH RISES AGAIN

Kizer Seeks to Allay Malathion Fears

By ESTANISLAO FAJANES
The alleged safety of malathion falls to reflect a substantial body of data to the contrary. It is true that malathion is among the least toxic insecticides when measured by traditional gross toxicological measures. However, malathion is a potent skin sensitizer and can cause allergic reactions after a single exposure. Malathion has also been shown to induce persisting neuro-behavioral, learning, and electroencephalographic disturbances in young animals exposed to small fractions of acutely toxic dose levels. Additionally, several studies have raised unresolved questions of the genetic hazards of malathion.

More ominously, a detailed review published in a prestigious peer reviewed scientific journal, has documented the carcinogenicity of malathion and its persistent breakdown product malaoxon in multiple strains of experimental animals, thus creating the strong presumption of human cancer risk. It would thus appear reasonable to object to such risks, particularly in view of evidence on the contrived nature of the Medfly crisis and on the highly questionable need for the current draconian eradication program.

SAMUEL S. EPSTEIN, M.D.
Prof. of Occupational and Environmental Medicine
School of Public Health
University of Illinois Medical Center
Chicago, Ill.
"rightened,"
neighborhood
called Citizens
Spraying
ing a rally
Deuk-

Many 'scared' Medfly spray

Dr. Mark Bayer, medical director of the Los Angeles Poison Center, says he's worried about Malathion's effect on developing fetuses. "I'm nervous because I can't stay out of the spray area for several days, they say indoors." Bayer also



No Space for Malathion Cowboys

...action
...up all
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...Joe. "If pol
...they will be
...is, who Dan Bend
...atives for Fruit Fly
...ion.
...control spraying of the
...eight out of the last 11
...years to protect the state's \$1.5
...billion fruit industry.
...Now, officials plan to spray
...each infested street 12 times.
...Officials say the doses aren't
...hazardous. Hospitals report no
...illments linked to the insecti-
...cide, but many residents say
...spraying has affected them.



DECISION DELAYED: City Councilman Joel Wachs expressed happiness that a judge agreed to study a suit by the City of Los Angeles seeking to stop aerial medfly spraying before making a decision.

— Enemies of the Medfly?

By ASHLEY DUNN
TIMES STAFF WRITER
7/23/90
L.A.T.

After a year of living dangerously with Medflies and malathion, there are some people around the country who wonder why the state has yet to unleash a powerful secret weapon against the pest—the harmonica.

As careful readers of the Farmer's Almanac know, the sound of the instrument's lower F-sharp imitates the mating call of the supposedly follow the sound to the ends of the earth—or at least out of the county.

If that doesn't work, another would-be eradicator has volunteered, try psychotronics. This is a technique that relies on satellite photos to focus psychic energy against people, places or things. Its creator claims that properly chan-

Please see MEDFLY, A&E

Final malathion spraying conducted in Compton

LOS ANGELES (CNS) — The last scheduled Malathion attack in Los Angeles County on Medflies and Mexflies was Wednesday night over a nine-square-mile area in Compton.

Aerial sprayings began last August in the Elysian Park area of Los Angeles and eventually covered 536 square miles in four counties.

Spraying to eradicate the Medfly continues in Riverside and San Bernardino counties. However, officials also plan to launch a sterile release program there.



Introduction to Chapter 12

The July 7th 1990 Edition of the Los Angeles Times headlines a story: "**CITY, STATE, MALATHION FEUD HEADS FOR COURT.**" It seems Councilman Joel Wachs had a sample of the malathion (used for aerial spraying) tested and the lab found over the state limit levels of nickel, lead and chromium.

When the state found out that Treusdail Lab was testing this mix for the city they demanded the lab turn over samples to them with threat of jerking their license if their demand was not met.

The state then tested the samples they received and found approximately what the lab had found, however, when the state talked with news media, they gave a different story, making the public think that the city was possibly "over-reacting."

Dr. Jack Thrasher, Ph.D. a pesticide and toxic chemical expert gives us his opinion on the lab's findings.

Greg Nelson, Councilman's Wach's aide, is interviewed and he tells the entire story of what happened to the lab after it found an over-the-limit amount of lead, nickel, and chromium in the sample they had been given for testing.

A chart by the Treusdail Lab on this test is displayed showing lead, nickel and chromium levels. Shown also in this chapter is a list of impurities found in the formulation of the malathion, which were "secret ingredients" in the mix. The interesting thing about the "inert" ingredients is that they are inert to insects but are very toxic to humans!

Rufus Young, Jr. Attorney at Law for the Cities of Azusa, Alhambra and Pasadena has found some legal loopholes the state missed. For instance, the state is allowing helicopters to fly at a speed under the FAA legal limit. The EPA law in the Federal Insecticide, Pesticide and Rodenticide Act states it is illegal to spray over cities that get their water supply from aquifers. EPA documents reveal that malathion is mobile or highly mobile in sandy and sandy loamy soils. Guess what kind of soils are over the aquifers in the City of Alhambra and Asusa?...Sandy and sandy loamy soils!

**EDITOR INTERVIEWS COUNCILMAN JOEL WACHS'S AIDE,
GREG NELSON ON (OVER-THE-LIMIT) NICKEL,
LEAD AND CHROMIUM FINDINGS IN THE MALATHION
SPRAY MIX AND THE STATE'S 'STRONG ARM' TACTICS
TO SECURE THIS INFORMATION FROM THE LAB.**

EDITOR: Is it true the state went to Treusdail Lab (the lab testing for heavy metals in the malathion spray mix for the City of Los Angeles)... and said something like, 'if you don't give us this information we won't register your lab the next time around?'

G. NELSON: Well, in so many words, that is part of the complaint that we filed with the Attorney General's office ...that the Department of Health Services sent a couple of people from its licensing division down there demanding copies of all the work they had done for the City of Los Angeles, and in so many words, I guess the implication was... "Give it to us or your license may be in trouble."

Our attorneys immediately chased off those Department of Health Services people and then complained formally the next day to the Attorney General. They violated a number of things including... (there are a lot of fancy words for it) but basically when attorneys request some information from a lab like that for use in a law suit, there is a special privilege that is involved in that.

No one, **especially the person you are suing**, can come down there and strong-arm their way in to get that information. So there is a lot of ethical and legal questions that have to be resolved, and a formal process requires a letter of complaint to the Attorney General and that has been done.

EDITOR: Didn't this lab retract their statement by saying the legal amount of lead, nickel and chromium found in the mix was indeed within the state's allowable limit according to Prop 65?

G. NELSON: No! They never did, and in fact the reverse is actually true. The samples that we analyzed, the state had half of the same sample that we did. So after Treusdail Lab gave their analysis, the state went off and hurriedly did their analysis. Their's was almost identical to ours, except a little bit lower levels on certain things, but nevertheless showed those levels significantly exceeding Proposition 65 limits.

What then got mis-recorded in the media... according to the media , and I have stood next to our attorneys as they have tried to explain this to the media, (time and time again), is that Treusdail Lab never reversed or retracted any of its information.

Also when Treusdail released his report, we explained that the results were preliminary as far as chromium was concerned, and that extensive additional testing had to be done to see if the kinds of chromium that is in there was the kind that was on the banned list, (the Prop 65 list) and so when we did some of that testing, we found out the chromium was not of that type, but they were going to do some additional extensive studies, to see if that is the bad type, (they call it chromium 6) to see if that was in there, and so somehow all of that got twisted in the media and possibly repeated by other media people that Treusdail had retracted...

EDITOR: That is what I saw in the paper up here.

GREY NELSON: The frustrating part for us, is that when we are in court, or when we're sitting in private meetings with the state, they admit to all of this, they admit that their findings are the same as ours. They admit all that, but then they go out and talk to the

media and they lie, and that is extremely frustrating to us. Again, I sat next to our attorney talking to the media saying, "They (the state) are not telling the truth, this is the truth."

And then the reporters go over to the state people, and state people say, "The city is lying." So the media gets caught in the middle, not having the time or energy to figure out exactly what is the truth...And Treusdail Lab can't talk directly to the media, (because you always run the risk of "leaking" confidential information that is important to our law suit). This lab did this study for our attorneys, certainly not for the state.

EDITOR: But the state acted as though they had the right to go into this lab and get the results from them, even before you had them!

G. NELSON: We were going to present this information to them (state) in court. The same way they were going to present their information to us in court. But apparently they wanted to find out before-hand what it was...so, in so many words, or in so many ways...if it was spelled out or inferred or whatever, the owner of Treusdail Lab called up our attorney and said, "What do I do, they are going to pull my license if I don't give them this information and put me out business?"

EDITOR: They were using intimidation.

G. NELSON: It was really strong armed tactics.

EDITOR: So... the lead and the nickel found in the mix was in fact over the allowable amount according to Prop 65?

G. NELSON: Oh yes! The state confirmed that with their separate studies too.

EDITOR: But the state didn't say that to the media?

G. NELSON: No. We said it to the media, but they won't say it. What the state kept saying is...it is not harmful... and we kept saying... "That is not the issue before the court, the issue is whether or not it exceeds Prop 65." What we were also saying is Prop 65 does not apply to the State of California; and what we have also been saying is whether or not Prop 65 legally applies to the State of California... doesn't it seem... if nothing else, morally wrong for the state to be punishing private business people, whose activity exceeds the limits set in Prop 65... but the state knowing that their activities also exceed those limits...go ahead and do it, because they can legally do it! It is just contradictory and it is morally wrong. In fact, that is what the state is doing. They are saying, "Yes, we exceed Prop 65, but...despite the fact that Prop 65 says anything over these levels is bad, we don't really think it is bad. We are special. We are different." So what the counsel said coming out of that particular court session, "My God, what the State Attorney General's Office is doing is beginning to "gut" this whole ordinance, because how can they now go in and prosecute some other private business man who may have lead, or nickel or chromium exceeding Proposition 65. How can they go in and charge that what you are doing is dangerous, when they just got through arguing that it wasn't dangerous. The proponent of Prop 65 is the Attorney General himself, John Van de Kamp!"

EDITOR: Thank you so much Mr. Nelson for this very enlightening interview and for giving us the truth regarding the nickel, lead and chromium findings in the malathion spray!

**TREUSDAIL LABORATORY REPORT-TUSTIN, CALIFORNIA
FOR CHROMIUM, NICKEL, AND LEAD-FOR THE CITY OF LOS ANGELES**

Legal Issue

The legal issue of exposure without clear and reasonable warning arises pursuant to carcinogen and reproductive toxicity regulatory limits set under Proposition 65 [Cal H&S Code §25249.6; 22 CCR §§ 12711(a)(2), 12805(b)].

FINDINGS OF POSSIBLE PROPOSITION 65 CARCINOGEN EXPOSURE

Carcinogen Found in
Laboratory Analysis
(CCR Title 22 Method)
And Resulting EXPOSURE

Source of Sample Taken May 31, 1990

	Product	Mix	Helicopter		
		Tank	#1	#2	#3
Ionic Chromium* Exposure	7.4 mg	2.8 mg	2.3 mg	3.9 mg	3.8 mg
	1.35 ug	2.06 ug	1.67 ug	2.84 ug	2.77 ug
Nickel Exposure	ND	2.2 mg	ND	2.7 mg	3.2 mg
	ND	1.6 ug	ND	1.97 ug	2.33 ug
Lead Exposure	ND	1.1 mg	ND	ND	0.9 mg
	ND	0.8 ug	ND	ND	0.66 ug

Proposition 65 Regulatory Limits

Carcinogens:	Chromium (hexavalent)	.001 ug per day
	Nickel subsulfide	.4 ug per day
Reproductive Toxin:	Lead	.5 ug per day

*At this time, our preliminary laboratory data has not specified, in a precise manner, the ionic chromium detected. Hence, further analysis will be required to determine whether or not the ionic chromium contains hexavalent chromium.

EDITOR'S NOTE: The best toxicology center in the country is at the University of Tennessee. Plutonium is listed as most toxic; it comes in on their scale at 1900+, mercury 1600 and nickel 600. According to David Eggleston, DDS (Professor University of Southern California) "Nickel is used routinely by the National Cancer Centers to induce cancer in laboratory animals to study cancer. Nickel is the most allergenic metal known. There are more people allergic to nickel than all other metals combined."

According to Endodontist, James Ouye, "Before you have any disease process you must first have a disturbed 'electromagnetic field.' Many things can disturb this field. For instance, bad bacteria, fungus, virus's, poisons, inflammatory process, osteioitis, caused by poisons such as is found in pesticides (malathion, etc.) radiation and toxic dental materials."

From a lecture before the Wholistic Dental Association, Eggleston further stated "The Chinese 3,4, 5,000 years ago did not have formaldyhde, mercury in their teeth, malathion, and all the different things we are exposed to now, polyesters, etc. These seem to be the things that are effecting these meridians."

EDITOR'S NOTE: Following is a drawing of man's electromagnetic field which Dr. Ouye refers to. According to Dr. Ouye, when this field is interferred with a disease process can then begin in the body. Also shown here is a drawing of different meridians of the body. This is referred to by Dr. Eggleston in his lecture above.

Man's Energy Field



Figure 1 Acupuncture meridians

**INTERVIEW WITH JACK THRASHER, Ph.D
REGARDING THE EMERGENCY INJUNCTION
COUNCILMAN WACHS WAS ABLE TO PLACE AGAINST STATE (July 5, 1990)
FOR (OVER SAFE LIMIT OF) HEAVY METALS FOUND IN MALATHION SPRAY**

EDITOR: What are the concentrations of lead, nickel and chromium found in the malathion spray?

DR. THRASHER: They aren't releasing the concentrations found until they have a meeting with the state Tuesday.

EDITOR: Who found it out?

DR. THRASHER: Councilman Joel Wachs had a test done.

EDITOR: Why wasn't this done before?

DR. THRASHER: The state has always found negative results. They reported negative results.

Somehow the City Council got hold of some samples from the last spraying and they found heavy metals, chromium, nickel and lead...above the state's allowable standards.

EDITOR: Would you find small amounts of these heavy metals in the concentration of the regular "technical" grade malathion?

DR. THRASHER: Yes, they would more than likely be there; you would have to look for them. They use various types of heavy metals as catalysts in the organic chemical process.

EDITOR: Nickel causes cancer.

DR. THRASHER: So does Chromium.chromium is extremely carcinogenic.

EDITOR: I am in shock.

DR. THRASHER: I am not surprised. It is a hell of a contamination load.

A list of impurities show numbers 3,4,5,12 and 13... (phosphorodithioates) are several fold more toxic than the Malathion. It is a hell of a contamination load. These are contaminants from the production process and these are severe immuno-toxins. (See next page for list of impurities-**Editor's Note**).

Kathleen Rogers, Ph.D., University of Southern California, has been working on this group of compounds. She works with the Phosphorodithioates They are several fold more toxic than the malathion. It is contaminated with 5% of these materials.

EDITOR'S NOTE: See Dr. Kathleen Roger's paper (on effects of Malathion on immune system) following this interview.

I wonder how real this list really is now that Joel Wachs and that group have found other things that aren't really on this list.

The chromium and nickel are also immuno-toxins, so is the lead. There are research papers published on human beings showing that these things cause damage to the human immune system; so not only do they have malathion, but they have these phosphorodithioates...and now we have other things added to the impurities.

EDITOR: Now the total amount of these impurities exceeds 5%?

DR. THRASHER: Sure. It is a hell of a contamination load....this is a minimum figure, I don't even know how real these figures are... these are the figures the State will admit to.

Another thing... This also smacks of mislabeling. For example..these chemicals ought to be on the label as ingredients, and since they are not on the label I would say this is mislabeling...so this is an adulterated product. These are listed as inert ingredients; they are NOT INERT! They are all toxic!

In front of a jury we could prove that this is mislabeling...an adulterated product. Now this is under Food and Drug laws...you can prove that. Under the EPA regulations, (they were suppose to in 1978, even up through today) they were suppose to be retesting and reporting all this information to the EPA...what is in their product. And I will lay you odds the company has not done it.

EDITOR: Wonder how we could find that out?

THRASHER: Go to EPA under FIA (Freedom of Information Act).

Find out what has been registered by the company as ingredients in their particular pesticide and if these impurities have not been listed as ingredients, it is an adulterated product. That is my estimation of it.

Another thing we don't know is...if these impurities are percent by volume or percent by weight...and this is important....and how many replications of this have they also done?

How many batches have they studied in this manner? Is this only one batch they have studied? Is it a summary of several batches? If this is only one batch, what is the variety between batches?

The State is playing some dangerous games. They are dealing with very toxic chemicals.

EDITOR: The state is trying to poison us!

DR. THRASHER: Absolutely!

A LIST OF IMPURITIES IN THE FORMULATION OF MALATHION:

L.A. Loses Bid to Halt Spray for Medflies

By ASHLEY DUNN
TIMES STAFF WRITER

Los Angeles city officials failed Thursday to obtain a court order blocking aerial malathion applications over much of downtown, and the state was preparing to spray high-rises and Skid Row sidewalks alike later in the night.

After a brief afternoon hearing, Los Angeles Superior Court Judge John Zebrowski ruled that the city had failed to prove that the mixture of malathion and fly bait used by the state posed a significant health risk.

State officials, concerned about a rapid resurgence of the pest after a relatively long dormant period, immediately began final preparations to send its squadron of helicopters
Please see MEDFLY, A30

FRIDAY, JULY 13, 1990

1	Diethyl fumarate	0.90%
2	Diethylhydroxysuccinate	0.05%
3	0,0-Dimethyl-phosphorothioite	0.05%
4	0,0,0-Trimethyl-phosphorothioate	0.45%
5	0,0,S-Trimethyl-phosphorodithioate	1.2%
6	Ethyl nitrite	0.03%
7	Diethyl mercaptosuccinate	0.15%
8	S-(1, 2-Dicarbethoxy)-ethyl-0 S-dimethyl phosphorodithioate (isomalathion)	0.20%
9	S-(1-Carbemethoxy-2-carbethoxy) ethyl-0,0-dimethyl phosphorodithioate	0.60%
10	Bis-(0,0-Dimethyl-thiomophosphoryl) sulfide	0.30%
11	Diethyl methylthiosuccinate	1.00%
12	S-Ethyl-0, 0-dimethyl phosphorodithioate	0.10%
13	S-(1,2-Dicarbethoxy) ethyl-0, 0,dimethyl phosphorothioate	0.10%
14	Diethyl ethylthiosuccinate	0.10%
15	Content of Water	0.07%
16	Acidity as H2 S04	0.05%

February 7, 1990

To: Ms. Virginia Johanssen
From: Kathleen Rodgers, Ph.D. University of Southern California

RE: EFFECTS OF MALATHION ON THE IMMUNE SYSTEM

Over the past 8-9 years, I have conducted studies on the effects of organophosphate pesticides on the immune system. Most of my research studies the effects of impurities in malathion (making the assumption that malathion was relatively non-toxic).

These studies on the impurities show that oral administration of the impurities to mice suppressed the immune response transiently. These effects were shown to be mediated by alterations in macrophage function similar to those observed following an inflammatory stimulus (i.e. an irritation). I have published 3 papers on the effects of malathion (purified, not technical grade which is being sprayed) on the immune system. These studies showed that malathion, at doses that are noncholinergic (that is do not affect nerve function), stimulated the immune system. These alterations in immune function are also through effects on macrophage function. It should be noted that non-specific enhancement of immune function is also potentially harmful. There are many diseases mediated by enhanced immune function, such as allergy. Current studies are ongoing to determine the dose of malathion that does not affect immune function, the mechanism by which malathion alters macrophage function and the effects of technical malathion on immune function.

In the past, the effects of purified malathion on the immune system has been studied and the effects of technical malathion are unknown. The impurities in malathion have separate effects on immune function and affect the metabolism of malathion. Published studies indicate that malathion may affect the immune system through a metabolite. Since the impurities in malathion block the breakdown of malathion through carboxyesterases into non-toxic derivatives, the technical grade of malathion may be more toxic to the immune system, as it is the nervous system, than purified malathion.

Studies by other investigators have shown that malathion can cause an allergic response (which would be in keeping with the data regarding immune enhancement above). Milby and Epstein conducted studies in normal human volunteers in which a solution of 10% malathion (95% pure) in ethanol was applied under occlusive dressings for 2 days. Such an exposure sensitized 45% of the exposed men. Application of a 1% solution of malathion in the same study did not sensitize any of the exposed persons. In this same study, persons who were occupationally exposed to malathion were studied and was shown that only 3-5% were sensitized. The reason for the discrepancy between these populations may be due to the low concentration of malathion used during occupation exposure (i.e. 0.9%). Since the malathion being sprayed is a relatively high concentration (i.e. approximately 22%), there is a possibility of dermal sensitization to malathion. Several other studies in other animals, such as, guinea pigs, mice and rats, have shown that allergic reactions occur in animal models.

The long term health effects of malathion on the immune system are unknown, nor can it be predicted from the animal studies discussed above. However, I do not believe that sufficient data are available to say that malathion has absolutely no health effects. In the current situation, it is impossible to tell what are real health effects and what is imagined. Although immunotoxicology (effects of chemicals on the immune system) is not currently used in making policy decisions and most of the current studies are in animals, I think these data should be considered.

cc: Ms. Cass Luke (Office of Assemblywoman Sandra Tanner)

**EDITOR INTERVIEWS RUFUS C. YOUNG, JR., LOS ANGELES ATTORNEY
FOR THE CITIES OF AZUSA, ALHAMBRA AND PASADENA IN THE
FIGHT AGAINST THE AERIAL SPRAYING OF MALATHION**

EDITOR: I understand the spraying of malathion is now under a Federal mandate and that it cannot be stopped on a county or state level...is that true?

ATT. YOUNG: Yes and no. Pesticide laws in this country like many of the other environmental laws, follow a pattern. First there is a federal framework. In this case, it is called FIFRA, (FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT). And in many cases of environmental laws, including FIFRA, what happens is the FEDS have a statute that establishes the framework. Then states, if they adopt a program that conforms to the Federal template, the states can do some of the administering of the pesticide program; some, but not all.

Federal pesticide registration is a matter of Federal law and it is governed by the FIFRA. That statute designates the EPA as the agency which administers FIFRA. Under FIFRA the EPA sets up a program of having those who want to market or use a pesticide to "register" the pesticide, and this term registration has its own meaning within FIFRA. It is not like registering a car or even registering a gun.

To "register" a pesticide you have to essentially do product safety tests and show how many white rats died when they are exposed to a lethal dose, or what is called a lethal dose 50. (That is one that kills half of them)... that kind of thing. So...under FIFRA, the EPA has registered malathion, but only for certain uses; and the EPA did not register malathion for use against the Mediterranean Fruit Fly, but there are a couple of exceptions to this registration process. One is what is called the SLN or Special Local Needs Registration. Under the Special Local Needs Registration, the states can declare, 'hey, we need, because of unique circumstances in our state, we need to register a pesticide that hasn't been registered by the EPA for this use. We need to register "Brand X" or "Compound Z" or Malathion (in this case) for use against the Medfly.

There is also what is called the "Emergency," or sometimes called the "Quarantine" Exemption. Under that, states acting through a delegation of authority (from the FEDS), can register and apply to the FEDS, in turn, for registration of a pesticide.

California did both of those things in the case of malathion for use against the Medfly. The case of the Medfly- the use of malathion- is a little bit unusual because it is not the 'Acme Crop Dusting Service' that is using the Malathion; it's the San Joaquin Helicopters using it under contract with the state. The state agency that is using it is the California Department of Food and 'Ag,' which... (guess what?) is the agency designated by the EPA to carry out FIFRA within the State of California. So, it is a little bit of a 'fox, chicken-coop' situation. In fact, it is a lot of the 'fox, chicken-coop' situation.

Now getting back to what the EPA does. During the registration process the EPA requires the applicant for registration to submit scientific data... 'O.K. what is your stuff made out of?...Is it going to wipe out all biological life in the entire western world, or is it specific to snails or lice, or tics, or whatever? How many does it kill? How fast does it kill? What concentrations are you going to use it in? What are the application directions? Do you mix it with water? Do you use it plain? Do you spray it externally? Do you put it on something for the bugs to eat... or what?' All that process results in what is called a label. A label is not like a mattress label. The label can go on for pages, and the label has what is called..'here's how you use it... here is the concentration... here is what you use it on...here are the precautions.' Those label provisions then have the force of law. Because under FIFRA, a Federal statute, it is a criminal offense to use a pesticide in a manner which is inconsistent with the labeling.

If the label says, 'spray it,' and you drink it, or you put it in drinking water or something, that is inconsistent, then the administrator of the EPA can do bad things to you, he can fine you; seek civil and criminal penalties.

Getting back to my earlier comments...typically, the administration of that program is left to the states. As in a word, to be designated as a FIFRA State Agency, the state has to demonstrate to EPA that 'yes, we have got state laws that are parallel to the Federal laws... so if you will let us carry out the FIFRA program in our state we have got the machinery to do it... the state laws, the inspectors, and that kind of thing.'

In this case, let's say we have the 'fox, chicken-coop situation,' and one of the problems we have is that the state is applying the pesticide in a manner that is contrary to the label provisions... among other things. So...my role in this is that I am an attorney, representing the Cities of Azusa, Alhambra, and Pasadena with respect to their contentions regarding the state's conduct in the malathion spraying program.

Our contentions fall into a couple of categories. First, we contend that Federal Aviation Regulations require aerial sprayers to file an emergency landing plan with the FAA and get that plan approved before they commence their spraying operations. The State of California didn't do that and the FAA didn't require the state to do that. The FAA's explanation for not requiring it was, "Gee, the governor declared it an emergency, we don't think we can do anything if the governor declared it an emergency."

I pointed out in a letter to the chief counsel of the FAA, that there is nothing in the FAA 'Regs' that says, "All bets are off once the governor declares it an emergency." And...we said that the person at the Los Angeles Flight Standards District Office said, "Hey, the governor declared it an emergency, we don't have to determine whether it is an emergency landing plan or whether it's any good."

We complained to the FAA that that person made a big mistake and that could be a mistake with tragic consequences if a helicopter does crash. The FAA Chief Counsel, in a letter to me dated last Thursday agreed to consider that complaint, and that... I think, is quite significant.

I also think the FAA got worried and thought, "Hey, if a helicopter does crash, we are going to have one heck of a time explaining why we didn't require the state to file emergency landing plans." It just doesn't do to have a helicopter crash into an orphanage or something else.

EDITOR: So...we can't fight the malathion issue on a state level because jurisdiction of this issue is under the Federal Government, which is FIFRA.

ATT.YOUNG: My comment on that would be ...there have been attempts made to fight this in state court, those attempts have been uniformly unsuccessful. Because there are a couple of state laws and because of the governor's declaration of 'emergency,' and frankly because the agriculture is very, very, important to the State of California, and there's I think, some understandable reluctance to set aside a spraying program that could result in a very, very serious adverse impact; some would say... "wipe out," (I think that is overstating it)...the California agriculture. So, there is that reality at work....We analyzed that aspect of the malathion situation, and determined that the more likely avenues of success lay in the Federal Courts and in taking this matter up with Federal bureaucracy.

We did write a letter to the governor, and to the Director of California Food and Agriculture saying, "Hey, we think your spraying program is unsafe, and unwise, and here is why." (1) You don't have an emergency landing plan for your helicopters, as FAA regulations require, ...and (2) you are spraying this pesticide in a manner that is contrary to the label. (3) You are spraying it over a couple of our cities that get their water supply from aquifers underneath the cities' ground water supplies. EPA documents reveal that malathion is

mobile, or highly mobile in sandy and sandy loamy soils. Guess what kind of soils are over the aquifers in the City of Alhambra and Azusa? **Sandy and sandy loamy-soils.** We don't know, and neither does the EPA know what malathion does in ground water supplies...

We don't know that it does something bad, we don't know that it is benign. We just plain don't know. And that brings me to that and all recited so far... brings me to the next point. You recall what I said, "We thought we might be more successful in dealing with the Federal Government." Well, we have achieved some success and the success has been very rare in the malathion arena.

The US Department of Agriculture has announced that they will prepare for the first time an Environmental Impact Statement on the effects of malathion spraying. We think this is a very, very important point and it is something that when we went into Federal Court suing the FAA, we specifically asked for the preparation of an Environmental Impact Statement because of, among other things, the threat to ground water supplies, and the threat posed to people owning property on the ground, from the risk of helicopter crashes. Well now, **the US Department of Agriculture has agreed they will prepare an Environmental Impact Statement.**

We determined that if we were going to do something about malathion spraying, we wanted to do it quickly and economically. If we got into a contest with the state over what the long-term health effects are of trace quantities of malathion, either sprayed on somebody's body or in the drinking water and so on... we decided that would be a very long, and a very expensive process, and might involve health affect studies that would last for years; and would also involve one side lining up 20 ophthalmologists, 40 gastroenterologists, 50 pediatric specialists on one side, and the other side lining up twice as many to contradict one another; it would involve depositions that might take forever, and would just be something that our little cities just couldn't afford to do. We came up with the Environmental Impact Statement and the FAA theories.

EDITOR: It seems as though you have definitely made the state sit up and take notice!

ATT YOUNG: Well, we hope so. We have also written to the EPA complaining about what we believe is a label violation and so far the EPA has not responded, although we think they are close to responding.

A couple of odd things are going on in all of this. First, agriculture and the agricultural industry are very important for the state and the country. Second is...that there is tension between those who spray pesticides from helicopters and those who spray pesticides from fixed wing aircraft (the traditional crop duster-the bi-plane type of aircraft) and that sort of thing.

Bi-planes can fly at 150 miles per hour, helicopters cannot. 150 miles an hour is the speed specified on the malathion label as being the minimum safe speed for spraying malathion from aircraft; (that in part, is the function of droplet size). So there is tension from that segment of the spraying.

EDITOR: So the fixed-wing people are upset with the helicopter company because they (helicopter company) are breaking an FAA law by flying at less then the speed dictated by FAA rules and regulations...

ATT. YOUNG: The fixed-wing people haven't really been heard from in this specific bout, but the fixed-wing people may well have been behind the EPA determination that here is what the speed ought to be; because if the EPA specifies 150 miles per hour that means the helicopter people are not eligible to bid for contracts because they are only capable of flying at 78 miles per hour...that is as fast as helicopters generally go...

EDITOR: Thank you very much Mr. Young for a very enlightening and informative interview!

Many 'scared' of Medfly spray

S. Californians fear pesticide poisoning

By Mary-Ann Benedel
Special for USA TODAY
LOS ANGELES — Fear, bordering on hysteria, is spreading about Malathion's effect on developing fetuses nervous systems. "If pregnant women can't stay out of the spray area for several days, they should stay indoors."

Dr. Mark Bayer, medical director of the Los Angeles Poison Center, says he's worried about Malathion's effect on developing fetuses nervous systems. "If pregnant women can't stay out of the spray area for several days, they should stay indoors."

Other neighborhood action groups are popping up all over the 300-square-mile area of the Medfly war zone. "If politicians don't listen, they will be out of a job," warns Dan Bendon of Moorpark, who organized Safe Alternatives for Fruit Fly Eradication. Helicopter Malathion spraying has used eight out billion fruit flies. Now, officials say each infested square is hazardous. Home ailments linked to spraying has



Sleep-disturbing questions about malathion

...I don't know what you do when you are asleep in the middle of the night by the Malathion being sprayed. I'm in the same neighborhood as the man in the picture. I'm in the same neighborhood as the man in the picture. I'm in the same neighborhood as the man in the picture.

Torres Opts for 'Insects Over Poison' Inveils 'Insects' Bill



Peaceful Coexistence

Formers in Hawaii and elsewhere have learned to coexist with the medfly—a contrast to California's eradication effort. Above, Old Hilo grows a papaya tree on his farm near Hilo. Papayas need special handling—including early harvesting—because of the fly. A1

Torres said, "This repeated spraying is simply unacceptable because of our lives." The bills would ban repeated aerial pesticide spraying and require proof from state agencies, in the form of detailed studies and assessments, that any pesticide used will be effective in eradicating the Medfly and not endanger the public or the environment. Together, the measures would effectively stop the state's current aerial spraying program, Torres said.

The bills also call for a full environmental review of any future state eradication efforts, public notice before any pesticide ap...



STRICKEN FAMILY: Michael Frazer, 6, found by his daughter, wife Christina, 2 1/2, experience flu-like symptoms. By Bob Riva w/ Gemma-Lawson

High Pesticide Levels Found Inside Homes

Washington, D.C. — A study by the Environmental Protection Agency found that pesticide levels inside homes in California are as high as those found in homes in other states. The study, which was conducted in 1980, found that pesticide levels inside homes in California were as high as those found in homes in other states. The study, which was conducted in 1980, found that pesticide levels inside homes in California were as high as those found in homes in other states.

Introduction to Chapter 13



Excerpts from testimonies (in a court of law) as well as affidavits are given by health professionals.

Testimony by Marc Lappe, Ph.D. in Superior Court: "Approximately fifty percent of the caucasian population and an undetermined number in other ethnic groups have a genetic deficiency in breaking down Malathion."

Affidavit by Ruth Shearer, Ph.D: "Much of the information in these documents relating to human health effects of the pesticides Malathion and Diazinon is outdated, misleading, or otherwise inadequate..."

Affidavit by Professor Sumner Kalman, M.D., Stanford University: "I believe that aerial spraying of Malathion involves severe risks to human health in addition to any other detrimental effect such spraying may have. Malathion is toxic to man. In fact, it is 10 times as toxic for man as for the rodent."

Affidavit by Allen K. McGrath, M.D.: "Malathion is an organophosphate insecticide. The organophosphate family of compounds includes some of the most deadly poisons known to man."

Phillip LeVeen, Ph.D., "Given the possible adverse impacts on urban regions, the burden of proof that such spraying is economically justified should be on the shoulders of the State and commercial agriculture. Until this research is done, the program should be stopped."

(EXCERPTED)

AFFIDAVIT OF RUTH W. SHEARER, Ph.D.

STATE OF CALIFORNIA

I, Ruth W. Shearer, being first duly sworn on oath, depose and say:

I am a consultant in genetic toxicology and am currently President of the Issaquah Health Research Institute, a nonprofit organization in Issaquah, Washington. I hold a Ph.D in molecular genetics from the University of Washington and I completed a two-year post doctoral fellowship in pathology there. I have testified in Federal Court as an expert witness at least five times and have submitted written testimony in other cases similar to this one.

I have reviewed the 1983-1984 Mexican Fruit Fly Program of the California Department of Food and Agriculture, including the Environmental Assessment (no date), the November 1, 1983 Work Plan for Los Angeles County, the November 18, 1983 letter to physicians and hospitals from the Los Angeles County Department of Health Services, and the Notice of Aerial Treatment (no date). Much of the information in these documents relating to human health effects of the pesticides Malathion and Diazinon is outdated, misleading, or otherwise inadequate.

...The data base of important health studies for diazinon is incomplete, and even EPA does not yet know the testing status of Malathion. New studies as well as most older studies provided by the manufacturers are considered proprietary information and are not available for public scientific peer review or for analysis of risks and benefits of programs such as the Mexican Fruit Fly Program in progress.

The residents of southeast and east Los Angeles County are the guinea pigs in an experiment which does not meet the standards of informed consent. They have been given inadequate and inaccurate information on the risks and their consent has not been asked. They have not been offered the necessary free health care to assess the damage and counteract it, and at least one local hospital was not provided with the means to measure organophosphate poisoning for confirmation of the cause of illness. It is impossible for persons living in the spray area to avoid exposure to the known and unknown hazards of the Mexican Fruit Fly Program, and it is my opinion that this uncontrolled experiment should be stopped immediately.

I declare under penalty of perjury that the foregoing is true and correct.

Ruth W. Shearer, Ph.D.

**Sumner M. Kalman, M.D.
Professor of Pharmacology
Stanford University
(Excerpted)**

AFFIDAVIT OF SUMNER M. KALMAN, M.D.

The aerial spraying of malathion in Santa Clara County poses severe risks to human health. Malathion is a broad spectrum pesticide that kills indiscriminately.

Although its effects on non-target species, including beneficial insects concern me, this discussion is based on the medical implications of aerial spraying.

Toxicity

The organophosphorous insecticides are highly reactive chemicals. They combine irreversibly with critically important molecules in the body. This is the basis for their combination with acetylcholinesterase causing paralysis of nerve nerve-muscle (and some nerve-nerve) functions. In severe cases this interaction causes respiratory depression, even respiratory arrest. Motor weakness, twitching of muscles, and an unsteady gait may appear. There are disturbances of the heart, blood pressure, intestine, and central nervous system. Some of these effects may be counteracted by appropriate treatment if carried out in time. But such treatment may have to be carried out for many days, even weeks. And in some cases of poisoning signs and symptoms persist after recovery. This feature of poisoning due to organophosphorous pesticides concerns me very much. The combination between pesticide and body proteins is an irreversible one. This means that the localized damage persists at least until these proteins are replaced by formation of newly-made molecules.(1)

Genetic Effects

For convenience "genetic effects" is a term used here to include mutation, teratogenesis (production of birth defect) and carcinogenesis, the ability to cause cancer. ...The evidence for mutagenicity is quite compelling. Reactive molecules such as malathion that form strong, chemical bonds with proteins, probably do the same with constituents of the cell's DNA or with enzymes involved in DNA replication and thus cause changes leading to "genetic" damage.

From all that I know about drugs and other toxic materials I believe that we put certain individuals at risk if we permit aerial spraying of malathion. This group includes, among others the newborn, the fetus some persons with disease of the liver, and any individuals with an inherited deficiency of the detoxification mechanism for this foreign chemical. The general population would also be at risk, in my view, but the incidence of serious effects would be smaller for them.

I declare under penalty of perjury that the foregoing is true and correct, and that if sworn in court I would testify thereto, and that this declaration was executed at Stanford, California, on March 24, 1981.



**Sumner M. Kalman, M.D.
March 24, 1981**

AFFIDAVIT OF ALLEN K. MC GRATH, JR., M.D. F.A.C.P.

My name is Allen K. McGrath, Jr., M.D. My address is 431 Monterey Avenue, Los Gatos, California 95030. Telephone: 408-354-8140.

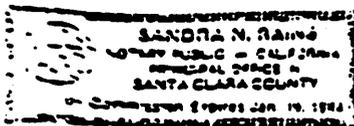
My medical credentials are as follows: M.D. degree, University of California, San Francisco, September 1946.

- 1. Department of Public Health
San Francisco Hospital Intern 1946-47
- 2. Public Health Service
National Institutes of Health, Bethesda, MD.
University of California Hospital 1948-50
Research Associate
- 3. Veteran's Administration Hospital
San Francisco 1950-52 Resident Medicine
- 4. New England Center Hospital
Boston, Mass. 1952-53 Resident Medicine
- 5. U.S. Army Medical Corps
1953-55 Internal Medicine
- 6. Private Practice Internal Medicine
Los Gatos, California 1955-81
Certified by American Board of Internal Medicine
9-16-55
Elected Fellow of the American College of Physicians
11-12-66

I believe that the aerial spraying of malathion over heavily populated areas of Santa Clara County would have potentially catastrophic effects on the public health of the residents and visitors of the area.

Malathion is an organophosphate (OP) insecticide. The organophosphate family of compounds includes some of the most deadly poisons known to man. These include a military nerve gas, Sarin, and several other OP insecticides. The primary toxic action of all organophosphate insecticides is the same. They differ mainly in

STATE OF CALIFORNIA
COUNTY OF SANTA CLARA



On this 24th day of MARCH in the year one thousand nine hundred and 1981 before me, SANDRA N. RAINE, a Notary Public, State of California, duly commissioned and sworn, personally appeared ALLEN K. MCGRATH, JR., M.D.

known to me to be the person whose name subscribed to the within instrument and acknowledged to me that he executed the same.

BY WITNESS HEREOF I have hereunto set my hand and affixed my official seal in the County of SANTA CLARA, California, this 19th day and year in the certificate first above written.

Sandra N. Raines
Notary Public, State of California
My commission expires 1/19/84

THIS AFFIDAVIT IS VALID IN ANY STATE WHICH HAS A SIMILAR AFFIDAVIT LAW AND IN THE DISTRICT OF COLUMBIA AND IN ANY TERRITORY OF THE UNITED STATES. THE AFFIDAVIT MUST BE FILED WITH THE COUNTY CLERK'S OFFICE IN THE COUNTY WHERE IT IS TO BE USED. COUNTY FORM NO. 32 - AFFIDAVIT OF NOTARIAL COMMISSION (C. S. Sec. 1190b)

1 GAIL HUTTON, City Attorney
ROBERT C. SANGSTER, Deputy City Attorney
2 ARTHUR DELALOZA, Deputy City Attorney
F.O. Box 2740
3 2000 Main Street, Fourth Floor
Huntington Beach, California 92647
4 (714) 536-3335

SUPERIOR COURT OF CALIFORNIA
COUNTY OF SACRAMENTO

Attorneys for Plaintiff
CITY OF HUNTINGTON BEACH

5
6 CITY OF HUNTINGTON BEACH, a
chartered municipal corporation,

7 Plaintiff/Petitioner,

8 vs.

9 STATE OF CALIFORNIA, DEPARTMENT OF
10 FOOD AND AGRICULTURE,
HENRY J. VOSS, Director, and
11 DOES 1-50, inclusive,

12 Defendants/Respondents.

CASE NO. _____

DECLARATION OF
MARC A. LAPPE', Ph.D

Hearing: Jan. 25, 1990
Dept.
Time: 2:00 p.m.

13
14 DECLARATION OF MARC A. LAPPE', Ph.D

15 I, MARC A. LAPPE', say and declare as follows:

16 1. I am a resident of Evanston, Illinois.

17 2. I received my Ph.D in Experimental Pathology at
18 the University of Pennsylvania in Philadelphia, Pennsylvania, in
19 1968.

20 I have taught at the University of California Berkeley
21 and was a founding Associate at the Hastings Center, a leading
22 biethics institute in Briarcliffs Manor, New York.

23 8. To be done safely, the assumptions underlying the
24 spray operation assume:

25 (a.) use of high grade Malathion (99% pure or greater)

26 (b.) even dispersal of spray

27 (c.) uniform exposure of persons

28 (d.) exposure limited to adults

29 9. I conclude that as a result of this premise there
30 is significant danger of chronic toxicity and possible genetic
31 damage to the following categories of persons if directly
32 exposed to commercial grade Malathion aerial spraying:

33 (a.) elderly persons

34 (b.) enzymatically impaired persons

35 (c.) infants and children

36 (d.) under-nourished persons

37 (e.) over-exposed persons

38 10. It is my opinion that Malathion spraying could
39 cause irreparable harm to such persons if not done according to
40 the conditions identified in number 8 above.

41 I declare under penalty perjury under the laws of the
42 State of California that the foregoing is true and correct.

43 Dated: January 24, 1990

Marc A. Lappe
44 Marc A. Lappe, Ph.D

Testimony of

E. Phillip LeVeen, PhD., Consulting Ag. Economist U.C. Davis

Regarding Economic Damages of the Medfly and Eradication Program

Presented to California Assembly Ways and Means Subcommittee No. 1
Feb. 28, 1990

Van Nuys, California

To summarize this discussion of agricultural losses, at this time, there is no strong data that supports the contention that the medfly poses large economic threat to agriculture. The existing research simply fails to provide any strong evidence to support its use of a series of extreme assumptions. These analyses of agricultural costs are based on flawed economic reasoning as well. To ask the people of Los Angeles to endure repeated exposure to a toxic chemical that damages property, disrupts everyday life, and imposes short-term illnesses on those sensitive to the chemical, not to mention the possible, if unknown, long-term impacts, requires that the proponents of eradication demonstrate good cause. This evidence does not exist. Perhaps a competent study would find sufficiently high agricultural damage to justify the aerial spraying, but this study has yet to be done. In the absence of one, I think that the State lacks the necessary clear evidence that would justify the risks of subjecting large numbers of people to a toxic chemical.

Given the frequency of medfly invasions over the past fifteen years, one might have anticipated that the State would have spent more for research indicating the true economic and biological impacts on agriculture, not to mention the possible long-term and short-term effects of malathion on human health. The point remains, this research has not been done, and therefore we are operating under conditions of considerable uncertainty. Given the possible adverse impacts on urban regions, the burden of proof that such spraying is economically justified should be on the shoulders of the State and commercial agriculture. Until this research is done, the program should be stopped. It is time to balance the equation -- we cannot continue to compare a worst case scenario for agriculture with a best case scenario for the spraying urban areas.

Hotting fish dot lake's shore in 3rd such incident since February

By STEVE SCARFALLO... ALACIA... fish dot lake's shore...



Female mallards... heavy sand malachite levels on the lake were low...



Fish carcasses litter shore of Peck Road lake in Alacalia

Dozens of dead fish found floating at Peck Road Park

By MICHAEL GOUGIS Staff Writer

ARCADIA — Be- trout washed up dead on the shores of Peck Road Park...

State Medfly Panelist Says Pest Is in Southland to Stay

By ASHLEY DUNN and RICHARD C. PADDOCK TIMES STAFF WRITERS

—In a harsh assessment of the state's war against the fruit fly, a key panelist at the Assembly hearing on eradication has taken a pessimistic view... James R. Carey testified before Assembly on Medfly infestation...



James R. Carey testifies before Assembly on Medfly infestation.

Scientists Grow Skeptical About Eradicating Medfly

By MAURA DOLAN TIMES ENVIRONMENTAL WRITER

Despite repeated aerial pesticide sprays, there are growing doubts among scientists about whether the Mediterranean fruit fly can be eradicated soon...

Disappearing Frogs, Salamanders May Be a Warning for Man

Environment: Scientists at UC Irvine conference blame species' disappearance on acid rain or other pollutants. One scientist calls situation a biological emergency.

By LANIE JONES TIMES STAFF WRITER

From Yosemite National Park to the Australian rain forest, many species of frogs and salamanders are rapidly disappearing...

where large populations of frogs and salamanders have been killed by acid rain or acid snow, deforestation, pesticide use or the pollution of water by heavy metals...

AIDS may lie in some amphibian," he said. The scientists were invited by the biology board of the National Academy of Sciences to spend Monday and Tuesday comparing their research...

Introduction to Chapter 14

James R. Carey, Associate Professor of University California-Davis asks the question, "Why do we find Medflies appearing almost exclusively in California and not in other states which have similar climates?"

An article written by Truman Temple an Associate Editor of EPA Journal states, "The public will become aware of the problem when apples start costing \$15 apiece."

He goes on to state, "Bees are the foundation of an industry that most people take for granted but which makes a major contribution to our food in unseen ways."

Every year pesticides destroy an estimated 10 percent of the Nation's honeybee hives and substantially reduce the populations of another 30 percent.

Dr. Michael Fox's book, **AGRICIDE-THE HIDDEN CRISIS THAT AFFECTS US ALL**, Schocken Books 1986 states, "According to Dr. H.M. Caine of the University of California, Santa Cruz, one-third of the American diet depends directly or indirectly on crops pollinated by honey bees and six percent of farm production (3.5 billion) is at least indirectly dependent on such pollination." But pesticides are now at work reducing the bee population, by an estimated two percent per year. This loss could have serious agricultural consequences.

The World Resources Institute has recently published a report indicating that insects and other pests are becoming more resistant to chemical pesticides. This fact now poses serious public-health dangers and contributes to increased food production costs. The report notes that the number of harmful insects immune to one or more pesticides reached 428 species by 1980, almost doubling the figure of 224 in 1978. The study estimated that insect resistance now costs American farmers at least \$150 million a year in crop losses and increased chemical applications. Furthermore, rodents are becoming more resistant to chemical poisons. At least 50 species of "weed" have become resistant to herbicides, and more than 150 kinds of fungi and bacteria are now resistant to agricultural chemicals, an increase from 20 in 1960. ...An annual 1.4 billion pounds of pesticides are applied in the United States, at a cost of \$4.2 billion, a one-thousand percent increase since 1947. Professor David Pimental has shown crop loss caused by insects has almost doubled (from 7.1 percent of total crop value in the 1940s to 13 percent in 1980). Pimental estimates that the cost of applying pesticides to U.S. cropland is about \$2.5 billion a year, and the crop loss is about \$10 billion..

From the book, **ORGANICALLY GROWN FOOD, A CONSUMERS GUIDE**, by T. W. Carlat, Wood Publishing 1990 it states, "In 1989 the United States Department of Agriculture (USDA) announced that over the course of 100 years of agriculture in America we have lost 50%, or half, of our top soil through misuse. In 60 more years, using the present agricultural methods, the USDA predicts that we will lose the remaining half."

THE PESTICIDE CONSPIRACY, by Robert van den Bosch, 1978, states, "Pesticides rank with the most dangerous and ecologically disruptive materials known to science, yet under the prevailing system these biocides are scattered like dust in the environment by persons often utterly unqualified to prescribe and supervise their use."

Pesticides and Bees

Truman Temple is Associate Editor of EPA Journal

populations across the land. Because many crops depend on pollination by bees, some observers fear that excessive bee mortality will bring food shortages and higher prices.

Bees are in danger for a variety of reasons. Their habitat is being disrupted and in many cases destroyed by the spread of urban development and highways. They are afflicted like other beneficial insects by environmental pollution. In recent years, they also have been killed off in large numbers by the use of pesticides.

Bees are the foundation of an industry that most people take for granted but which makes a major contribution to our food in unseen ways. There are more than 210,000 beekeepers in the United States. Most of them—about 200,000—are

Continued to page 24

Bees

Continued



hobbyists, and the rest are part or full-time professional beekeepers.

All told, their bees produce about \$100 million worth of honey annually and around \$3.4 million worth of beeswax used in cosmetics, medical ointments, candles, and other products.

But bees fulfill a much more important function. While making their rounds of various plants in search of nectar, they pollinate billions of dollars worth of food crops each year—about a third of all the food that shows up at the dinner table. They also pollinate untold numbers of trees, shrubs, and flowers, including everything from wildflowers to the vegetation used in protecting watersheds. By serving as a link in the reproduction of such plant life, the bee is a vital and even indispensable part of the web of life.

Pollination is the transfer of pollen from stamens to ovules in plants, resulting in fertilization and seed formation. Cross-pollination between two plants, often made possible by insect carriers such as bees, has genetic advantages since this produces more varied progeny with a better chance of survival than self-pollination within a single plant. Entomologists point out that many bee-pollinated plants are unable to reproduce themselves in areas where certain kinds of bees are not present.

Honeybees kept by professional beekeepers are often rented out to farmers for pollination purposes. Without the domestication of honeybees by professionals, many foods could not be produced on a large scale. These include production of cherries, avocados, tangerines, apricots, almonds, apples, several vegetables, and seeds for forage crops such as clover and alfalfa.

Yet every year pesticides destroy an estimated 10 percent of the Nation's honeybee hives and substantially reduce the populations of another 30 percent. The U.S. Department of Agriculture became worried about the problem of bee mortality a decade ago and launched an indemnification program to help beekeepers recover from losses incurred by pesticides. As of this writing USDA has paid out approximately \$23.5 million to reimburse apiarists for damage to their bee colonies since 1967. However, bee industry specialists believe that less than a fourth of the losses are being indemnified. They estimate that actual losses are totalling at least \$12 million a year or 400,000 hives.

Commenting on the lack of communication between farmers and beekeepers, Roy Barker of the U.S. Department of Agriculture's Bee Research Laboratory in Tucson, Arizona, complains: "There are very few areas where beekeepers and pesticide applicators are seeing each other. Mostly they see each other in court."

The other side of the picture, of course, is that growers often complain of lack of understanding and cooperation by beekeepers when pesticides are being used in fields where bees are not needed for pollination.

"We have programs in many states to notify beekeepers when spraying is scheduled," explains one food industry representative. "But it's difficult at times to get the apiarists to cooperate when we suggest they cover the hives or remove them from nearby fields. For example, the bees will move into sweet corn fields where we are spraying for corn earworm or borer control, and they are killed. Bees are not needed for pollination in corn or other grain crops. It is not helpful when the beekeepers simply tell us, 'If you kill my bees, you'll be sued.'"

To bring together various organizations concerned with the problem, the Environmental Protection Agency sponsored a conference in November, 1977 in Washing-

ton, D.C. with William C. Holmberg, Director, Operations Division, Office of Pesticide Programs, as program chairman.

Attendees included representatives from Federal and State agriculture departments, universities, pesticide manufacturers, and the bee industry.

One of the special problems for beekeepers is a relatively recent development called microencapsulated pesticides. With the banning of DDT, chemical companies have been turning to highly toxic organophosphate insecticides. ~~Although they degrade rapidly and therefore do not present a long-term danger to the environment,~~ repeated applications are necessary to protect crops effectively. However, such repetition is costly and time-consuming, and manufacturers are slowing down the degrading process by enclosing fine droplets of liquid pesticide in tiny polymer spheres. This microencapsulation permits the active chemical to be made as a powder with individual grains only 30 to 50 microns wide. (A micron is one thousandth of a millimeter or 0.00039 of an inch long.)

Microencapsulation permits the pesticide to be applied as a water-based spray with ordinary equipment.

The problem is that the tiny capsules are picked up by bees and carried back to their hives before the insecticide is released. The result: Other bees including hive workers and brood are poisoned. Where most pesticides kill only bees working in a field, this type is hazardous to the entire bee colony. Studies at the University of Oregon and Washington State University entomology departments suggest that extensive bee losses have been caused by misapplication of PennCap—M, a microencapsulated insecticide patented by Pennwalt Corporation of Philadelphia. The company, in an effort to help solve the problem, underwrote the cost of last November's meeting in Washington.

Among other views aired at the Washington conference were the following:

- A principal point of contact within the Federal Government is needed to represent the interests of beekeepers, coordinate bee research efforts, and improve communication between beekeepers and growers.
- Training of growers and spray applicators should focus to some degree on bee protection measures.
- Label precautions must be improved as well as State enforcement of pesticide regulations.
- More grant resources for bee research should be identified and utilized.
- A public relations effort is needed by beekeepers to explain their problems to the public and the significance of bee losses to food production. □

**CALIFORNIA STATE ASSEMBLY
CONVENED TO CONSIDER
CALIFORNIA'S MEDFLY CRISIS.**

SPEAKER:

**Dr. James R. Carey, Associate Professor
University California Davis
Department of Entomology**

**MEDFLIES HAVE BEEN HERE (CALIFORNIA) FOR A LONG TIME,
AND WE MAY NEVER HAVE GOTTEN RID OF THEM**

Ever since I've been a member of the Scientific Advisory Committee for California Food and Ag, I've asked the following questions: Why do we find Medflies appearing almost exclusively in California and not in other states which have similar climates? Secondly, why, with the state, do we always find Medflies in Los Angeles County, not in surrounding counties such as San Diego County? For example, we found 434 Medflies in L.A. County, whereas there's only been 2 recovered in San Diego County. Thirdly, why within L.A. County do we find Medflies often within the same cities over a period of years, for example in Culver City area, Northridge area, and Baldwin Park, and fourthly, why within these cities, are Medflies sometimes found within a few blocks of where they were found several years earlier, even though eradication was declared. Proven eradication programs in Southern California failed to eradicate the Medfly—and the Medfly is endemic to the greater Los Angeles area. The reason the question of whether the Medfly problem is caused by a low-level endemic population, or to annual recurrent introductions, is that before you can prescribe a solution to the problem you must understand the nature of the problem. For example, if reappearances of Medflies year after year are due to re-introductions, then we must tighten our borders. On the other hand, if reappearances of the Medfly are due to an endemic population, then our detection and eradication programs may be at fault. In short, understanding the history of the problem is crucial to this overall matter.

Invasion is much like a chronic disease. It's not an event, but rather a process. So we can think of invasions occurring in 4 different phases. One, you have an introduction, that is to get from where the Medfly (is) into California in this case; two, what's called colonization, where the Medfly has to go through one reproductive cycle; three, naturalization, which is the acclimation of the population to the local conditions, including temperature, humidity, and host conditions, and fourthly, we have spread.

Where we stand right now. The infestation ranges from up here in Asilomar to over here in Alta Loma, down here to around Westminster and Orange County. So we've caught 249 flies since July, and each dot on this map represents a location of a capture not a fly. There's about 5 times as many dots here if we plotted each fly...We have 3 pockets of reoccurrences of Medflies here. We have Northridge area, we have Culver City area, and we have the Baldwin Park area. Note in Culver City we recovered Medflies in 1975. In fact, that was the original Medfly discovery in the state. They reappeared in 1984, 1986, 1987 and 1988. Now in Northridge, we discovered them in 1980, and then they reappeared in 1988. Then in Baldwin Park, they were discovered in 1981 and then again in 1989 and 1990.

I'd like to just present the facts of this infestation. The Medflies recovered from 6 of the approximately 250 cities in the Greater L.A. area in the 1980-82 eradication campaign. Flies have recently appeared in all 6 cities: Baldwin Park, Northridge, Reseda, La Puente and West Covina, and the City of L.A. Second, the Medfly capture in 1988 in Northridge on Parthenia St. is separated by only about 3-blocks from a Medfly capture in 1988 on Melvin Ave. Thirdly, Medflies have been captured in L.A. County five out of the last 5 years, and six out of the last seven years. Only two of the last 11 was captured in Orange County in 1987. This fly was in the City of Westminster. Five, if Medflies are being introduced from Mexico, where they occur at exceedingly low levels, or from Central America, they would also be expected to occur in San Diego County, but we don't find many there, only

two in the history of this state. Six, the sheer number of captures and spatial spread is indicative of population that has been proliferating for a long time. A total of 254 Medfly adults have been captured in Los Angeles County covering 45 cities and 500 square miles. It's highly unlikely that a population that has been only recently introduced could become that widespread in such a short time.

I have two recommendations. One, appoint an independent scientific panel to take stock of the biological status that is independent of the political and economic status of this over-all invasion. Secondly, develop a system for the long term in which the state has the capabilities to deal with the long-term scientific aspects of exotic pest research that is separated from politics and economic ramifications.

(QUESTION)

TO DR. CAREY FROM ASSEMBLYMAN FRIEDMAN: If the Medfly is established, then why are we calling the program an eradication program rather than a control program? The difference—there's a significant difference in consequences that flow from what it's called. If, in fact, it's a control program, which seems to be appropriate if it's established, then the state requires that the agriculture industry pay a portion of the cost of that control program, which is what we've done with a lot of other pests in the past."

(ANSWER)

DR. CAREY: That's exactly my point, ...is that we cross a line from a pest being exotic to a pest being endemic, and that we have to acknowledge that if it's an endemic pest, then the nature of that problem is fundamentally different, and we have a different kind of pest control or eradication problem.

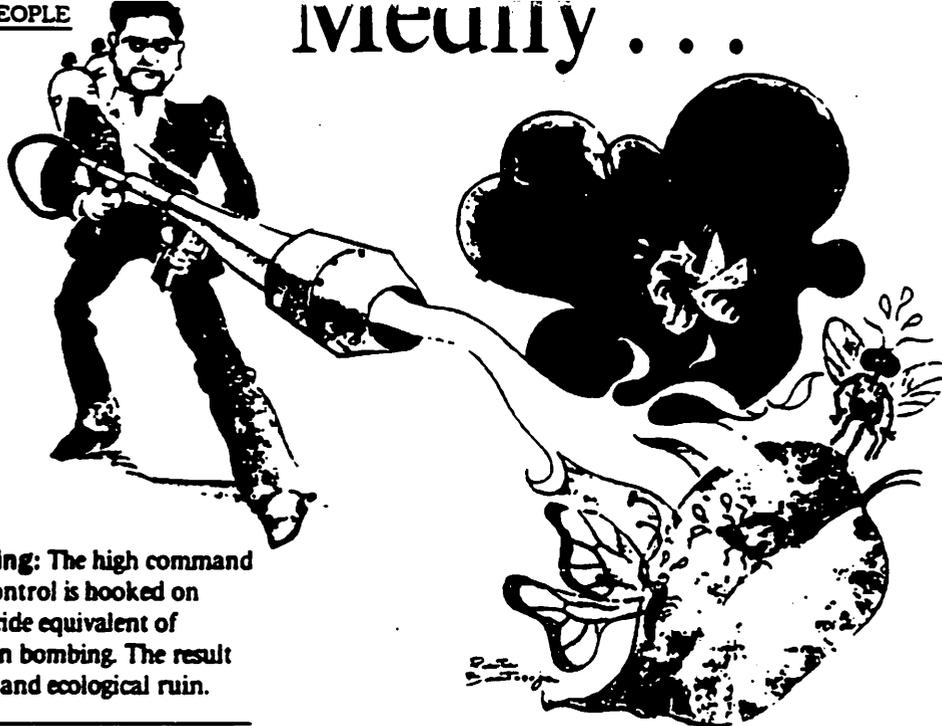
**IDA HONOROF'S
REPORT TO THE CONSUMER
P.O. Box 346
Cutten, Calif. 95534
(Excerpted) June 1990**

In Northern California taxpayers money was being irresponsibly wasted on an apple-maggot program, at a cost of approximately \$2.5 million per year, starting with April 1984, and lasting until 1987/88. The legislature felt that if the apple maggot could be eradicated, they would appropriate the funds. If merely controllable, the funds would not be appropriated unless the industry supplied 65% of the program costs. The Apple Maggot program came to a total halt, after the industry was informed by the Science Advisory Panel that the program couldn't be called an eradication program unless every host tree—throughout the 6 counties carried a trap—since pest control programs are not included under CEQUA exemptions, they cannot be financed through the General Fund. The industry refused to pick up the 65% tab—The "Duke" deleted the funding for 1987/88 and the program went kaput! Agribusiness is very generous with taxpayers money—but it's different if the money comes out of their fat accounts!

IDA Honorof's REPORT TO THE CONSUMER can be subscribed to for \$8.00 per year.

**JEAN HINSLEY
Lakewood, California**

When we are sprayed with Malathion it is called an eradication program. When it's called eradication it is paid for by the taxpayers. Eradication? Do you realize how many times the medfly has been eradicated in California? Yet the state proudly persists in using that word!



■ **Spraying:** The high command of pest control is hooked on the pesticide equivalent of saturation bombing. The result is failure and ecological ruin.

By WILLIAM JORDAN

It's been called "Smash-Mouth Pest Control," after the style of football in which you throw out all finesse, smash your opponent in the mouth and stomp his body into the sod. Gather your bombers, fill their tanks and spray your enemy into oblivion through brute, military-industrial might.

Too bad about the birds and fish. A pity about the pets and the beneficial insects like bees and predators. Sorry about those poor slobs and their children who have to be sprayed too. Sorry about that, because this is a war. The only way to win a war is to mass your troops and pound your enemy into the dirt. Smash-Mouth Pest Control is the strategy of choice throughout the Westernized world.

I believe it is an artifact, of the male mind—or rather, it is an artifact of a particular kind of male mind. Wherever you travel in developed countries, you will find men occupying all the top positions of pest-control politics, almost without exception. (This is true of organizations in general, but more pronounced in pest control.) Go to a board meeting and you will see it in graphic detail: the husky men in their late 50s and early 60s, the gray, barbered hair, the sagging jaws cinched off by neckties, the deep, coarse voices, the cold, steady gazes, the deep creases of experience and yes, of courage, toughness, endurance etched into their faces—the scars and medals of many wars.

This is the portrait of a warrior—a dominant warrior in the study of animal behavior this would be called an alpha male. His primary mission in life is to get power. Power, be it physical or political, means the ability to make others do things your way, to make them submit. Anyone who conveniently seeks high political office is a person who feeds on the exercise of dominance.

So the high command of pest control is used to battle and used to winning. In the human world they have vanquished many political foes, and in their illusion of life they have whipped many legions of insects. And when they are challenged they revert to those fundamental traits of the quintessential male—size, strength, intimidation. If that fails, they resort instinctively to physical force.

Now a fly has invaded their territory, challenged the warrior's dominance and threatened his deepest levels of being. He

responds the only way that such a mind can be expected to respond. From the roots of his soul surges a burning and uncontrollable urge to spray.

His mind fades into fiction, the motors throb, the rotor chops, the malathion gurgles. The copter swags and sways through the night. A universe of light glitters against the vast black infinity of Los Angeles below. He reaches for military-industrial technology and wraps his hand around the pesticide lever. He squeezes the grip, feels the surface worn smooth by uncountable blows against the multitudes, and he pulls.

A number of notions flow from this military approach. A dead insect is a good insect. To control insects, kill insects. To equate killing with control is one of the great illusions of the 20th Century. In the most advanced programs of control you actually want the pests to survive at low levels, because they are food for their enemies. The enemies hold the pests at levels that cannot cause economic damage.

The smash-mouth approach leads to the opposite extreme, to exploding populations and ecologic ruination. Pests develop pestucidal immunity and the residues soak into the environment. The first spray upsets the system and with their predators gone, insects that were not pests previously are released from natural control and become secondary pests. Each spraying requires yet another. Today the American farmer uses 125 million pounds of pesticide against insects and loses 13% of his crop. In 1948, as the Age of Pesticides began, that same farmer was spraying 15 million pounds and losing just 7% of his crop. We are using 10 times more pesticide and losing twice the percentage of yield as a direct result.

This is not to condemn outright the use of the pestucidal fur. But the fur should be controlled by the rational mind and its philosophy, not the jerking of some subconscious urge. When properly used, pesticides are an invaluable tool, the environmental equivalent of a drug. Like a drug,

they should be urged only as a last resort and prescribed by a practitioner licensed in the art and science of ecology.

There is a school of pest control that sees the Medfly, and all pests, as pieces of a larger system. The men and women who think this way have no political power, of course, for dominating others is not their primary goal in life. But they maintain that if you study the life cycle of the pest and how it fits with its peers, you will find that every species has points where it is vulnerable to attack.

To illustrate the point, consider the case of the cotton bollworm (*Heliothis* spp.). *Heliothis* was a formidable pest of cotton in the San Joaquin Valley, and by the early 1960s the pestucidal fur was pounding away from 12 to 15 times each season.

Then a group of insect ecologists came, and studied, and discovered that the adult bollworms, which are moths, flew and mated under the full moon. All you had to do was wait three days, spray once, and you caught all the little bollworms as they hatched. They had no time to burrow into the bolls where pesticides could not reach them. The result was a mere two or three applications per season.

The same approach will work with the Medfly, or any living thing. It is not used because the warriors of pest control are simply not constituted to think in multi-step, non-dominating ways. Manipulation and persuasion do not appeal to the alpha male. You can only wonder what would happen if women other than the Margaret Thatchers of the world were in charge of pest control. In general, women seem less inclined to use force and more inclined to manipulate with skill and guile. That's exactly the ticket in dealing with Mother Nature, who responds not to the pulverizing blow, but to the intelligent stroke.

William Jordan holds a Ph.D. in insect ecology. His book, "Divorce Among the Gulls and Other Essays On Human Nature," will be published by North Point Press in January.

vs. Macho

Los Angeles Is Home Sweet Home

■ **Medfly:** There is virtually no chance that each of the hundreds of new catches represents a new infestation. The first outbreak, years ago, was never eradicated.

By WILLIAM JORDAN

Well, friends and fellow citizens, the first battle in the Medfly war—the epic struggle that began 15 years ago—is over. We've lost. We have lost abysmally, ignominiously and unconditionally. The Huns are pouring into Rome. The Hunsians are swarming over Berlin. Malathion has not worked. The sterile flies have not worked. Humiliation. We have to face reality. We have to step back and reassess. Any ecologist who is not employed by the state or federal governments, who looks to biological truth for guidance, not to political mandate, will tell you the same thing.

What, then, is going on—what is really going on behind the biological scene? James Carey, an entomologist at UC Davis, has taken on that question. As a university scientist, his job and his reputation depend on finding the biological truth. He therefore began with the most elementary step in data analysis, looking for gross patterns in whatever evidence that existed; he just added up the Medflies caught in Los Angeles County each year. What he found has revolutionized the Medfly story.

It begins in 1975, with the first outbreak of 34 flies, and, according to the state, it was eradicated. No more flies appear for five years. Then, four flies show up in 1980 and 63 more in 1981. Again the Medflies are eradicated, according to the state and federal governments. Of course, one fly happens to be caught in 1982, one in 1984, one in 1986, but these are just the odd bug, declares the government. Nothing to worry about. Easy to eradicate. . . . Until 1987. Forty-four turn up then. That population is also eradicated. Fifty-three arrive in 1988. Yet another successful eradication. A resounding 241 enter the traps in 1989, incredible in light of the fact that the flies have been eradicated in eight of the previous 13 years. But by now it has become routine to eradicate them. The government has become so good at eradication that there is no need for alarm; they can do it any time. They are not about to "let" the Medfly immigrate illegally.

In the minds of the government bureaucrats and their in-house scientists, each year's outbreak is a new invasion. Without realizing it, they have fallen victim to a fundamental function of the human mind, illusion. The mind creates illusions of life; illusion is the expansion of the images that move across the screen of the conscious mind. The problem is, illusions are crafted around one's interests. You see the world in a way that supports your job. All your research is right-headed, all your methods work.

There is also denial. The mind instinctively ignores facts that run against its illusions.

So, tourists, immigrants and illegal aliens are said to be sneaking infested fruit into Los Angeles and lobbing it, presumably, into the various neighborhoods as they drive by. With drive-by lobbing out of control, what more could go wrong? There is talk of fruit-fly terrorism. A \$10,000 reward is offered for information leading to the arrest of any miscreant. But for some

inexplicable reason, no one is able to claim this prize. And there it is, the drive-by fungus-spore, sterile-doped, malathion-suckered, state-controlled Medfly.

A very different explanation occurs to Carey, the ecologist whose mandate is to find biological reality. When, like the government agents, you are defending a cause, you bend the truth to fit the illusion. When, like Carey, your mandate is to find the truth, you bend the illusion to fit the facts.

What Carey sees is not an endless series of new introductions. It is an absolutely classic, textbook example of a single, massive invasion. He applies the discipline known as "invasion biology," a field in its own right, for insects do strange and

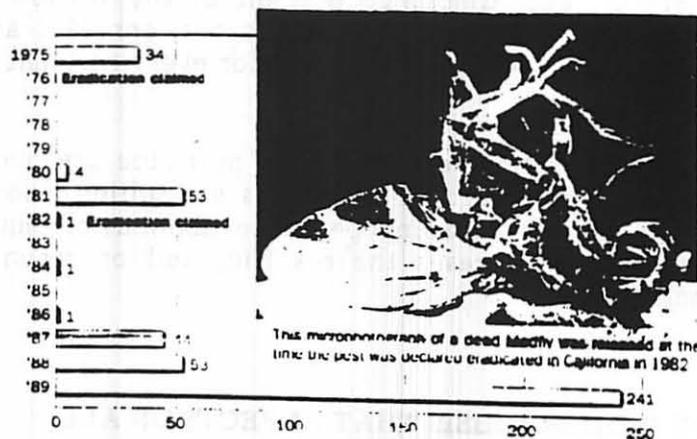
ment. Malathion bait is part of the Medfly's new home, a big part.

To get some idea of how difficult it is for insects to adapt to a new land, entomologists have been introducing beneficial insects deliberately for more than 100 years, and only about 30% of the species have ever established themselves. And these were given every advantage—matched to similar environments, released in huge numbers, put in sheltered places, provided with food, shielded from pesticides.

The point is, Medflies are not like fungus spores or plant seeds. Infestations do not sprout wherever an infested fruit rolls to a stop, which must likely would be the garbage can. There is virtually no chance

HOW THE COUNTY TRIED TO KILL A FLY

The number of medflies found in Los Angeles County each year:



This microscopic view of a dead medfly was released at the time the pest was declared eradicated in California in 1982.

Source: California Dept. of Food and Agriculture

Los Angeles Times

remarkable things when they acquire new territory.

A typical insect invasion has four phases. There is the introduction, when the first colonists arrive; there is colonization, in which they reproduce; then naturalization, in which the insect calibrates its body and adjusts its behavior to its adopted land; and, finally, the spread phase, in which, remodeled and finely tuned, it multiplies and marches, multiplies and marches and settles down in those regions to which it is genetically suited. Carey claims, and he is undoubtedly right, that the Medfly has entered that fourth and final phase.

There are some crucial points to be emphasized here.

First of all, Phase 3—naturalization—is a crucial and difficult time for an insect. It is not easy to get a toehold in a new land. It arrives suited for life in the place it left, and like a human immigrant, it has a sort of biological "accent." Also like the human immigrant, its offspring will become native speakers and natural citizens. The only difference is that the insect takes a number of generations, for its adjustments are genetic. It must adjust to different pathogens, different strains of food with different levels of minerals, and so on. And, if pesticides are used heavily against it, the insect must acquire some kind of resistance, some way of coping with them, because they are part of the new environ-

ment. That each of the new catches represents a new infestation.

Furthermore, Medflies are being caught in the same neighborhoods where they were caught eight years ago. At least four of these sites were heavily sprayed with Malathion. The odds of new infestations occurring on top of old ones cannot be calculated, literally.

Finally if, for the sake of argument, tourists, immigrants and aliens were importing fruit, and if the flies were sprouting like seeds as the government claims, then you would expect infestations throughout Southern California. Especially in San Diego, with its river of immigrants flowing northward. Southern and Central California would have gone up in a huge Medfly conflagration long ago. Until this last month, all of the captures have been in the Los Angeles area.

The truth can be denied, but it cannot be altered. The Medfly is established. Almost certainly it has been among us since 1975 and has never been eradicated. The chances are excellent that it arrived even earlier, as long ago as the mid-1960s.

William Jordan holds a Ph.D. in insect ecology. His book, "Divorce Among the Gulls and Other Essays On Human Nature," will be published by North Point Press in January, 1991.

**FACTS ON PESTICIDES
AND BIOLOGICAL CONTROL
EXCERPTS FROM THE FOLLOWING BOOKS**

POISONING PROSPERITY

"The Impact of Toxics on California's Economy"

by State of California, Commission for Economic Development (1985)

Lt. Governor Leo McCarthy, Chairman

Pg.14

In keeping with its agricultural prominence, California is the nation's largest user of chemical pesticides, responsible for about 50 percent of the national total. There are dozens of chemical preparations used in California to control rodents, soil nematodes, fungus and many other natural pests. About 45 percent of the world's pesticide products are used in the United States, and almost 25 percent of the world's share are in California. The average annual use of the top 25 pesticides between 1971 and 1981 was about 132 million pounds or approximately six pounds per year for every resident of the United States.

Pg. 15

Environmental contamination resulting from pesticide use occurs in two major ways. 'Point source' contamination can occur if pesticides are spilled prior to or after field application, or if rinse waters used in cleaning pesticide application equipment are released directly onto the ground. In these cases the resulting soil or groundwater contamination can be traced to a specific incident.

AGRICIDE-THE HIDDEN CRISIS THAT AFFECTS US ALL

by Dr. Michael W. Fox

Schocken Books 1986

Pg. 57

The widespread use of insecticides results in the non-selective poisoning of both 'good' and 'bad' insects. Worse, this practice can lead to the development of resistant strains and to the unchecked multiplication of currently harmless but naturally resistant insects, which then become pests because the other insect species and predatory birds that normally keep them in balance have been killed off.

According to Dr. H.M. Caine of the University of California, Santa Cruz, one-third of the American diet depends directly or indirectly on crops pollinated by honey bees and six percent of farm production (3.5 billion) is at least indirectly dependent on such pollination. But pesticides are now at work reducing the bee population, by an estimated two percent per year. This loss could have serious agricultural consequences. Nevertheless, the AFBF* supports the "modification of existing regulations to more easily permit restricted use of previously cancelled pesticides under emergency conditions."

***AFBF- American Farm Bureau Federation, Handbook**

Pg. 73

"The World Resources Institute has recently published a report indicating that insects and other pests are becoming more resistant to chemical pesticides. This fact now poses serious public-health dangers and contributes to increased food production costs. The report notes that the number of harmful insects immune to one or more pesticides reached 428 species by 1980, almost doubling the figure of 224 in 1978. The study estimated that insect resistance now costs American farmers at least \$150 million a year in crop losses and

increased chemical applications. Furthermore, rodents are becoming more resistant to chemical poisons; at least 50 species of "weed" have become resistant to herbicides, and more than 150 kinds of fungi and bacteria are now resistant to agricultural chemicals. an increase from 20 in 1960.*

*M. Dover and B. Croft, Getting Tough: Public Policy and the Management of Pesticide

Pg. 140

An annual 1.4 billion pounds of pesticides are applied in the United States, at a cost of \$4.2 billion, a one-thousand percent increase since 1947. But, as Professor David Pimental has shown, crop loss caused by insects has almost doubled (from 7.1 percent of total crop value in the 1940s to 13 percent in 1980*). Pimental estimates that the cost of applying pesticides to U.S. cropland is about \$2.5 billion a year, and the crop loss is about \$10 billion.

*Perspectives of Integrated Pest Management.

Pg. 141

The environmental impact of pesticide use, including human pesticide poisonings, is estimated to cost the nation at least \$3 billion annually. Taking these external costs into account in a benefit/cost analysis of pesticide use in agriculture, the dollar return is \$3 per \$1 invested in pesticides.

SOIL, GRASS AND CANCER

by Andre Voisin
Crosby Lockwood & Son, Ltd.
1959

FORWARD

Without a doubt, the health of both animals and men is linked to the mineral balance of the soil. The realization of that fact is neither new nor specific to Voisin.

It is estimated that in the year 1951 the quantity of pesticides produced in the United States was sufficient to kill six times the population of the world.

SILENT SPRING

RACHAEL CARSON
Houghton Mifflin Company

Pg. 196

The organic phosphates, usually considered only in relation to their more violent manifestations in acute poisoning, also have the power to produce lasting physical damage to nerve tissues and, according to recent findings, to induce mental disorders. Various cases of delayed paralysis have followed use of one or another of these insecticides....

Pg.197

...The insecticide responsible for these cases has been withdrawn from the market, but some of those now in use may be capable of like harm. Malathion (beloved of gardeners) has induced severe muscular weakness in experiments on chickens. This was attended (as in ginger paralysis) by destruction of the sheaths of the sciatic and spinal nerves.

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All these consequences of organic phosphate poisoning, if survived, may be a prelude to worse. In view of the severe damage they inflict upon the nervous system, it was perhaps inevitable that these insecticides would eventually be linked with mental disease. That link has recently been supplied by investigators at the University of Melbourne and Prince Henry's Hospital in Melbourne, who reported on 16 cases of mental disease. All had a history of prolonged exposure to organic phosphorus insecticides. Three were scientists checking the efficacy of sprays; 8 worked in greenhouses; 5 were farm workers. Their symptoms ranged from impairment of memory to schizophrenic and depressive reactions. All had normal medical histories before the chemicals they were using boomeranged and struck them down.

THE PESTICIDE CONSPIRACY

by Robert Van den Bosch

U.C. Press 1989

Reprinted with Permission



Robert Van den Bosch, Ph.D.

...in an era of increasing concern over food production, energy shortages, and environmental quality, politics is helping to perpetuate a costly, inefficient, and pollutive pest-management system.

Who, then, are the members of the consortium that opts for this seemingly undesirable state of affairs? Topping the list, as one would expect, is the agricultural-chemical industry. The pack also includes: Pest-control operators, aircraft applicators, agri-business concerns, grower organizations, food processors; certain key politicians; administrators, and individuals in certain governmental agencies; segments of the media; elements in some professional societies; a spectrum of private citizens concerned about "threats" to free enterprise and agri-technology, administrators, elements, and individuals in the land-grant universities, including the Agricultural Extension Service.

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Pesticides rank with the most dangerous and ecologically disruptive materials known to science, yet under the prevailing system these biocides are scattered like dust in the environment by persons often utterly unqualified to prescribe and supervise their use.

Pg.95

The Beilenson bill very nearly attained enactment, but then, at a late hour, the pesticide mafia, sensing the threat that the bill posed to its interests, effected its abortion...that it was only a matter of time until someone else's examining/licensing law was passed, moved quickly to fashion a bill of its own. Ergo, the straw man.

Under this law, pesticide salesmen are included without restriction among the licensees, and the Pest Control Advisory Committee (read board of examiners) includes a representative of the pesticide industry, a licensed pest-control operator (i.e., crop duster), and a licensed agricultural pest-control adviser (most likely a salesman, since salesmen account for more than fourteen hundred of the approximately eighteen hundred fifty licensed advisers) This is equivalent to a board of medical examiners having a drug salesman, a bedpan manufacturer, and an ambulance driver among its members

(The Rape of EPA)

Pg. 109

...My job as special consultant would be to explain the integrated-control concept to EPA staffers, so that they, in turn, could better help in its implementation. I unhesitatingly accepted the invitation as a golden opportunity to boost scientific pest control while simultaneously helping to alleviate a serious environmental problem (pesticide pollution).

Pg. 110

But then, on one of my Washington visits, I crossed paths with a hardened old bureaucrat who knocked much of the wind out of my sails with the sobering comment: "Forget it, man; I been around here a long time and I'm telling ya, EPA is just like the rest of the agencies set up to protect the public interest: it'll lose its teeth before ya know it. Just watch, in six or seven years it'll be taken over by the people it's supposed to regulate. It always happens that way."

Well, this man was one of the great prophets of my experience. Today the nobly conceived EPA has lost much of its clout and is showing signs of becoming more tabby than tiger. And in no area of responsibility has it suffered greater erosion than in its pesticide registration and regulation function. Indeed, what has transpired can only be described as rape.

Medfly spraying kills good, bad bugs alike

LOS ANGELES (AP) — Ladybugs, honey bees and crickets are dropping like flies in Medfly-infested regions of Southern California soaked in pesticide, leaving gardeners to battle aphids thriving with their natural enemies gone.

"It's gross. It's sickening," said San Gabriel Valley homeowner Peggy Watson, whose orange trees are covered with aphids.

Frustrated gardeners are making a bee line for pesticide shelves at nurseries and garden centers, where there has been a run on \$4 tubes containing 1,000 ladybugs.

"We have people calling us up asking to reserve ladybugs," said Henrick Mar, manager of the San Gabriel Nursery.

Poisons sprayed by helicopters were intended to rid the region of the Mediterranean fruit fly.

The Medfly, thought to enter the country in illegally imported fruit, threatens part of the state's \$16 billion farm economy because it feeds on and lays eggs in more than 200 varieties of cash crops.

Gov. George Deukmejian said Thursday there was no alternative to spraying and it would continue despite vocal protests and attempts by local governments to stop it what they view as a potential health menace.

"The Department of Agriculture is pursuing what is a time-tested method of eradicating the Medfly," Deukmejian told reporters. "We cannot give up on this. We have to eradicate it."

Deukmejian said if eradication efforts fail there will be higher food prices, quarantines on California fruit by foreign governments, loss of jobs and even placement of maggot-infested fruit on supermarket shelves.

The blossom-devouring aphid has flourished because malathion has killed off its predators — ladybugs, lacewings and tiny wasps. They have been all but eliminated within the nearly 400 square miles of quarantine and spray zones.

Wild honeybees, which pollinate fruit trees, have fallen victim to malathion spraying. "It's as if they drop dead in mid-flight," said Watson.

Medfly spraying also has robbed spring of one of its traditional sounds: the chirping of crickets.

Aphids, leaf scales and whiteflies survive the sprayings because they live close to petals or beneath leaves, shielding them from the pesticide droplets.

"Malathion spraying causes an imbalance," said Lester Ehler, an entomologist at the University of California, Davis. He said seven or eight sprays over an urban area is

'We have people calling us up asking to reserve ladybugs.'

— Henrick Mar,
nursery manager

enough to kill off beneficial insects.

The aphid, enjoying a backyard garden feast without reprisal, leaves disfigured rosebuds, wilted orchids and mold-coated leaves.

"There are aphids on my violets, aphids covering my herbs. It's horrifying," said Marty Asolas, 42, of Bellflower. "I have just decided not to plant anything else because I can't bear to see my flowers attacked."

The aphid infestation was expected by state officials.

"We knew this was going to happen. But it is infinitely preferable to what the Medfly can do to the state," said Robert Dowell, senior economic entomologist for the state Department of Food and Agriculture.

Aphids have become a hot topic among members of the Pacific Rose Society, said the organization's president Bartje Miller. But members also blame prime aphid breeding weather — a dry winter followed by warm spring showers.

"It's a whole combination of factors. I think Mother Nature is just throwing us a curve," said Miller, who is also chairwoman of Wrigley Gardens in Pasadena.

The aphids are "the worse I've seen in the eight years I've been here," said Clair G. Martin III, curator of roses at the Huntington Library, Art Collections and Botanical Gardens in San Marino.

It could take up to a year or longer after malathion spraying ends for gardens to become home again to beneficial insects. "We don't know what the long term effects are on plant life," Ehler said.

Entomologists advise gardeners to control aphids and other pests by hand-washing leaves with soap and water. Using more pesticide will only prolong the time it takes beneficial bugs to return and could burn leaves.

Malathion spraying in Southern California began in force last summer and was recently ordered over a wide area of Riverside County that includes a commercial citrus grove.

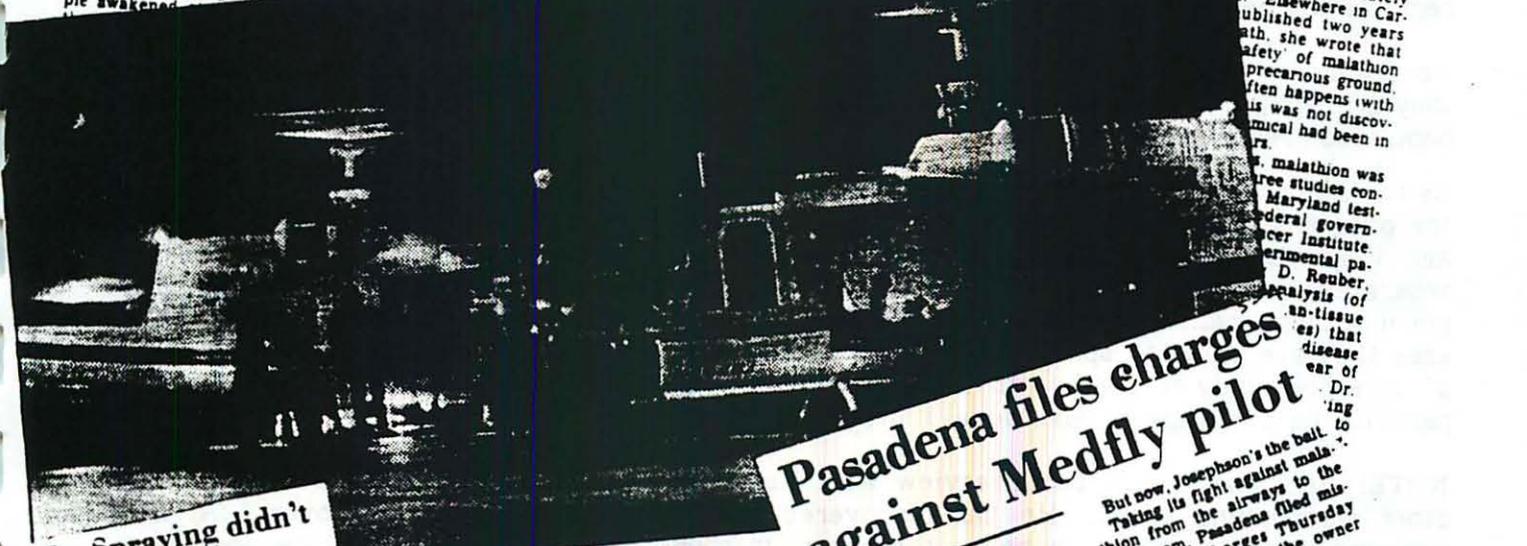
HELICOPTER SPELLS DANGER

Helicopters bring back 'Nam echoes

When neighbors talk to neighbors about the spraying of malathion in their midst, it doesn't take too long before the eeriness factor is brought in. People

Trying to survive the Medfly air war

Each time my wife Elizabeth and I were targeted for malathion bombardment last month, we were notified that it was for our own good. According to the Vietnam-war rhetoric of the "Official Notice" that we received in our state helicopter...



Medfly: Spraying didn't end until after 6 a.m.

Continued from Page A-1... added that the spraying ended at East Pasadena 6:14 a.m. Arrows said the spraying last year (over agreement) officials had to cancel treatment for last week. That led officials to combine two hours covering from Pasadena to Adams, for treatment on the same night, she said. We regret any inconvenience," said Brown who added that the reason this is the last time helicopters will be spraying at 6 a.m.

Malathion at night warmed up at the

...and larvae inside fruits or pupae buried in the soil. The "Official Notice" implied that malathion was so effective that only one aerial treatment planned, then repeated that assurance again only 10 days later. Now, repeat bombardments expected to continue, in me...

Pasadena files charges against Medfly pilot

By KATHY BRAIDHILL Staff Writer James Carl Josephson was just doing his job on Feb. 22... adding the helicopter crew... spraying malathion-corn syrup... part of the state's battle against the Mediterranean...

Late spraying Malathion mission didn't end until after 6 a.m.

When Flo McNeill stepped outside of her East Pasadena home at 7:20 Friday morning to empty the trash, she smelled something awful. "It smelled like Raid..." McNeill said. "Actually, it was malathion, and the odor was so strong because helicopters had jumped the pest-control neighborhood."

Police will intercept malathion choppers

Pasadena bans low flights

By MICHAEL GOUGS PASADENA — The state's main threat to helicopters will not be alone in the near future. Pasadena police will intercept the helicopters... The city is asking for the Pasadena Police Department to be authorized to intercept helicopters... The city is asking for the Pasadena Police Department to be authorized to intercept helicopters...

What the ordinance says

It is unlawful to engage in formation flying at altitudes of 700 feet or less within the boundaries of the city of Pasadena between one hour after sunset and one half hour before sunrise without prior permission from the board. The names of formation fliers has been presented in recent months and such flying is hereby prohibited to occur in the next ordinance is originally passed or from then on. The ordinance is originally passed or from then on. The ordinance is originally passed or from then on.

Cities file suit to stop spraying

By JOHN FLECK LOS ANGELES — The Los Angeles City Council voted Tuesday to file suit to block the aerial spraying of malathion. Councilman Richard Alatorre... When the ordinance was passed... But the court process will take a long time even if the cities prevail... City Attorney Keith Prisker... We have no other choice but to decide to go to court to stop the spraying," argued Los Angeles...

Notice" skirted the question of malathion safety, including the cumulative risks to children and others from repeated spraying. government was made... wrote: "Although today's (insecticide) pesticides are more dangerous than those used before, they have become something to be feared. Elsewhere in California, published two years ago, she wrote that the safety of malathion is on a precarious ground. Malathion often happens (with malathion) was not discovered until it had been in use for years. Malathion was the subject of three studies conducted by the Maryland testicular cancer Institute. Governmental pathologist Dr. Reuber's analysis (of malathion) that disease was not a fear of malathion. Dr. Josephson's the bait. Taking its fight against malathion from the airways to the courtroom, Pasadena filed misdemeanor charges Thursday against Josephson, the owner of the helicopter. Please see CHARGES, Page A-4.

But now, Josephson's the bait. Taking its fight against malathion from the airways to the courtroom, Pasadena filed misdemeanor charges Thursday against Josephson, the owner of the helicopter. Please see CHARGES, Page A-4.

Responses from Wilson and California General John Van... the main contenders for the job. But I haven't heard them speaking out on this issue. For them and for many other politicians, on the question we shall go...

It's not acceptable to spray in the morning when people are out in it. Flo McNeill. East Pasadena...

parked her car in East Pasadena at about 6 a.m. and was walking to her office when the helicopters moved directly over her. "It frightened me," she said. "Where do you go?" she said. During the spraying last year, helicopters typically would fly around 2 a.m. This month, the zones have been re-expanded and the spraying has been completed work closer to 4 a.m. The helicopters ever the day morning was the said Medfly Project man Anita Brown. She

Please see MEDFLY, Page A-5.

Introduction to Chapter 15



The PHOENIX Newspaper dated November 19-December 2, 1981 wrote an article in 1981 regarding the CIA Air Empire. According to the article the CIA owns Evergreen Helicopters which were the helicopters used in the aerial spraying of malathion in northern California. in 1981.

The L.A. TIMES Newspaper article by Richard C. Paddock, dated March 28, 1990 indicated that the San Joachin Helicopter Service is owned and operated by J.J. Josephson. According to this article, Mr. Josephson was appointed in 1989 to serve for a second term on the state Agricultural Pest Control Advisory Committee. Josephson was named by then Food and Agriculture Director Jack Parnall to the panel, which advises the Department on how to regulate the pesticide application industry.

According to a retired Air Force Captain (pilot): "These helicopters are flying around and they are flying, to the best of my knowledge, below FAA minimum for flight...over a densely populated areas."

As the Editor I asked the pilot: "Do the helicopters always fly low over your house?" ...and the pilot answered, "Yes, last Friday they came three times between 2:00AM and 2:30AM, and they were within 300 feet. Now when they are conversing from one area widely separated from another, they go up to 500 feet or maybe somewhere in that realm and get in a long line...then they come charging along in a long line. When they get to the next area they are going to spray, they get in a 'step-down' right or left echelon, like the point of an arrow, only it goes up in the air, and they charge around. I do know that in some parts of the Los Angeles basin legal limit is 2,000 feet."

NOTE: See Chapter 12 for Interview with Rufus Young, Jr., Attorney for Pasadena, and other surrounding areas. He has discovered that the helicopters in use over L.A. and surrounding areas are flying below the minimum speed limit for helicopters over populated areas. In other words, these helicopters used in the spraying of malathion are flying at a maximum speed of 78 miles per hour. According to FAA requirements the speed 'minimum' is 150 miles per hour. So these helicopters are in direct violation of FAA rules.



Phoenix

Vol. 3 No. 20

November 19-December 2, 1981

A Worker Controlled Newspaper

10,000 copies

Evergreen or Nevergreen?

Medfly Helicopters Linked to CIA

EVERGREEN HELICOPTERS, THE SOLE company contracted by the State Medfly Project to conduct the aerial spraying of malathion in Santa Cruz County, has links to the Central Intelligence Agency dating as far back as 1976.

It was in that year that Evergreen purchased the assets of Intermountain Aviation, a CIA "proprietary," or private, corporation which is actually funded and operated by the CIA. Proprietaries such as Intermountain serve as "fronts" for clandestine CIA activity, particularly in Africa and Latin America.

Evergreen's ties to the CIA come as no surprise to the aerospace industry. Evergreen Corporation was first linked to the CIA at the time it purchased Intermountain, according to the July 7, 1980, issue of *Aviation Weekly and Space Technology*. Terming the CIA tie-in "a sometimes bothersome connection," the article noted that Evergreen "was marked with the CIA brand" when it moved its operations from Montana to the former Intermountain facility in Marana, Arizona, where Intermountain's CIA connection had been exposed during a congressional inquiry.

Evergreen's Agency ties were "strengthened" when Evergreen hired two former CIA agents as a chief executive and Washington consultant, according to the aviation magazine. Though the article did not reveal the names of the officers, the *Phoenix* has learned that one of the agents in question was George Doole, who had directed a number of CIA-controlled airlines.

A CIA agent for 17 years, Doole became a consultant to Evergreen at the time it purchased Intermountain, and was also appointed to Evergreen's board of directors. An Evergreen spokesperson has recently stated that he "could neither confirm nor deny" Doole's present role in Evergreen operations.

These allegations surfaced last week during a weekly talk show led by Ray Taliaferro of KGO radio. An employee at the State Medfly Project told a local county supervisor that "things were crazy... the phone was ringing off the hook" after Taliaferro's broadcast, and Project Director Jerry Scribner called KGO to publicly denounce the talk show. Dismissing Evergreen's alleged ties with the CIA as "irrelevant," Scribner declared, "I don't care whether they are [connected with the CIA] or not."

In the same talk show, Taliaferro discussed Evergreen's controversial herbicide spraying in Scottsdale, Arizona, and its role in secretly transporting the Shah of Iran from Panama to Azores, the first step of his journey to exile in Egypt. Both allegations were confirmed by *Aviation Week*, which said that Evergreen president Delford Smith had "no qualms" about aiding the Shah's flight.

"I thought the Shah had been a pretty genuine friend to America... We knew the trip had been blessed by the U.S. government," the magazine quoted the Evergreen chief as saying. The White House chose Evergreen as an intermediary because it could react quickly," Smith concluded.

The aerospace weekly also informs us that "working for the CIA might not be all that bad: they pay their bills," he [Smith] said. And though Smith denies knowledge of a CIA-Evergreen connection, he is quoted as admitting that "unknown to us," the airline might have performed some jobs with CIA connections.



THE CIA AIR EMPIRE

Fly the Friendly Spies of...

"Far and away the largest and most dangerous of all the CIA proprietaries" is how ex-CIA agent Victor Marchetti described the CIA's enormous network of clandestine airlines, pointing out that the Agency needs air support for its covert operations in the Third World.

"Incredible as it may seem, the CIA is currently the owner of one of the biggest—if not the biggest—fleets of 'commercial' airplanes in the world," wrote Marchetti in *The CIA and The Cult of Intelligence*. Explaining that these "commercial" airlines serve as covers for covert military operations, Marchetti concluded: "CIA mercenaries and CIA-supported foreign troops need air support to fight their 'secret' wars... Without the air proprietaries, there could have been no Tibetan or Indonesian or Burmese operations. Most important of all, there could have been no 'secret' war in Laos."

At the time of Marchetti's writing, CIA proprietaries included Air America, Air Asia, Civil Air Transport, Southern Air Transport, and Intermountain Aviation, which Marchetti described as "a particularly mysterious air proprietary."

continued on page 6

INSIDE THE PHOENIX

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SPIES AND FLIES

continued from page five

Intermountain, created by the CIA in the 1950's to store and maintain CIA aircraft, soon became a training site for American and foreign mercenaries. Its operations malfunctioned in the early 1960's as a result of the wars in Southeast Asia and the Congo. Marchetti reports that "Intermountain expanded to the point where it covered as a commercial air charter and repair company becoming difficult to maintain.... If nothing else, its private jet owners looked suspicious to the casual viewer." Military aircraft with bomb bays were also stored in view of the highway. Intermountain later used CIA funds to build hangars for its military aircraft. Intermountain's most controversial operation was its role as conduit for the sale of B-26 bombers to Portugal, which used the planes to wage war in the African colony. Official U.S. policy had banned all weapons sales to Portugal for use in its African colonies. Official U.S. policy also resulted in a Justice Department investigation.

In the next decade, Intermountain's cover was increasingly thin, and he notes CIA officer Richard Buzard pointed out in 1969, a promoter identified as a CIA front later in violation. "Once our relations [with a private corporation] have been blown, they cannot be reworked. We need to operate under deeper cover." In 1976, Intermountain was sold to Evergreen. "A number of factors" suggest that Evergreen itself may be a CIA front, according to Owen Aaron Johnson, Business editor Louis Wolf. He cited as examples the airline's purchase of Intermountain and U.S. military helicopters used in Vietnam, its role in the Shah's flight, and its "rapid ascension" capabilities, but concluded that "so far we have no conclusive evidence" that Evergreen is a CIA front.

"I've heard it bandied about that Evergreen had ties to the CIA," Madoff, Information Officer Roger Biles told the Phoenix. "My gut feeling is that Evergreen is legal, but who knows? They're the biggest helicopter company in the world!"

No Spray is Good Spray

Aerial application of pesticides is a major activity of Evergreen Helicopters. In 1978 Evergreen sprayed over 2 million gallons of chemicals throughout the world. These operations have met fierce opposition at home, particularly in Arizona, northern California, and Oregon.

In Scottsdale, Arizona, Evergreen Helicopters was contacted to spray three chemicals on the cotton fields of a Pima Indian reservation. Mary Neive, American fall ill from valley fever and becomes shortly after the spraying, and a congressional inquiry revealed that the reservation had been assumed with over 20 chemicals.

In Oregon and northern California, Evergreen was hired by timber companies to spray weevillers A-D and 2,4,5-T herbicide developed by a U.S. Army Germ. Warfare Center in 1945. In 1978, a group of Oregon doctors linked the spraying with a sharp increase in miscarriages and deformed babies in central Oregon.

Dr. Rose Strickland, an Oregon physician, told the L.A. Times that she had seen three cases of anencephaly (infants born without brains) in four years of practice—an incidence 13 times higher than the national average. The mother of one of the babies born without a brain told reporters that she had "seen the helicopters overhead and smelled the chemicals" while pregnant.

In a 1978 investigation of hospital records in three Oregon counties, the Environmental Protection Agency concluded not only was there a "strong correlation" between chronic health problems and the spraying, but that the use of organophosphorus herbicides was "significantly higher" in areas sprayed with the herbicide.

Evergreen Helicopters, then, has left more than a trail of herbicide and insecticide in its wake: a marked increase in birth defects, miscarriages, and neurological disorder has been documented among populations areas sprayed in Oregon and Arizona. Recent cases of some pesticide-related health problems are being reported from areas that have been heavily sprayed with malathion.

Don Mudge, a research specialist in the State Department of Health, says that his office has received 30 reports by physicians of health problems related to the malathion spraying. However, Mudge added, "The appropriate investigations have not been done," to confirm that those health problems were in fact caused by pesticide poisoning.

Kathy Campbell, who directs the Chien and Campbell Department for the state in Los Gatos, said that as of November 5th, 51 doctors against the state have been filed for cases of allergy, asthma, rashes and other symptoms related to malathion poisoning. She said that these symptoms have been confirmed by physicians. The symptoms of pesticide poisoning, which usually develop within one to two days of the aerial spraying, include headache, dizziness, conjunctivitis, nausea, vomiting, abdominal cramps and diarrhea, skin rashes, visual blurring, and various rashes or eruptions.

However, Physicians of the Santa Clara Medical Society's Maricopa Report had circulated a letter to members of the society which said, "Medical use of organophosphorus insecticides is a major cause of malathion intoxication."

But the Peninsula Times Tribune later quoted Mark Segor, a member of the Madoff Health Advisory Committee, as saying that health investigators "made a mistake in saying that the major health problem was public hysteria. They should have approached the project with an open mind."

Malathion, which belongs to a class of chemical pesticides called organophosphates, is a broad spectrum pesticide that indiscriminately kills non-target species as well as target species. Developed in Nazi Germany during World War II as a nerve gas, it combines irreversibly with an enzyme in the body called acetylcholinesterase, blocking transmission of sensory signals from nerve to nerve and causing paralysis of nerve-muscle functions.

Stanford Pharmacology professor Dr. Seymour M. Kalman has summed that malathion is toxic to man. In an affidavit, Segor said, "The aerial spraying of malathion in Santa Clara County poses severe risks to human health."

According to Kalman, there is strong evidence in animal and tissue culture studies that malathion is mutagenic and some evidence that it might cause birth defects and cancer. Dr. David Ramick-Strauss, a local physician, also believes that malathion is toxic to hu-

MALATHION: TOXIC TIME BOMB

November 19-December 2, 1981
David Ramick-Strauss has treated patients in Basel, Germany who appear to be suffering from malathion poisoning symptoms. He has also treated Chicago farmworkers who had pesticide poisoning.

"There has not been proper concern shown for [it spraying] it has been given a whitewash by the state and medical association," he said.

He feels that the Cholinesterase blood test, which is used to determine malathion poisoning, is a crude test, because it cannot indicate all the effects of malathion or where it goes in the body. It only detects acute poisoning.

"Nobody has any good answers, and that's the best reason to treat malathion with respect," he added.

He believes that the County Health Department isn't doing an adequate job of monitoring the health effects of malathion.

"I don't know what they're doing in Santa Clara, but they aren't doing anything here," he said.

Maloff claims that the State Department of Health has done three monitoring surveys in Santa Clara County—a door to door survey of general health conditions before and after spraying, a telephone survey, and a survey on hospitalizations before, during, and after spraying.

Malathion was chosen as the means to eradicate the Madoff infestation in California because physicians, considering its particular benefits and costs and felt it was safe and had low acute symptomatic reactions. There has, however, never been a study done on the long-term chronic effects of malathion. ■

Donna Handwe and A. Jay Field, with Geoffrey Dem

Continued from County-Agents Reports



Spraying Firm Has Record of Accidents

■ Madoff: San Joaquin Helicopters has a history of crashes and repeated violations of state pesticide regulations, records show.

By RICHARD C. PADDOCK
Times Staff Writer
MAR 2 8 1981

DELANO, Calif.—The company hired by the state to spray malathion on over 50,000 acres of alfalfa fields in the San Joaquin Valley has a history of safety problems, including nine helicopter crashes since 1963 and repeated violations of state pesticide regulations, government records show.

At least six of the accidents involving helicopters sprayed by San Joaquin Helicopters Inc. occurred when the aircraft were flying at low altitudes over farms in the San Joaquin Valley. In four of the crashes the pilots were injured, and in two cases the helicopters were destroyed, according to National Transportation Safety Board records.

San Joaquin Helicopters, one of the region's largest pesticide application companies, also has been cited 13 times since 1969 for viola-

ting state pesticide regulations in Kern and Fresno counties, according to the county records. Among other things, the firm was cited for spraying crops with prohibited pesticides and for illegally discharging chemicals on a county road.

And, reports by Kern County officials show, the company has been involved in a number of pesticide injury cases for which it was not cited, including two occasions when chemicals sprayed from helicopters drifted onto workers in nearby fields—causing 13 people to become ill.

State officials said that the past safety problems of San Joaquin Helicopters do not indicate any similar hazards to residents of Los Angeles and Orange counties. While the company is spraying malathion to eradicate the Madoff infestation from fruit fly.

Please see STRATAVING, A16

SPRAYING: Firm Has Accident Record

Continued from A3

Until Tuesday, however, the officials said they were unaware of the company's history of crashes. They also acknowledged that they did not check San Joaquin Helicopter's record of pesticide regulation violations before hiring the firm. But they defended the state's choice, saying the company has a good overall safety record for its aerial pesticide applications.

"When you add all these up with all of the helicopters they're flying in the state, I don't think that's much of a bad record," said Rex Magee, associate director of the Department of Food and Agriculture. "Comparing them with others in the business would not indicate they have any worse problems than anyone else."

As a further indication of the company's good standing with state officials, the president of San Joaquin Helicopters, Jim Josephson, was appointed in 1989 to serve for a second term on the state Agricultural Pest Control Advisory Committee. Josephson was named by then-Food and Agriculture Di-

■ MEDFLY SPRAYING MAP: B2

rector Jack Parnall to the panel, which advises the department on how to regulate the pesticide application industry.

Any safety problems in the San Joaquin Valley have little bearing on the operation to spray malathion over homes in Southern California, Magee said.

During farm operations, the helicopters fly at much lower altitudes and must constantly avoid such obstacles as trees and power lines. During spraying for the Medfly, the helicopters fly in a straight line at an altitude of about 500 feet. In addition, state workers handle all ground crew activities for the Medfly spraying, while in normal farmland operations, these duties are performed without state involvement.

None of the helicopters that were involved in the accidents are being used in the malathion spraying operation, according to a check of the aircraft registration numbers.

Josephson denied in a telephone interview that any of his company's helicopters had ever crashed.

"There's been no incident involving helicopters," Josephson said before refusing to discuss the matter further.

However, NTSB records show that helicopters flown by the Delano-based company have gone down in nine crashes ranging as far south as Arvin in Kern County and as far north as Chowchilla in Madera County.

Details of the six most recent accidents were available from records of the Federal Aviation Administration, and, in two cases, from eyewitness accounts:

- On Sept. 30, 1988, a helicopter applying paraquat to cotton west of the town of McFarland ran out of fuel on takeoff, landed in the field and rolled over. The pilot was not injured but the helicopter, a Hiller UH-12E, was substantially damaged.

- On March 14, 1988, a helicopter involved in frost control for almonds on the Tejon Ranch near Arvin ran into a transmission tower line and crashed, injuring the pilot and demolishing the Bell UH-1B aircraft.

- On March 8, 1987, a helicopter spraying pesticides in an almond orchard hit a tree and crashed southeast of McFarland. The pilot was not injured, but the Hiller OH-23G helicopter was substantially damaged.

- On Feb. 19, 1987, a Hiller STOUH-12 ran out of fuel near Coalinga and crashed, substantially damaging the helicopter. The pilot, who was not injured, reported that the fuel gauge was inoperative, the FAA report said.

- On June 17, 1986, a Hiller UH-12E crashed near Delano after parts of the main rotor blade separated in flight. The pilot was not injured but his craft was substantially damaged. An investigation found that the blades were not airworthy.

- On April 16, 1986, a Bell UH-1B lost power near Chowchilla and rolled over during an emergency landing. The pilot was injured and the helicopter was demolished. An investigation found there was no oil in the transmission.

In 1984, according to the NTSB, two Hiller UH-12 helicopters operated by the company crashed in separate accidents near Delano, in both cases injuring the pilots. And in 1983, a Hughes 369D helicopter

crashed near Caliente. No one was injured in that crash.

Apart from its accident record, San Joaquin Helicopters has been cited by Kern and Fresno counties agriculture commissioners for violating a variety of regulations in its aerial and ground applications of pesticides.

Among the violations were aerial spraying of an almond orchard where a crew was working, illegally disposing of pesticide containers by burning, improperly labeling pesticide containers, and not providing proper training to workers.

On one occasion, a helicopter sprayed pesticide on bees in a field without notifying the beekeeper as required. And twice, the company sprayed crops with pesticides that were not permitted for use on those crops.

In most cases, the company received warning notices for the violations. In one instance, the company was fined \$150 for not requiring employees to wear proper safety equipment.

Jim Wells, an official in the pest

management division of the California Department of Food and Agriculture, said the state did not review the company's record before hiring the firm because it was not necessary.

He said the department has routinely reissued state pesticide applicator licenses to San Joaquin Helicopters and a host of other pesticide companies without checking their safety records.

But Wells defended the overall safety record of San Joaquin Helicopters, contending that all of the violations were relatively minor.

"Looking at the amount of work [Josephson] did, both ground and air, his record is not poor," Wells said. "Anybody who does a lot of work is going to have violations."

No citations were issued in the cases where pesticides drifted onto workers during helicopter spraying. In one case, seven workers in a nearby almond orchard suffered ill effects from the potent pesticide parathion. And in another case, six employees became ill after they were sprayed with a dose of malathion in a concentration much stronger than that used in the Southland Medfly spraying operation.

IS IT CHEMICAL WARFARE?

Pasadena's chopper brigade

HELICOPTER HEROES

Manager Don McIntyre) in the heat of the fray.

Acting Police Chief Bruce Philpott ensured his department kept up with and enforced the sudden new laws of his city. City Attorney Victor Kaleta to all reports was the coolest head in City Hall — and a sober father figure was desperately needed in the absence of the mayor and the manager. Nick Rodriguez of Kaleta's staff did fast and deep research into the laws of the skies, countering false Federal Aviation Administration assertions and for perhaps the first time writing the catch-phrase "an accident waiting to happen" into legal language. Assistant City Manager Judy Weiss and the Communication Department's Carol Spencer did spokeswoman's work.

And Pasadena police Lt. Terry Blumenthal of the department's helicopter brigade is widely seen as the lead hero of the city's anti-malathion crusade. Defeating FAA concerns, ensuring that the aerial encounters between police, media and pesticide-spraying choppers were completely safe, soothing ruffled flyers' feathers all around — he did a great job.

Some will say it's all been a publicity stunt. If it was, it worked. The state is listening to our concerns, and it was simple as that. The city has sent people out of

ed out of

Elly Breake, spokeswoman for the Federal Aviation Administration in Los Angeles, said that Pasadena has no authority to control the flights of helicopters. The city cannot preempt federal law, she said.

Breake added that the state has FAA permission to conduct its aerial spraying flights. State officials also were concerned about the possibility of a midair collision caused by the presence of the city's police helicopter. Jim Josephson, owner of the Bell company under contract to fly the spraying state, read the

The news from the far-flung fronts of the Medfly war is hard to keep up with.

It was malathion madness all last week in the sprayed-upon areas of Southern California. The people rose up and, not to put too fine a point on it, their leaders followed them.

But that's all right. The following was done with a lot of guts and a wild creativity. What more could we ask for in leaders during trying times?

As other cities follow Pasadena's lead in concocting ways to get reasonable about the amount of pesticide rain the people can be expected to have poured upon them, let's play a little catch up and thank those who performed above and beyond the call of duty.

The Pasadena Board of City Directors led the way. Director Bill Papanian stretched his legal mind in especially creative style in dealing with what he sees as a real health crisis for his city and his family. Director Rick Cole cut a dashing, bomber-jacketed figure in the polite dogfight above the Huntington Hotel — "What's Cole doing on the 'Today show'?" demanded a former Pasadena calling from San Diego. Director Chris Holden played a key role in the talks with Governor George Deukmejian at the Doubletree Hotel, reminding him that "you can't educate people as long as the choppers are flying — they can't hear you." Director Katie Neck showed boldness and intelligent concern for the unforeseen long-term possibilities of malathion ingestion. And Vice Mayor Jess Hughton led the way in the absence of Bill Thomson, out of



MEDFLY: Pasadena Moves to Stop Spraying Over City

HELIPLANE OPERATING MESS: 12

five state helicopters that had been scheduled to spray the city late Monday night.

Vice Mayor Jess Hughton said that the state helicopter pilots were

action number would be recorded and the pilot ticketed for breaching a city ordinance.

The violators could be required to appear in Pasadena Municipal Court on misdemeanor charges that carry a maximum penalty of one year in jail and a \$1,000 fine. Police spokesman Bruce Hughton said the police pilots would not try to force the state helicopters to the ground or interfere with

and Pasadena

Continued from B2
also potentially dangerous to residents on the ground.
"I've tried to be a frustrated citizen director since August of 1971, but in the normal course of the law, things are being done."

Other Cities Rev Up Anti-Malathion Efforts

By ASHLEY DUNN
TIMES STAFF WRITER

A day after the city of Pasadena launched a novel scheme to use police helicopters to shadow and ticket the state's squadron of malathion-spraying choppers, several more Southern California cities moved Friday toward launching their own aerial wars against the state.

The political battle over malathion also heated up Friday in the state Legislature as Assemblyman Mike Roos (D-Los Angeles) unveiled a proposal that would seek an end to funding of the program and make the state more liable for lawsuits arising from the Medfly eradication campaign.

On Friday, Los Angeles City Councilman Robert Farrell introduced a measure similar

on similar ordinances over the next few weeks.

"I think it's a clear indication of the concern that is shared by all these public officials," Pasadena City Director William Papanian said. "It is gratifying to see other public officials step forward and take action."

The Pasadena ordinance aims to stop aerial malathion spraying by banning formation-flying by aircraft under the altitude of 700 feet. On Thursday, that measure had its first test as a Pasadena police helicopter followed state pilots, warning them that they were violating the new law and could face a penalty of up to six months in jail and a \$1,000 fine.

The state has attacked the ordinance, saying the city has no authority to regulate

Roos, the Assembly Speaker pro tempore, said he has also asked a joint Senate-Assembly committee in charge of approving funds for spraying to "turn off the spigot" until a public hearing is held on the aerial eradication effort.

Meanwhile, Atty. Gen. John K. Van de Kamp also announced Friday that his office is launching an investigation into whether malathion sold in stores should be regulated under the restrictions of the state's Proposition 65. The proposition imposes strict notification and discharge requirements on the release of toxic chemicals.

Van de Kamp, whose office has been defending the state in lawsuits aimed at stopping malathion spraying, said his investigation will focus on potentially

Introduction to Chapter 16

EDITOR'S NOTE: Not many Americans have thought of the United States in terms of biological and chemical warfare, but if one peruses this literature in that vein it soon becomes evident that the United States is involved heavily through the Pentagon in building up a huge stockpile of chemical and biological warfare. Some of these books are mentioned here and others inside this chapter on this most serious subject. Could the aerial spraying of malathion be chemical warfare on its own citizens? I leave it up to you the reader to decide for yourself.

CHEMICAL AND BIOLOGICAL WARFARE, (Edited by Steven Rose, Beacon Press) states, "The U.S. Army's Field Manual on the Law of Land Warfare was quietly changed to point out that the United States is not a party to any treaty now in force, that prohibits or restricts the use in warfare of toxic or nontoxic gases."

Our nation had also emerged from World War II with new centers of gas and germ research and production. Biological warfare had come of age during the war years—the perverted stepchild of medical science. Poison gas production facilities had been added to our military machine. These additions were not dismantled after V-J Day. Our men went home but the military professions, their civilian assistants and the research and production facilities remained as the nucleus of future growth.

Much of the U.S. experimentation with nerve gases has taken place at the Army's oldest chemical warfare installation, the sprawling Edgewood Arsenal, some 20 miles northeast of Baltimore. ...In July of 1969, under prodding by the House Subcommittee on the Environment headed by Congressman Henry S. Reuss, the Army revealed plans for testing 239 gas weapons at Edgewood over a six-month period.

SILENT DEATH, by Yuri Fyodorov, published by Progress Publishers, Moscow, Russia, 1987. states: "The enormous threat posed by nuclear arms in a way distracted public attention from the existence of huge arsenals of chemical weapons, other means of mass destruction, while scientists and technologists working for the military-industrial complex were developing more sophisticated varieties of these weapons.

Way back in 1969, the UN Secretary-General had this to say in his report: "Advances in chemical and biological science, while contributing to the good of mankind, have also opened up the possibility of exploiting the idea of chemical—warfare weapons, some of which could endanger man's future, and the situation will remain threatening so long as a number of states proceed with their development, perfection, production and stockpiling."

People hold different political views are gravely concerned over the practical preparations for a rapid buildup of chemical weapons started by the U.S. Administration in the early 1980s. ..The Pentagon is drawing up scenarios of chemical wars for various regions of the world. For instance, "Airland Battle 2000" provides, among other things, for the use of chemical weapons during an armed conflict in Europe...

The action of Western militarists have increased the possibility of a chemical war breaking out. Julian Perry Robinson, an outstanding British expert, in a yearbook of the Stockholm International Peace Research Institute (SIPRI) states, "The menace to international security from CBW developments during prior years...has become more evident."

Dr. Bruce Halstead, M.D. is interviewed on "Health Plan for the United States and the Malathion Issue." Dr. Alan Levin, M.D. is interviewed on how to arouse the public to stop the spraying of malathion!

SILENT DEATH

Yuri Fyodorov

Progress Publishers 1987

(Excerpted)

Meanwhile, a factory that will turn out a large amount of binary ammunition is going to be commissioned in the United States (Arkansas). Intensive research is under way in the laboratories of the Dow Chemical Company, fitted out with most up-to-date equipment, and other similar concerns. But no one can tell what that chemical research will yield in the end. Perhaps a new fertilizer will be synthesised thus offering a solution to the food problem in the developing countries. On the other hand, the scientists may develop a technology of producing new super toxic agents capable of killing people and destroying crops and forests more effectively than the ones available today.

NO FIRE, NO THUNDER**MONTHLY REVIEW FOUNDATION**

(The threat of chemical and biological weapons)

by Sean Murphy, Alastair Hay, and Steven Rose

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"The control of vegetation by herbicides is not novel. When plant hormones were first identified and purified in the 1920s it became clear that specific hormones control growth. In large amounts these substances cause abnormal growth and plants outgrow their strength. Investigations into the military use of herbicides as crop-destruction agents began in England in 1940, and it was the British who were the first to use herbicides in a military conflict. During the Malayan Emergency, which persisted from 1948 to 1958, British forces used the herbicide 2,4,5-T against the Communist insurgents to control vegetation along lines of communication and to destroy food crops. But it was in the Vietnam war that herbicides and anti-crop chemicals were used on a large scale. Some 17 million gallons of mixtures (e.g. Agents Orange, Blue, White) of 2,4-D (used in lawns for weed-killing), 2,4,5-T, picloram and cacodylate (an arsenic chemical) were sprayed by a US Air Force squadron, boasting the slogan 'Only we can prevent forests.' Between 1962 and 1971, US scientists estimate that 10 per cent of the country's inland forests, 36 per cent of the mangrove forests, 3 per cent of cultivated land and 5 per cent of 'other' land was affected.

The defoliation programme was initially described as part of the strategy of denying forest cover to the guerillas in largely jungle terrain. However, one important aspect of this was the destruction of crops. The grand US strategy was to drive the largely agrarian, peasant population into the towns or strategic hamlets - vast concentration camps, where the availability of food could be effectively controlled by the US and its puppet government in Saigon. The weapons soon became responsible for large-scale starvation. Had this been the only effect of the spraying it would have been serious enough. However, before long it became clear that animals and humans were being directly affected by exposure to aircraft spraying of the defoliants. There were reports of death, of cancers and birth abnormalities. One reason for these human casualties was that Agent Orange (a 1:1 mixture of 2,4,5-T and 2,4D) was heavily contaminated with dioxin, a very stable toxic compound now known to cause birth abnormalities and cancer in animals. Dioxin is produced as an impurity during the manufacture of 2,4,5-T and its danger to humans only became widely recognised in Europe when contamination of people and land followed factory explosions during production - at Coalite, Derbyshire, in 1968; and Seveso, Italy, in 1976. It is estimated that 170kg of dioxin was accidentally sprayed on Viettnam, Lao and Cambodia (Kampuchea) during the war. Dioxin is more toxic than nerve gas and a few grams would be sufficient to wipe out a population the size of London.

Twelve years after the spraying finished, Vietnam's inland forests still bear the scars. Despite a massive replanting programme begun in 1977 around Ho Chi Minh City, Vietnamese

scientists are convinced that defoliation has led to changes in local rainfall, excessive erosion and irreparable damage to the local fauna and flora. Of equal concern are the effects of the spraying on people. Vietnamese scientists have evidence of an increase in liver cancer, spontaneous abortion and birth defects. In addition, 23,000 US, Australian, Korean and New Zealand servicemen have collectively sued the five chemical companies which manufactured the defoliants, claiming that their health has been irreparably damaged.

CLOUDS OF SECRECY

(The Army's Germ Warfare Tests over Populated Areas)

by Leonard A. Cole

Rowman & Littlefield Publishers - Reprinted with Permission

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..."The current U.S. biological warfare program was intended by Congress simply to study ways to counter biological warfare agents (i.e., as defensive research.) The Reagan Administration says that as a matter of policy it is not developing offensive biological weapons. But as Leonard Cole suggests, unless one is constantly on guard, research in defensive biological weaponry can easily spill over into offensive research.

...Some of the experiments involved the release of supposedly harmless organisms which had properties resembling those of certain biological agents. The Army claimed the organisms were innocuous. But Cole presents evidence that those organisms were known to be harmful. He suggests this is still an open question despite the fact that the court ruled in favor of the government in a suit for damages brought by a San Francisco resident in 1981.

Congress has already taken steps to see that there is no recurrence of such secrecy. In 1977 congress passed legislation requiring the Department of Defense to notify Congress before conducting any experiments with biological or chemical agents using human subjects. My information is that no secret tests have been conducted since the late 1960s.

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Perhaps the most important question about the army's open air testing program concerns the danger of the simulant agents involved. The army has repeatedly contended that none of the millions of people who have been exposed during the tests has suffered ill effects. In a memorandum to Congress in 1977, the army sought to assure everyone by insisting that it used only biological warfare simulants "considered by the scientific community to be totally safe." The official position was that the simulant agents were harmless and, by implication, that there was nothing wrong with using them in the past and nothing wrong with using them now.

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ASPERGILLUS FUMIGATUS

Aspergillus fumigatus is a fungus that the army used during tests in the 1950s over populated areas. In a report provided during the senate hearings in 1977, the army suggested that the organism posed little danger to humans. It conceded that the organism "is considered an opportunist causing aspergillosis in debilitated persons," but contended that *Aspergillus fumigatus* is unremarkable and implied that there was nothing wrong with spraying it because the organism is all around us anyway: "It is ubiquitous in nature and can be cultured from soil, water, air, food stuffs, animal waste products and most human body orifices."³

The report is misleading in two respects. First, in saying that the army stopped using *aspergillus* after the 1950s, though not explaining why, there is an inference that until then the army might not have realized the organism could be "considered" harmful. Second,

as the army would have it, only debilitated persons are at risk. Both of these propositions are wrong.

Aspergillus fumigatus has long been known to cause aspergillosis, a disease not merely "considered" to affect debilitated people, but one to which any person may fall victim. Standard medical reference works before and during the testing program make this clear. A textbook published in 1951 noted that the danger of aspergillus had been recognized since the nineteenth century.⁴ A description of the organism published in 1949 indicates that *Aspergillus fumigatus* is "important as a contaminant of lesions and as an agent of infection." A cause of aspergillosis, it could lead to "infections of lungs, bronchi, external ear, paranasal sinuses, orbit, bones, and meninges."⁵

The organism was known to cause death, and not just in previously debilitated persons. Although some types of infections caused by aspergillus were not especially threatening, this was not true "for the pulmonary and generalized infections, which frequently are fatal," according to a source book on medical diagnosis and therapy.⁶ Since the army tests involved inhalation of aspergillus spores, the risk was of a pulmonary nature.

Portions of a report about an army test in 1951 involving *Aspergillus fumigatus* were released in 1980 in response to a Freedom of Information Act request. They indicate that the army intentionally exposed a disproportionate number of black people to the organism. The testers imagined that an enemy might use a more lethal fungus that affects blacks in particular, and that assessing the dispersal of aspergillus among these people would help prepare defenses against an attack. Thus in 1951 at the Norfolk Supply Center in Virginia, unsuspecting workers were handling crates that had been contaminated by the army with aspergillus spores.

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The article dedicated to historical review is plainly irrelevant. Its centerpiece is a lengthy recapitulation of a report written in the late 1940s for U.S. intelligence, revealing that the Soviet Union was then involved in chemical and biological warfare preparations. This evidently was meant to show that the Soviets have always been fond of bacterial weaponry and to explain the roots of today's purported program. It makes as much sense as quoting from a U.S. War Department report on the American biological warfare program written in 1946: "work in this field, born of the necessity of war, cannot be ignored in time of peace; it must be continued."²⁹ Should such 1940s wisdom give rise to suspicion that today the United States is ignoring treaties that it subsequently signed? That seems to be the intended message about the Soviet Union.

In another non sequitur, we are told that the denial of an exit visa to Soviet microbiologist David Goldfarb helps confirm the existence of a genetic engineering weapons program. ³¹ After years of waiting, Goldfarb and his family received permission to emigrate to Israel early in 1984. Their visas were suspended when the KGB intervened, claiming that Goldfarb intended to take his collection of bacterial strains with him. While the KGB held that the material was of "national security importance," Goldfarb insisted that he never engaged in classified work. This leads the Journal to conclude that the Soviets show "particular sensitivity about microbiology" and supports suspicions that "Soviet Russia intends to use molecular genetics for biological warfare."

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Meanwhile, Fort Detrick continues to sponsor increasing numbers of biological warfare projects that involve the development of vaccines and other defensive work. Even if these efforts remain defensive, American citizens have reason to worry. Among other activities, a return to outdoor testing over populated areas has never lost its appeal to some defense planners. As discussed in the next chapter, by the end of 1984 just such a proposal was made, and in 1986 field tests were underway.

MEDICAL MYCOLOGY 2nd Edition
 (The Pathogenic Fungi and
 The Pathogenic Actinomycetes)
 By John Willard Rippon, Ph.D
 Associate Professor of Medicine
 The Pritzker School of Medicine
 The University of Chicago
 Chicago, Illinois
 Publisher: W.B. Saunders Co. 1982
 (Excerpted)

"The importance of *Aspergillus* as an agent of opportunistic infections has only recently been recognized. Systemic disseminated disease is essentially a product of the antibiotic era and may be termed a 'disease of medical progress.' Fortunately this form of aspergillosis is still relatively rare. The debilitated patient, however, offers a special milieu for opportunistic fungi. In one large series of 454 leukemia cases, 14 per cent of deaths were attributable to fungus infections. Aspergillosis was second only to Candidiasis in this series. Several recent reviews have emphasized the increasing occurrence of aspergillosis in patients with leukemias."

EDITOR'S NOTE: Systemic Candidiasis is one of the opportunistic infections for A.I.D.S. according to the Center for Disease Control. Much has been written over the last 8 years regarding *Candida* and systemic Candidiasis and the part it plays in a large percentage of the American population. Some of the books written and edited in the last 6 years on this subject include: **The Yeast Connection**, by Wm. Crook, M.D., **The Yeast Syndrome**, by J.P. Trobridge, M.D., **The Missing Diagnosis**, Dr. Orian Truss, M.D.; **Candida Silver (mercury) Fillings & the Immune System**, Edited by Betsy Russell-Manning; **Home Remedies for Candida**, Edited by Betsy Russell-Manning.

The above mentioned books give many reasons for *Candida* overgrowth and systemic Candidiasis. One of the reasons given is the wide-spread use of pesticides.

Could Aspergillosis paralyze the different systems of the body just as the toxins from Candidiasis does?



DELAYED TOXIC EFFECTS OF CHEMICAL WARFARE AGENTS

A SIPRI MONOGRAPH

Stockholm International Peace Research Institute (1975)

(Excerpted)

CHAPTER 5. Delayed lesions caused by Organophosphorus CW agents.

Pg.23

I. General Evaluation.

The sole examples of openly published, discrete studies on delayed lesions caused by organophosphorus CW agents are the investigations made by Spiegelberg (50), U. Hellmann (51) and W. Hellmann (38). A number of other scientific investigations have, of course, been carried out meanwhile on widely different types of delayed lesions caused by industrially important organophosphorus compounds. In these publications - mainly concerned with organophosphorus pesticides, solvents and plasticizers - it is possible, however, to find the occasional reference to CW agents. Since all these organophosphorus compounds are structurally and functionally closely related to each other, the earlier findings on industrial compounds can - with justification - be essentially applied to their CW analogues.

The advent of binary weapons has, moreover, made it more difficult to decide whether certain chemical compounds are meant for **civilian or military applications**. The personnel engaged in the manufacture and storage of such compounds are themselves very often unaware of the nature of the civilian or military use for which the products are intended.

Where the term organophosphorus compounds is used without qualification in the following sections - as is frequently the case - it is intended to denote all those organic compound of phosphorus which are closely related to each other in their chemical and toxicological properties, and which can be represented by the general formula first stated in 1937 by Gerhard Schrader of Germany, the pioneer investigator in the field of organic phosphorus insecticides.

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According to Schrader, effective (that is, toxic) esters are obtained when the central phosphorus atom - in addition to being doubly bonded to an oxygen or sulphur atom - is bonded to two identical or different substituents and to an organic or inorganic acidic group (117).

Militarily, the organophosphorus V-agents - and, to some extent, the G-agents- play the most important role as CW agents. In this connection, binary weapon techniques are likely to constitute the most important system of application (118). The advent of binary weapon technology might also lead to a reappraisal of other highly toxic organophosphorus compounds, which only a few years ago were dismissed as potential CW agents because of their unsuitable properties - for example, poor transport and storage stability.

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II. Specific toxicological evaluation

Symptomatology of acute poisoning by organophosphorus compounds

In order to elucidate the subject of delayed lesions it is firsts necessary to give a brief account of the symptoms produced through acute poisoning by organophosphorus compounds. The reader is referred to monographs for a more detailed treatment (119-121)

Phosphoric and phosphonic esters may enter the human body by inhalation, ingestion or - a noteworthy feature - by skin contact. The entry of these virtually odorless and tasteless compounds into the system is not marked by any perceptible effects, being only manifested later by the onset of grave symptoms.

Symptoms of intoxication by organophosphorus compounds are usually classified as (1) muscarinic effects, (2) nicotinic effects, and (3) central nervous system toxication:

1. The muscarinic effects include miosis, accommodation spasm, bronchoconstriction, bronchospasm, bradycardia, nausea, vomiting, abdominal cramps, diarrhea, urinary and fecal incontinence, pallor, increased salivation, perspiration, lacrimation and increased blood pressure.
2. The nicotinic effects include tremor, myasthenia, cramps, and perhaps paralysis.
3. **The effect on the central nervous system leads to giddiness, insufferable headache, feelings of anxiety, speech and balance disorders, depression of the respiratory centre, and finally coma and convulsions.**

BIOCHEMICAL MECHANISM OF POISONING BY ORGANOPHOSPHORUS COMPOUNDS

The organophosphorus compounds which concern us here are powerful poisons having a specific inhibitory action on the enzyme cholinesterase. Facts concerning this anticholinesterase activity on the part of organic phosphate derivatives were already known to German biochemists and pharmacologists who, prior to the outbreak of World War II - acting on orders from the Wehrmacht - were intensively engaged on work with phosphoric esters intended for CW applications. British teams were also independently working along the same lines during World War II. **We now know that, in addition to cholinesterase, a number of other enzymes may also be affected by organophosphorus compounds particularly chymotrysin, trypsin, liver esterase, milk lipase, choline oxidase, cytochrome oxidase, carbonic anhydrase, amylase, carboxylase and dehydrogenase.**

EDITOR'S NOTE: Noting the just mentioned underlined statement, it is also worthwhile to note the following excerpt from **YOUR ELECTRO-VIBRATORY BODY** by Victor Beasley...**"The nervous system controls behavioral patterns, but enzymes control the nervous system. Hence, physiologically speaking the enzyme is the lowest possible level of behavioral control, all biological systems, necessarily, being directed by enzymes."**

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Table 5.2. Survey of symptoms of poisoning with cholinesterase inhibitors

Bronchopulmonary symptoms	Sensation of constriction, possibly light pain in the thorax, increased secretion with coughing and expectoration, possibly lung edema-like condition, dyspnea
Gastrointestinal symptoms	Anorexia, nausea, vomiting, tenesmus, diarrhea, involuntary discharge of feces
Urinary tract symptoms	Pollakiuria, possibly involuntary discharge of urine
Cardiovascular symptoms	Pallor, possibly initial tachycardia with increased blood pressure, subsequent bradycardia with decreased blood pressure, possibly shock, cyanosis
Glandular symptoms	Perspiration, salivation, epiphora
Ocular symptoms	Miosis, nebulous vision, headache (ciliary pain)
Symptoms from striated musculature	Fatigue, flaccidity, fasciculations, possibly convulsions
Symptoms from the central nervous system	Neurosis- or psychosis-like conditions, agitation, insomnia, headache, hallucinations, phobia, apathy, dysarthria, ataxia, convulsions, tremor, depression, coma, depression of respiratory centre

Source: See ref. [122]

The symptoms of cholinesterase inhibition predominate in the primary manifestations of poisoning. Knowledge of the processes inhibiting the other above-mentioned enzymes is still incomplete.

Some general observations may be apt here on the part played by cholinesterase and on its importance for the basic processes of nerve transmission.

Cholinesterase - together with other esterases, carbonic anhydrases, proteases and amidases - belongs to the large group of hydrolytic enzymes or hydrolases. Another principal group of enzymes - the desmolases - comprises the enzymes which catalyze the final general breakdown of hydrolytic decomposition products.

Acetylcholinesterase (formerly called "true cholinesterase") should be distinguished from cholinesterase (formerly called "pseudocholinesterase", serum or plasma cholinesterase). Acetylcholinesterase has a high affinity for acetylcholine and is capable of splitting this choline ester more rapidly than any other choline derivative. It is present in nervous tissue, **Acetylcholinesterase plays a decisive role in nerve-transmission processes.**

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Acetylcholine has important physiological functions, such as playing a role in the transmission of impulses from one nerve fibre to another across a synaptic junction.

Acetylcholinesterase is inhibited by organophosphorus compounds and the resulting accumulation of acetylcholine gives rise to the symptoms of endogenous acetylcholine poisoning.

...As approximately 300 molecules of acetylcholine are assumed to be split every milisecond by a single molecule of cholinesterase, **it is conceivable that minute concentrations of organophosphoric inhibitors are capable of initiating disastrous biochemical effects.**

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...The above discussion has characterized organophosphorus compounds primarily as **enzymatic poisons, specifically as cholinesterase inhibitors.** We have thereby overlooked a very important fact fundamental to the clarification of the matter of delayed lesions. This fact has likewise been neglected-or, at any rate, inadequately dealt with-by practically all scientists working in this field. This fact is, namely, the alkylating capacity of these organophosphorus compounds.

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Research scientists working on pesticides were the first to indicate the biological consequences of the alkylating property of organophosphorus compounds. Their publications were, however, primarily concerned with the metabolic problems associated with the use of pesticides.

Lofroth of Sweden was the first to show, by means of experiments with DDVP (2,2-dichlorovinyl dimethyl phosphate) on microorganisms, that such alkylation processes in the case of organophosphorus insecticides can assume far-reaching significance because of their mutagenic effects (138). His publications attracted great attention -and also aroused much opposition; at any rate, they initiated a number of intensive investigations with DDVP - the basis of important pesticide formulations in worldwide use. The manufacturers of this important class of trade products have naturally shown interest in **clarification of the question of alleged mutagenic effects.**

MEDICAL ASPECTS OF THE EFFECTS OF DELAYED LESIONS CAUSED BY ORGANOPHOSPHORUS COMPOUNDS

It must again be pointed out that, apart from Spiegelberg's findings on psychopathological-neurological delayed lesions (2,50), literature data on delayed lesions caused by organophosphorus compounds relate primarily not to CW agents but to the pesticidal derivatives of phosphoric acid. As mentioned earlier, because of the chemical and toxicological similarity between organophosphorus pesticides and CW agents it appears permissible to draw generalized conclusions.

Health lesions caused by organophosphorus poisons may be grouped as follows from the biological and toxicological viewpoints:

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Group 1

Health lesions resulting from acylation-synonymous with the inhibition of cholinesterase, chiefly acetylcholinesterase.

Group 2

Health lesions resulting from alkylation-synonymous with action on the nucleic acids (DNA) or on the biogenic amines of the central nervous system, or on both.

The major clinical manifestations take the form of delayed and permanent lesions of the central nervous system. Teratogenic, mutagenic, carcinogenic, hepatotoxic and hematotoxic symptoms also arise.

Group 3

Health lesions caused by various-not individually known-metabolites, and so on.

The major clinical manifestations take the form of, for example, paralysis, impotence and eye diseases-partly in immediate connection with Group 2 lesions.

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PSYCHOPATHOLOGICAL AND NEUROLOGICAL LESIONS CAUSED BY ORGANOPHOSPHORUS COMPOUNDS

The biological mechanism of action of organophosphorus compounds suggests that they may cause damage to the nervous system in addition to the acute manifestations of poisoning. The derangement of the transmitter function of acetylcholine by the inhibition of the cholinesterases- particularly acetylcholinesterase-brings on manifold dysfunctions, not simply restricted to the nervous system. Not all of these derangements can be offset fully and without complication by the metabolic counterregulatory and repair processes of the organism.

If we disregard the studies carried out in the early 1930s by Smith et al. on the neurotoxic effects of ortho-tricresyl phosphate and related compounds (146), we first encounter indications of psychopathological-neurological lesions caused by organophosphorus compounds in a publication of 1950 by Rowntree, Nevin and Wilson (147). Experimental studies on animals were carried out in the late 1940s and early 1950s (148-150). In their publication of 1953, Bidstrup, Bonnell and Beckett ascribed the mental disorders in two cases of poisoning to the high doses of atropine administered (151).

In the mid-1950s, Spiegelberg of FR Germany began his comprehensive studies on the psychopathological neurological delayed lesions of workers formerly engaged in CW production plants for the Wehrmacht (2,50). His publications will be discussed later in some detail.

The article entitled "Psychiatric Sequelae of Chronic Exposure to Organophosphorus Insecticides" published by Gershon and Shaw in 1961 attracted great attention (152). The authors chose to carry out their studies on farm workers and agricultural technicians "...to see whether there is any seasonal or geographic variation in the incidence of these conditions in districts where these insecticides are used, and to determine the role of cholinesterase and the levels of acetylcholine in mental disease". They go on to say that although the toxic manifestations - both muscarinic and nicotinic in type-have been fully reported, the effects on the central nervous system are not so well known.

They observed:

Giddiness, floating sensations, tinnitus, nystagmus, pyrexia, tremor, ataxia, paralyzes, paraesthesiae, polyneuritis, speech difficulties, slurring, difficulty in forming words, difficulty in saying what is intended, memory defect-slowness of recall, insomnia, lassitude and weakness, drowsiness, concentration difficulty, mental confusion, uneasiness, restlessness, anxiety, tremulousness, emotional lability, depression with weeping spells

and insomnia, **schizophrenic** reaction, dissociation, somnambulism and **excessive dreaming**, fugue.

Gershon and Shaw summarize their findings as follows:

...only two forms of psychiatric illness were induced—depressive and schizophrenic reactions. This indicates that these insecticides activated a tendency towards **depression or schizophrenia**. This effect appears to be brought about by the central action of these agents on cholinesterase. It is thus possible that the activation may be related to the anticholinesterase action of the drug on the brain. This effect contrasts with the improvement in schizophrenics produced by intravenous injections of acetylcholine...The effects on the central nervous system produced by these compounds which have been shown to inhibit cholinesterase within the brain suggest that the acetylcholine—cholinesterase cycle plays a positive, though as yet undefined, role in central neural function.

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Table 5.3. Central nervous system toxication

Case number	Exposure years	Type of work	Effects on central nervous system
1	9	Technical officer (greenhouse technician)	Depression, headache, impaired memory, fatigue, irritability
2	9	Technical officer (greenhouse technician)	Depression, impaired memory, gastrointestinal symptoms, irritability
3	4	Technical officer (greenhouse technician)	Dullness, depression, impaired concentration and memory, irritability
4	10	Technical officer (greenhouse technician)	Severe depression, headache, impaired concentration and memory, irritability, nightmares
5	4	Technical officer (greenhouse technician)	Headache, impaired concentration and memory
6	2	Technical officer (greenhouse technician)	Headache, fatigue
7	2	Technical officer (greenhouse technician)	Impaired concentration and memory, schizophrenic reaction, paranoid ideation, ideas of reference
8	1 1/2	Technical officer (greenhouse technician)	Schizophrenic reaction: paranoia (2 episodes) and auditory hallucinations
9	4	Field officer (scientific)	Schizophrenic reaction: auditory religious hallucinations
10	3	Field officer (scientific)	Schizophrenic reaction: apathy
11	4	Farmer	Schizophrenic acute reaction: aggression
12	5	Farmer	Severe depression
13	4	Farmer	Impaired concentration and memory, fugues, somnambulism
14	3	Farmer	Depression
15	8	Scientific officer	Depression, impaired concentration and memory
16	2	Contract sprayer (farmer)	Speech difficulties, waxing and waning of consciousness



Source: See ref. (152)

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The following statement in the article "**Organophosphorus Insecticides and Mental Alertness**" by Durham, Wolfe and Quinby appears to be of importance (155): "These test results are consistent with the accepted opinion that organic phosphorus compounds may **affect mental alertness** if absorbed in amounts great enough to cause clinical signs or symptoms of systemic illness. No cases were seen in which mental effects occurred alone."

According to Reinl, an authority on industrial medicine, significant clinical manifestations of industrial phosphorus poisoning—apart from the classical symptoms—are cardiac and mild renal lesions, damage to the hematopoietic system, and neuritic symptoms (156). He writes: "Considering, however, that the pathophysiologic effect is essentially one of cholinesterase inhibition—that is, it results in interference with the entire enzymic system of the body—a clinical picture rich in symptoms is to be expected since all the organs, particularly the **brain, are endangered.**"

...Mention should also be made of the investigations of Namba et al. (160) and Davignon et al (161) on the **chronic effects of organophosphate insecticides on man.**

In 1969, Aldridge, Barnes and Johnson succinctly summed up their extensive work of many years on delayed neurotoxicity produced by some organophosphorus compounds thus (124): **"It is clear...that many organophosphorus compounds can produce delayed neurotoxicity in low doses.**

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Up to now, publications dealing specifically with the delayed effects of organophosphorus CW agents have been scant in the literature. Meanwhile, Davis, Holland and Rumens (170) and Durham, Gaines and Hayes (171) have been successful in showing by means of animal experiments that, for example, **the neurotoxic phenomena produced by organophosphorus compounds of the nerve-gas type in some poultry varieties are, within certain limits, comparable to the manifestations produced in man.**

In their above-mentioned study, Davies, Holland and Rumens of the Chemical Defense Experimental Establishment, Porton, England, investigated the correlation between the chemical structure and neurotoxic effect of alkyl phosphates-including DFP, sarin and derivatives-and compared them with trialkyl phosphates (170). In 1960 they came to the following basic conclusion:...**It must therefore be assumed that all the organophosphorus compounds shown to be neurotoxic in chickens will, under appropriate conditions, produce neurotoxicity in man.**

In a study published in 1964 on the behavioural changes produced on administration of a phosphoric acid derivate (code name EA-1701 or VX), similar to sarin, to US Army test volunteers, Bowers, Goodman and Sim arrived at the following conclusion after comparing the results with findings from animal experiments and from production workers in the phosphorus industry (173): **"It seems, therefore, that an excess of the free endogenous amine acetylcholine as produced by anticholinesterase administration leads to a state of altered awareness in man."**

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In an experimental study on animals, W. Domschke and G.F. Domagk concluded that the CW agent, soman, has an inductive effect on the entire enzymatic biosynthesis of the liver, which is, however, unspecific for individual liver enzymes (179). In 1971, on the basis of their investigations of the mechanism of liver-cell damage by alkyl phosphates, S. Domschke, W. Domschke and M. Classen concluded that **"...the liver-damaging action of alkyl phosphates is...to be regarded as indirect, and to be interpreted as the result (like respiratory insufficiency) of general hypoxia caused by cholinesterase inhibition, which also affects the liver"** (180). Their views were partly confirmed by findings from animal experiments published in 1971 and 1973 by Gibel and co-workers on the hepatotoxic effects of trichlorophon and dimethoate, and also amplified with regard to the possible involvement of biochemically pertinent alkylation processes (181). We shall revert below to the results of Gibel et al. in connection with the hematotoxic and carcinogenic properties of organophosphorus compounds.

The hematotoxic effects of organophosphorus compounds became known at a relatively early stage. Thus in 1956, Reinl stated that E-605 (parathion) poisoning might possibly lead to bone-marrow lesions (156). ... In 1972, Reizenstein and Lagerlof reported on longterm studies on agricultural workers, who-primarily as a result of handling organophosphorus pesticides -showed significantly marked leukocytosis (184). The study by Davignon and co-workers on the chronic effects of insecticides also indicated hematotoxic symptoms such as leukopenia (161).

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...It is thus high time to check other organophosphorus compounds for hematotoxic properties, and to rate them accordingly. The hematological findings from workers engaged in production plants for phosphoric ester CW agents during and after World War II should

now be released in view of the urgency of appraising the actual hazards. This also applied to other clinical diagnostic findings obtained in these production plants.

The hematological and hepatotoxic findings and the development of benign and malignant tumours make it necessary to revise the view held up to now—namely, that trichlorophon and dimethoate, as well as related organophosphorus pesticides, are to be considered innocuous from the point of view of long-term biological effects because of their relatively rapid hydrolytic decomposition in warm-blooded animals. Moreover, a Soviet team working on pesticidal alkyl phosphates has succeeded in demonstrating a **teratogenic effect**. ...Knowledge of this relationship is not simply of theoretical interest for the problem of carcinogenes; it will enable possible hazards to be assessed properly—thus contributing to practical cancer prophylaxis. In this connection, the investigations performed using trichlorophon and dimethoate seem decisive for the optimization of health protection and work safety in direct contact with such alkyl phosphorus derivatives in manufacturing industry and in applications in agriculture and hygiene.

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The publications of Lofroth on the mutagenic properties of organophosphorus pesticides (138) have attracted far greater attention than other publications of recent years on the **carcinogenic effects of organophosphorus compounds**. As already mentioned, Lofroth's findings from investigations on microorganisms were heavily attacked by the pesticide industry on account of the relatively high dosages employed. However, the investigations carried out in the hope of refuting his findings have not been successful up to now. The value of all these investigations lies in the fact that they have stimulated thorough studies of the alkylating properties of alkyl phosphates and of the biological consequences entailed (186-187).

EYE LESIONS CAUSED BY ORGANOPHOSPHORUS COMPOUNDS

Remarkable scientific findings have been obtained in recent years in the USSR and in Japan on eye damage caused by the handling or agricultural application of organophosphorus compounds (191-192). The Soviet study covered 1995 workers and 2272 students. The Japanese study dealt with the effects of aerial application of the organophosphorus pesticides, parathion, malathion, EPN, sumithion, and so on, in a fruit-growing area, and discussed the findings obtained from a group of 71 children in the 4-16 year age-group. Since these findings were reproducible in dogs by the use of organophosphorus compounds, the authors concluded that the syndrome was induced by chronic poisoning by these chemicals.

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LONG-TERM EFFECTS OF ACUTE EXPOSURE TO NERVE GASES UPON HUMAN HEALTH

B. Boskovic and R. Kusic

Military Technical Institute, Medical Dept., Belgrade, Yugoslavia

Abstract: For many years it has been maintained that acute poisoning by organophosphorus insecticides and nerve gases causes only functional but not histopathological changes. However, recent detailed studies of acute poisoning by organophosphorus anticholinesterases have revealed a high incidence of paralysis in humans which differed from the signed of "delayed neurotoxicity", as well as skeletal muscle necrosis in rats. Furthermore, the latest results in monkeys and humans show that acute exposure to toxic doses of sarin produces

prolonged changes in the brain function. These results point to the long-term risks to the health of populations exposed to nerve gases and call for an immediate ban on chemical warfare agents and on their study in voluntary human subjects.

On the other hand, the toxic effects followed by pathological changes after prolonged occupational exposure to nerve gases and OP insecticides are today clearly established and have been summarized in a monograph published by SIPRI (1975)

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It has also been shown that poisoning by a single administration of sarin alters the electroencephalogram (EEG) in Rhesus monkeys for up to one year (Burchfiel et al., 1976). Furthermore, significant changes in waking and sleeping EEGs have been found

The authors conclude that "regardless of the pathogenic mechanisms, results of the current study confirm the ability...that pathogenic mechanisms, results of the current study confirm the ability...that OP exposure can produce long-term change in the brain function of ...humans."

These results point to the marked hazards arising from exposure to toxic levels of nerve gases. Moreover, owing to the inadequacies of the existing methods used in routine control of human health, one cannot rule out some other, so far not detectable, changes in these poisonings.

REFERENCES

Aldridge, W.N. and Johnson, M.K., 1971 Side effects of organophosphorus compounds: delayed neurotoxicity. Bull. W.H.O., 44: 259-263.

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Since 1930 (Smith & Elvore) it has been known that some organophosphorus compounds produce a chronic neurotoxicity.

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Burchfiel, J.L., Duffy, F.H., and Sim, V.M. 1976. Persistent effects of sarin and dieldrin upon the primate electroencephalogram. Toxicol. Appl. Pharmacol., 35:365-379

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For sarin the predominant effect was in the EEG derivation from the temporal cortex, and for dieldrin from the frontal cortex. For both drugs, the beta increase was most prominent in the states of awake in darkness and drowsy. These results indicate that a single symptomatic exposure or a series of subclinical exposures to sarin or dieldrin can alter the frequency spectrum of the spontaneous EEG for up to 1 year.

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Duffy, H.F., Burchfiel, J.L., Bartels, H.P., Goan M., and Sim, V.M., 1979. Long-term effects of an organophosphate upon the human electroencephalogram. Toxicol. Appl. Pharmacol., 47:161-176

"Statistically significant group differences included increased beta activity, increased delta and theta slowing, decreased alpha activity, and increased amounts of rapid eye movement sleep in the the exposed population. It is suggested that the above findings represent an unexpected persistence of known short-term OP actions. It is also suggested that these results, when taken along with the reported long-term behavioral effects of OP exposure, provide parallel evidence that OP exposure can produce long-term changes in brain function.

Hernandez-Peon were among the first to suggest that the sleep-wake cycle was partially under cholinergic control. More recently, several reports have demonstrated a cholinergic link in **REM sleep mechanisms**...It has been postulated that cholinergic mechanisms are

involved in REM initiation, based upon the demonstration that cholinesterase inhibitors, such as OP compounds, can elicit REM sleep in both intact animals and brain-stem preparations. ...It is possible, therefore, that the long-term EEG changes in this study represent the unexpected persistence of the well-known effects of acute OP exposure.

...visual reading of standard EEG: decreased amounts of alpha(9-12Hz), increased amounts of slow activity (0-8Hz, delta and theta), and nonspecific abnormalities in the EEG background; (3) sleep EEG: increased amounts of REM sleep.

EDITOR'S NOTE: REM sleep, often called paradoxical sleep because of its awake pattern in the EEG. My question to you the reader, "Are we as citizens of the spray area, being subjected to an altered state of consciousness because of the repeated spraying of this organophosphate?"

Holmstedt, B., Krook, L., and Rone, J.R., 1957. The pathology of experimental cholinesterase inhibitor poisoning. *Acta Pharmac. Toxicol.*, 13: 337-334

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The factors, among others, shown to be operative in Ch EI poisoning are:

- 1. CNS.
 - a. Cortex - convulsive manifestations
 - b. Medulla oblongata - paralysis of respiratory and circulatory centers.
- 2. Respiratory organs.
 - a. Increased secretion and bronchospasm
 - b. Neuromuscular block with early involvement of respiratory muscles (diaphragm, intercostal muscles)

3. Heart and peripheral circulation. Bradycardia, decreased cardiac output, peripheral vascular effects.

Wadia, S.R., Sadagopan, C., Amin. B.R., and Ardesai, V.H., 1974 Neurological manifestations of organophosphorus insecticide poisoning. *J. Neurol. Neurosurg. Psych.* 37:841-847.

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Paralytic signs were divided into type 1 signs (present on admission) and type 2 signs (appearing later while on atropine treatment). Type 1 signs, chiefly impaired consciousness and bilateral pyramidal tract signs, respond to atropine. The most common type 2 signs are proximal limb weakness, areflexia, and cranial nerve palsies. EMG studies during type 2 paralysis show a myasthenic response in some cases. Of 36 cases with type 2 signs 15 died from respiratory paralysis after a variable period of artificial respiration. Twenty one recovered and no residual neurological deficit has been noted. Atropine did not influence type 2 signs differ significantly from those described before as 'delayed neurotoxicity' and may represent an alternative mode of human toxicity with organophosphorous compounds.



Up to 60 percent of pesticides used on our fruits and vegetables are used for cosmetic purposes.



Over the last forty years, pesticide use has increased tenfold, yet crop loss due to pests has nearly doubled.

**THE HEALTH PLAN FOR THE UNITED STATES
AND THE MALATHION ISSUE**

by **Bruce Halstead, M.D.**

The basic issues in America's health program are extremely complex. On one hand the various governmental agencies make all kinds of claims resounding of goodness, motherhood and high patriotic altruisms. However, if you peel away all the hoopla and examine the bottom line of our medical care program, you will find that it has little to do with health care. The bottom line is to keep America sick. Medical care is a monopolistic industry that generates in excess of \$600 billion per year or almost 12% of our gross national product. Although its human constituents are sick the industry is financially healthy and threatens to engulf the entire economy. It is a medical care program that operates by the golden rule: "Them that gets the gold makes the rules."

There is a fundamental principle in medical economics which John Doe public has never understood, namely: **SICK PEOPLE MAKE ASTRONOMICAL SUMS OF MONEY FOR THE MEDICAL PROFESSION. HEALTHY PEOPLE MAKE NO MONEY FOR THE MEDICAL PROFESSION.** Once the public fully understands what this medical equation is all about, the winds of medical fortune will begin to shift. At present our industrialized civilization is on a disaster course which will continue to increase our mortality statistics and decrease our survival rate.

America is a sick society and getting sicker with each passing year. It has been estimated by the Coalition of Immune System Disorders that more than 65 million Americans are suffering from secondary immune deficiency disorders. The actual number of people suffering from immune incompetence probably approaches the 100 million mark.

Consider the cancer problem. We have in this country one person dying of cancer every 64 seconds, about 1350 persons a day, or about 500,000 per year. We have about one million new cancer cases a year. Moreover, the cancer statistics are steadily worsening. However, there is one bright light in the cancer corner. Cancer is an important industry in the United States and generates more than \$100 billion a year. Cancer is big business. More than one trillion dollars have been spent in the war against cancer. Most of this money has been wasted developing a large number of worthless cancer nostrums which cause cancer and deplete the immune system.

Now let's talk about the malathion spraying problem. The issue at stake is complex and knotty. Thanks to governmental lassitude and ecological myopia over several decades of time we are completely unprepared to deal with the medfly problem from either an agricultural or health point of view. We are now damned if we do and damned if we don't.

At the same time Los Angeles was battling medflies using biological control, Santa Clara incurred a medfly infestation. Santa Clara County, however, decided to use malathion. The battle continued for 14 months at a cost of more than \$100 million.

This was about 100 times more costly and ultimately proved to be less effective than using biological control methods. Moreover, the authorities sprayed not only medflies, but the general population as well covering more than 10 million acres. They dumped more than 190,000 gallons of malathion on flies and humans. As the Deputy Director of the California Department of Food and Agriculture, commented, "everything that could go wrong went wrong." Governor Deukmejian has concluded that we are losing the medfly battle.

The medfly equation is similar to that employed in medical economics. Lots of money is being made by someone in malathion spraying, but not much money is being made using biological control.

There is an economic common denominator which is seldom brought to the attention of the public. There is an intertwining connection between cancer and pesticides which needs

to be examined more closely. So let's step back and look at the big scene.

Over the years agriculturists have been brain-washed by the chemical industry into believing that the only solution to getting rid of their insect pests is by means of highly toxic carcinogenic and immune destructive chemicals.

Over the years cancer victims have been brain washed into believing that the only way of getting rid of cancer was to use highly toxic carcinogenic and immune destructive chemicals, better known as cancer chemotherapy.

The history of the multinational chemical and pharmaceutical giants reveals that the early war gas industry was initially spawned by the great German international chemical-pharmaceutical cartel of I.G. Farbendustrie, who had its economic tentacles in about 80 of the major chemical and pharmaceutical companies in the United States and Europe. When World War II ended this chemical complex started to turn its attention (among many others) in two directions one was the production of pesticides and the other was the production of cancer chemotherapeutic agents.

The sale of highly toxic pharmaceutical agents for the treatment of cancer was not difficult to achieve because various high ranking officers of pharmaceutical and chemical companies were also members of the advisory boards of both the National Cancer Institute and the American Cancer Society. Similar maneuverings and nepotisms have taken place throughout the agricultural industry.

America was sold the big lie that the only salvation for cancer victims was the use of extremely expensive toxic chemotherapeutic agents. Cancer prevention through nutrition and the use of immunomodulating herbs were not only neglected, but physicians using them were persecuted and prosecuted.

America has also been sold another big lie that the only way to control insect pests is by means of highly toxic chemicals that are carcinogenic and lower the immune system. Biological control is much less expensive and when properly done is more ecologically acceptable to the earth's ecosystem.

If any one is under the delusion that malathion is harmless than they haven't investigated the substance and the National Institute for Occupational Safety and Health's (NIOSH) reports on the subject. First of all it is related to war gases and is an acetylcholinesterase inhibitor producing an adverse effect upon the nervous system. Malathion poisoning in humans causes increased bronchial secretions, excessive salivation, nausea, vomiting, sweating, constriction of the pupils, muscular weakness, and muscle twitching. The primary targets of attack include the respiratory system, liver, blood, cholinesterase, central nervous system, cardiovascular system and the gastrointestinal system.

Malathion is only one more of thousands of highly toxic chemical agents which have been foisted upon the American public by the multibillion dollar multinational chemical cartels which are threatening to exterminate life on this planet.

The end product of all of these insane criminal activities by government and industry is the production of an ever increasing cancer mortality rate and massive immunoincompetence in the public. The bottom line is we have to make a profit and who gives a damn how many people, animals and plants we kill as long as we make money.

I would urge everyone to read the book by Ralph W. Moss entitled THE CANCER INDUSTRY, Paragon House, New York 1989.

Dr. Halstead is Director of the World Life Research Institute in Colton, California. A former Navy Commander. Halstead was also a consultant in Global Medicine at the U.S. Naval Medical School and has held many visiting lecturer positions world-wide. He has been published over 280 times.

**EDITOR INTERVIEWS ALAN LEVIN, M.D.
ALLERGIST-SAN FRANCISCO**

DR LEVIN: American medicine is now being given to us by the same people who gave us Vietnam. Hughes Industries, through its front called 'The Hughes Medical Foundation,' runs the largest research program at Johns Hopkins, Harvard, and the University of California San Francisco. I am told that Hughes has purchased a Convent across the street from the National Institutes of Health in Bethesda, Maryland and that their budget for 'medical research' will be greater than the U.S. Federal Governments in the 2000's.

Lockheed owns Dialogue Data Base which is the largest data base used by virtually all of the medical schools in the United States. McDonnell-Douglas runs the hardware and software for 40% of the hospitals in the United States. Monsanto and Dow Chemical gave us Agent Orange and they are 'heavy' into medicine in America. General Dynamics, General Electric, General Motors are all defense contractors and medical contractors. FMC has had a contract with Hybritech for monoclonal antibody research.

In summary, most of the major defense contractors in the United States have large interests in the healthcare industry. With this interest goes the same mentality and ethical code of conduct. We all know that the American defense contractors provide the military with defective equipment.

In fact, the defectiveness of military equipment is the subject of major feature films. In the movie "TOP GUN", the hero is afraid to fly the F114. The reason he fears the airplane is because it doesn't work in combat. It was designed by people who had no idea of the needs of combat aircraft. We very often lose pilots and crew members in this type of accident. The kids get killed.

Interestingly enough, the Israelis fly the same aircraft. When they order the airplane from the manufacturer, they take delivery in crates. They do not allow their children to fly the stock F114. They rebuild these aircraft from the landing gear up with different leading edge slats, and trailing edge flaps, different induction systems and modified engines. While the Americans lost between 1 and 3 F114s per month in operational accidents between the years of 1977 and 1983, the Israelis lost none. You may ask, "If the Israelis can build these planes to be flown safely, why doesn't the manufacturer?" In my opinion, the answer is that they are practicing good American business. Every time an F114 goes down, the manufacturer gets another \$40,000,000.00 order.

You may ask, "How does this fit in with the Malathion issue?" The answer is simple, when the defense contractors dominated the American military, the cannon fodder was 18 year old boys. As we know from American history, 18 year old boys aren't worth much, so no real Americans worry about the defective equipment in the military.

Now that the defense contractors dominate American medicine, the cannon fodder is 'John Q. Public.' John Q. is important. He can buy attorneys, he can buy politicians, and he also pays taxes. He also doesn't like being given defective medicine or being poisoned.

For instance, I used to go around the country saying that 'Trichloroethylene (TCE) causes birth defects, learning disabilities, and childhood leukemia.' Everyone said, "That's irresponsible, we need more epidemiology, we need more studies."

Then I said, "**TCE causes wrinkles, hair-loss, and impotence.**" Then 'John Q. Public' became outraged... and now it is illegal.

We can, and will convince 'John Q. Public' that not only are his children threatened by toxic chemicals but his own personal appearance and sex-life may be endangered. This will get action from the general public!

EDITOR: How do you know that the CIA sprayed Malathion on the civilian public."

DR. LEVIN: The answer is that it is common knowledge. Evergreen Airways was the helicopter company that sprayed malathion in the Santa Clara Valley in the early '80s. A KGO radio talk show host, named Ray Taliaferro, uncovered the fact that Evergreen Airways was made up of principles of Air America, the CIA airlines. In fact, officials of that company admitted to having CIA contracts. San Joaquin Air Helicopter Service has similar people working for them.

EDITOR: Why would the CIA spray malathion?

DR. LEVIN: My answer is I don't know. I don't even know that it is malathion they are spraying. I guess that you can stand under the aircraft and aspirate the spray and test it for malathion. If it is malathion, are they using the same material every run? If you find that the material they are spraying isn't malathion, who would believe you? I can only speculate why they are spraying. Since they seem to be spraying over predominately poor and gay neighborhoods I speculate that this may be part of the Final Solution.. Part 2

EDITOR: Have you seen patients who you believe to be genuinely injured by malathion spraying?"

DR. LEVIN: Yes. I have seen asthma patients made much worse by malathion sprayed from helicopters. I have seen cancer patients and AIDS patients who were previously in remission, develop severe disease and die shortly after being sprayed by malathion. I have seen incidents of high fever, seizures, and increased chemical sensitivity caused by malathion in patients with immune dysregulation.

EDITOR: Were some of these patients you have seen not chemically sensitive before?"

DR. LEVIN: No. All of the patients I have noted who became significantly worse from malathion spraying were people who had significant immunologic disease prior to their exposure.

EDITOR: Do homeopathics or other remedies help with malathion exposure?

DR. LEVIN: My answer is 'possibly.' The real problem is that we do not know whether or not we are dealing with malathion. We need some honest answers from the spraying companies and our government. If I were to follow the advice of our government, I would tell my patients that it is perfectly safe for their baby to roll in the grass after it has been sprayed with malathion but do not leave your car out because it will pit the paint. I guess the same goes if your child is freshly painted! This obviously flies in the face of common sense but never accuse an American Government Official of using common sense.

EDITOR: What should the reader do about malathion spraying?

DR. LEVIN: The answer is obvious to me. If you care about the health of your children and your neighbors, 'STOP IT!'

EDITOR: How do you stop malathion spraying on civilian populations?

DR. LEVIN: THAT'S UP TO YOU!

**TESTIMONY OF DR. ALFREDO SADUN
LOS ANGELES CITY COUNCIL
August 6, 1990**

WACHS: To begin with I would like to call upon Dr. Alfredo Sadun, Professor at the University of Southern California School of Medicine, the Doheny Eye Institute, Department of Neurological Ophthalmology and Surgery. Dr. Sadun, would you come forward to join at the end table? For the record, can you please state your name?

SADUN: Alfredo Sadun.

WACHS: Dr. Sadun what is your educational background?

SADUN: I received Bachelor of Science at M.I.T., and a Masters thereafter. I went on to medical school where I received an M.D., then proceeded further by obtaining a Ph.D at the Albert Einstein School of Medicine —internship in General Medicine — residency in Ophthalmology followed by Fellowship in Neuro-ophthalmology.

WACHS: Are you currently associated with the university medical school?

SADUN: Yes I am.

WACHS: In what capacity?

SADUN: I am a full professor of Ophthalmology & Neurosurgery there.

WACHS: What does this entail?

SADUN: This is a full-time obligation with my work being divided approximately equally into one-third direct patient care, one-third teaching and lectures, and one-third active laboratory research.

WACHS: In your discipline have you had an occasion to become familiar with malathion?

SADUN: Yes I have.

WACHS: In what way?

SADUN: In several instances, initially theoretically, and later more directly with my patients.

WACHS: Are you familiar with the term "Saku Disease?"

SADUN: Yes I am.

WACHS: Would you tell the committee and public what it is?

SADUN: Saku Disease is so called because of the district in which certain sprayings were done in Japan. Beginning, I believe in the late fifties, but mostly through the sixties and early seventies, there was aerial spraying of organophosphates. A variety of

organophosphates were used, and the applications did differ from that which we see here in Southern California. However, the most important part is that following these applications a number of medical problems developed. Most of these were temporary, but those that were permanent and more serious had to do with the visual system. Dr. Ishikawa, who was first involved with gathering this data, after some time was able to put out a rather extensive body of literature, including clinical case reports, epidemiological reports, toxicology reports, pharmacological reports, and finally, expanding on animal histopathology reports, which is to say he established a model in a dog where he was able to apply equivalent doses of organophosphates, and shows exactly the effects that could be seen by a microscopy of a damage tissue were the same as the effects that were seen clinically in humans. Then this large body of material came to be known as Saku disease because of the Saku district that was sprayed.

WACHS: Sprayed with malathion?

SADUN: Sprayed with a number of organophosphates, including large amounts of malathion.

WACHS: In your professional capacity have you ever treated patients who have suffered from malathion exposures?

SADUN: Yes sir.

WACHS: Would you tell us (you don't have to give us names obviously) what symptoms they may have had, or what you've seen in this capacity?

SADUN: It is a little bit difficult because it is not going to give you an idea of the typical or average situation. That is because I am a tertiary referral center. By the time I see a patient he has been seen by a variety of other doctors. Presumably the easy stuff has been excluded, and only the things that will continue to trouble the patient, and also those things that are felt to be beyond the competency of the referring physicians come to my attention. We did, for that reason, actually, somewhat of a screening on about 40 patients who felt they had problems. By and large it seems to me that majority of the patients who are going to have a problem with malathion affecting the eyes are going to have fairly not impairing and not permanent problem. They are going to have conjunctivitis — red teary eyes. A smaller number are going to have a more serious problem. They are going to have problem of focusing which may be temporary or may be permanent. One sub-group of those are going to have a problem focusing, which is classical for this disease, and is hardly seen in other settings. And then a smaller number yet are going to have one of the more permanent effects, either to the retina, or which concerns me the most, to the optic nerve, because there is actually no recovery or compensation anyone can provide. Glasses won't fix that. So the small numbers will get optic nerve disease. And a smallest number of all will have problems moving their eyes. This particular abnormality, moving the eyes, is almost exclusive for (in this case) malathion poisoning. There can be just about no other disease that would produce it.

WACHS: In your opinion, have any of your patients actually suffered from Saku Disease?

SADUN: I am sure of one case that has suffered from Saku Disease.

WACHS: You're sure?

SADUN: And there are several others of which I am suspicious.

WACHS: And what is their prognosis?

SADUN: The individual who has Saku Disease is going to be permanently blind.

WACHS: Are there any segments of the population which you feel are especially at risk with respect to malathion exposure?

SADUN: Absolutely. I think that's one of the important issues here. Those who are very young, actually not even so young, perhaps the susceptible age is going to be the period from seven to 10. Those who are very old, and those who have some of the disease, especially those requiring medications, may have an exclusive sensitivity to the malathion which the young healthy men or women would not have. One of my concerns is that some of the data that is being considered, or some of the evidence that the State considers, is the workers who have been exposed to even larger doses, and saying, "See there, if they're not poisoned then no one will be poisoned." But that's really an apples and oranges comparison.

WACHS: Have you conducted any studies yourself with respect to malathion?

SADUN: Not the sort of studies that one could publish. Most of these have been to get a better sense of what is going on. What needs to be done is two types of studies. Large heavy funding study where we can look at the patients as they first present, not wait months until they finally make it to a referral center at the University. I have not been able to conduct that. And what I would most like to see is an experimental animal study with malathion.

WACHS: I am going to come back to these studies in a moment. Are you familiar with the State appointed Malathion Public Health Effects Advisory Committee?

SADUN: Yes, very much.

WACHS: In what capacity?

SADUN: They've invited me to attend their sessions, and to be part of the table discussion, and I have.

WACHS: Were you a member of the Committee originally?

SADUN: I was told that I was, on the other hand when the official sheet with the membership came out, I was not, so I'd better hold off until I make sure. I may have been a special guest of the Committee.

WACHS: What basically does the Committee do? What is its function, and what is your relationship with it up to this point?

SADUN: In my naivety, I believe, I began with a different impression of what the Committee was to do than which I may have concluded later on. Certainly the committee held open discussions, many of them with members of the public in attendance. The Committee was very courteous and open, allowing everybody's opinion to be well expressed. However, the concern that I have with the Committee was that no matter what was said, the conclusions of the Committee appeared to be not reflected by the statements made, nor by the expertise that the Committee avails itself of, but by certain members of the Committee's original and initial impressions of the situation.

WACHS: Have you ever brought the issue of Saku Disease or other malathion caused eye disorder to the Committee's attention?

SADUN: Yes, most assuredly, as well as providing the Committee with the myriad of papers that have been written on the subject.

WACHS: What action did the Committee take on these issues?

SADUN: They certainly expressed considerable amount of concern initially. They did invite me to discuss the issue on several occasions. At these occasions I tried very hard to maintain what I considered to be professorial position, which is to say with no axe to grind

and no position concluded. And not surprisingly the State had certain individual members that you've already discussed, people like Dr. Stratton who had a fairly strong committed position, and there was open friendly and reasonable debate. My own complaints would not be with the way the hearings were held, but with the fact that the minutes presented each time would not reflect the full extent of the discussion of the previous meetings.

WACHS: Would you elaborate on that?

SADUN: The minutes might go so far as to even conclude the opposite of that which we in the open discussion had. This I thought was a question of unintentional error on several occasions even to the point where I missed a meeting and was quoted in absentia that I had recanted on everything I had said. When I attended the next meeting I said that this wasn't the case, but they still wanted to keep it in the minutes until I thought that, at minimum, if they are to keep it in the minutes the individual who had made the statement should take responsibility for it. But this individual who was there refused to take responsibility for it. They finally did strike it from the minutes. but it means so far in the end to state that the Committee, with all its expertise felt, and I'll paraphrase, something to the extent of "fear about eye disease unwarranted," which was obviously diametrically opposed to all the input I provided to the Committee. So in conclusion, I had to ask Doctors Stratton, Kizer & Siegel to please withdraw my name so as not to have me be any part of such conclusion.

WACHS: Is the Committee preparing a malathion health effects report?

SADUN: I believe so.

WACHS: Are you familiar with their findings regarding eye disorders?

SADUN: Yes, I know at least one of the draft elements. Dr. Stratton has been good enough to release it to me at various stages, and I responded each time with a point-point analysis from my point of view.

WACHS: Perhaps you might sum up for the Committee what health concerns you have regarding the aerial applications of malathion in urban areas.

SADUN: My concerns first of all are that they have not really been the open scientific discussion which I believe the committee is charged to perform. I certainly don't have the answers, and I believe that as long as the proper system is in place then we'll proceed towards the answers. So I suppose I'm more concerned with the process. It seems that the Committee would have been obliged to do two things. One is that it felt that either my credentials, or for any reasons my statements, were in error then they should have availed themselves of other experts. In this case we're talking about neuro-ophthalmologists of which there are several excellent ones in the area. They have had the names available for six months. If not, then at minimum, used the input of ophthalmologists or neurologists but instead the Committee's conclusions still seem to be based on Dr. Shusterman who is an epidemiologist, and by Dr. Stratton who does not practice medicine and does not see these situations. So it is a very awkward situation to find that the conclusions are made by people who really do not have the credentials or the appropriate expertise. Secondly, the actual discussions that began with the Committee were very reminiscence of what we call "roundsmanship" amongst interns and residents. It is very appropriate for them to nitpick to pull little sneaky tricks like pulling out a paper that's obscure, and say "do you know this one," which makes reference to having a personal conversation with somebody that discounts their credibility. But this is done for almost the fun and games of it in the roundsmanship setting, but the stakes are much lower. Moreover, following a grand rounds in a hospital after all this sort of games has gone on, finally the individual who was considered to be the greatest expert in the field is asked to make a conclusion regarding what should be the appropriate patient care. We don't have that level in terms of the Committee. The roundsmanship ends up on paper. If you wish, I was just making notes about five minutes ago about what were the State's reasonings, and I came up with six or

seven points that they made which I think are in error. Should I itemize?

WACHS: Please.

SADUN: First of all, they all felt that many other toxic agents of the malathion were used, some of which were considered more powerful than malathion as insecticides in Japan. To this there are two important caviats. The first is that there was about three years, in the mid-to late-sixties, during which almost exclusively that malathion was used, and yet the Saku district problems continued. The second is that even though it's true that there are other agents, perathion for example, which are much more powerful as insecticides the damage, the permanent damage to the visual system to the optic nerve is through a direct toxic effect, and not through the poisoning of the insecticides. In other words, this agent, malathion has at least two separate individual effects. One is called cholinergic. That's how it poisons the bug, and it also poisons the human body. And that tends to be reversible. If you survive it, you survive it well. The second is the direct neurotoxin which permanently destroys parts of the nervous system. And these being independent events means that even if you had another agent like perathion, which is a hundred times more powerful in killing the insect, it doesn't mean that it is a hundred times more powerful as a neurotoxin. In fact, at first evaluation you have to assume they are about the same. So, it's inappropriate to disregard all of the studies that occurred in Japan because some of the agents were stronger insecticides. Another issue that they brought up was that of dosages. Unfortunately, Dr. Ishikawa published all his works in Japanese initially. We are talking about dozens of articles, some of which eventually became translated as reviews in English. And there was a clear-cut mix-up. Some of his translations had a dosage which was higher than that which he had published in Japanese, and that's perfectly appropriate to be brought up by the State. However, we clarified it. We asked Dr. Ishikawa. He provided us the original data. He sent us faxes, which I have, saying that it was really the lower dosages that was the correct one. However, the State seems to cling to the alternative, which is the safer alternative, that their dosages were 10 times higher than ours, and therefore there is no danger. Thirdly, they point out the differences in application, and this is a very legitimate point, that the true aerosolization which occurred in Japan, the fact it drained into ground water, and several other things that distinguished it from our program, means it's impossible to make comparisons on a point-to-point basis. However, while this to me represents a quantitative difference, 50% of the children in the Saku District suffered permanent damage to their optic nerves. And God forbid that would be true here, and I'm sure it is much less than 50%. I would be concerned if it was 5% or even .5%. So, I think that the quantity that they dealt with was different, the application process was different, and in that sense we may have a quantitatively different situation here. But qualitatively I'm quite concerned that we are dealing with the same story.

WACHS: Would it surprise you that of the several hundred cases that we've received in our office, eye inflammation is one of the three most frequently reported symptoms?

SADUN: No, that wouldn't surprise me. I think that eye inflammation is going to be extremely common, fortunately not extremely serious.

WACHS: You mentioned earlier that there were two studies that you would like to see made. Would you repeat those, and perhaps amplify a little bit about what these studies would accomplish?

SADUN: Let me say that if we took the State's positions and all their itemized considerations at face value, then the conclusion is that we need to have some studies, because basically they are saying that the studies of Ishikawa were not any good — a point with which I disagree — then it's clear that we do need to have studies. The two studies which need to be done are one clinical and one experimental animal. The experimental animal study is going to be, in my view, the tightest. You can have better controls with that than you can with anything else as long as the correct animal is chosen — one that has pharmacology most suitable and similar to humans. And we can do a very simple experiment. We can apply different dosages of malathion, no other organophosphate, and

we can measure the effects on the visual system through a sophisticated analysis of the eye. In the clinical study, I think we need to go around and find out what is the cholinergic effect on humans by drawing their blood after they've been sprayed, and what is neurotoxic effect by having that large pile of patients that you have there examined, but examined right away, and not wait for the system to work itself through by having those who can see a physician see one. Those physicians recognize a problem to refer and so on. My concern is that not only is there no suggestion that we are going to have such studies, but through pressure I believe from the EPA, is discussing supporting or partly sponsoring a study that will be done on animals, but will be done in extremely crude way. They will be performed on rats which have extra enzymes that humans don't have that will destroy the malathion. They will give the rats the malathion by mouth, which would give their liver a chance to detoxify it before it gets into their system, unlike the situation with humans. And they will examine the rats' visual systems in extremely crude ways that wouldn't pick up anything short of total blindness. It is interesting that they would choose to do such a study when they have been the ones who have suggested that Dr. Ishikawa's work is substandard, when in fact his animal studies was using dogs and his electro-microscope which counts the nerves are exactly the sort of experimental design we need.

WACHS: Would you basically refute the State's position that they have, on every occasion of which I am aware, tried to tell the public "don't worry we've done all the studies we need to do, we know it's safe." Do you basically think that is a misleading position to take?

SADUN: Yes, I can answer that clearly. I think that it's a shame because it is understandable that they want to allay hysteria, and if at the beginning they began with a position saying "don't worry we are going to look into it," one could almost understand if they in fact had thrown themselves to avidly checking both the literature and the evidence. Then you would think, with honesty, as soon as the literature showed a real problem they would put the brakes on.

WACHS: You mentioned in the studies, at least perhaps in the clinical studies, that the people who exhibited symptoms should be examined right away. What period of time would you find to be an acceptable period from when the symptoms occurred to when the examination would take place?

SADUN: There are two reasons that you want to have it right away. One is because at least you can measure the actual amount of malathion that entered the system by analyzing it within the first week. Secondly, many of the symptoms are going to go away with time. And while it's true that the symptoms that go with time reflect less minor disease, those are still the patients who are most likely to have major disease, so we have to have them see them. I would say one to two weeks at the longest would be the appropriate evaluation.

WACHS: I guess for the following up, and related to that, does the risk get greater as the exposures are repeated?

SADUN: That's a difficult question to answer. I think the best answer is that there is a theoretical potential for that, but nobody knows. It all depends on whether each exposure successfully gets rid of everything.

LEGAL COUNSEL: Dr. Sadun, you indicated that Dr. Stratton had a strong committed position in terms of the danger of malathion spraying, and I was wondering if you can elaborate on what his strong committed position was?

SADUN: On one hand I appreciate the fact that Dr. Stratton has been kind enough to invite me to participate, and there are other virtues of his personality, but I have found it somewhat difficult to deal with the fact that it seems to all be post hoc reasoning. He starts off, as does many of the other individuals we're talking about, with the conclusion that it must be safe, and all the reasoning works in reverse from that in order to garner the evidence and the data to prove that he is right, as opposed to looking at the data for

what it is truly saying.

WACHS: Sounds like politics.

SADUN: Yes, I was going to make that comment myself.

LEGAL COUNSEL: You also indicated that the Committee has taken a position that the basis for concluding that malathion spraying is not dangerous to people's eyes. I was wondering what sort of articulated basis they've used?

SADUN: Two. One is that they have found, with what I would regard nitpicking, problems with the work of Ishikawa, and therefore would like to throw it all out, which is really my view of throwing out the baby with bath water, because there is a lot of excellent work published in some of the very best journals and fully accepted by the professionals in the field. It seems, in fact, somewhat presumptuous for one to hear them say that his work is substandard when the reviewers of his articles say it's excellent. And the reviewers are people in the field, and familiar with the technology. The second reason is worth discussing. They feel that since there haven't been more reported cases, particularly among those who are applying the malathion, this proves that it can't be that dangerous. This is a very dangerous approach though, because obviously one won't find what one doesn't look for. The absence of proof here is being used as proof in the other direction. And there are a large number of reasons I believe, that they haven't found cases. First of all, the applications that the people applying the malathion and exposed to high doses are usually healthy young men who are least likely to develop problems. Secondly, the disease itself in it's relatively minor stages looks like so many other diseases.

Conjunctivitis can be caused by allergies or by viruses. All the other problems of nausea, fatigue, and cramps can be caused by flu. When you get to the very serious parts of the disease, the ocular disease, it is true that it doesn't look like a lot of other common diseases but it is also an exclusively difficult disease to diagnose. The typical physician is not in a position to look for an optic neuritis, or extra ocular muscle abnormalities. As a matter of fact the ophthalmologist most often will not be able to do this sort of evaluation. So unless these people were to be particularly well educated about the situation, and since most of these articles are written in Japanese- they're not... then they aren't going to know what to do with it. They're not going to refer it on to the few people in this area who would be in the position to make the diagnosis.

WACHS: Dr. Sadun, are there any other points that you might want to make to the Committee?

SADUN: Maybe just two more. The first, is that as a physician we're frequently in a situation where we have to weigh the risks and the benefits, and I think that's exactly what the State is doing. But it concerns me, because if I have a medication that I am giving a patient, and the chances of it causing a serious problem are one in a hundred thousand, I say to him very reassuringly, "Look, one in a hundred thousand, don't worry about it. And that's fair, because if he doesn't take that medication he is in deep trouble to start with. So it is a very legitimate risk for him to take it on his shoulders considering the benefit he receives. It is quite another thing to talk about risk-benefit when you are dealing with each individual as a healthy patient who doesn't have anything that he derives of great importance. But secondarily perhaps there is the economic argument we all know so well. And so I think that it is a rather poor approach to take risk-benefits when even if the odds are one in a hundred thousand that it causes blindness; when you are spraying a million people, that's 10 people who are going to be blinded. Ten individuals who will find it very hard to understand why they have to have these risks for the benefit they receive by the spraying.

Finally, if I may, I would like to make my own recommendations in terms of what I think would be appropriate right now, and I see five important things that need to be done. The first is to have an ability to reach the State. I'll say educate the State, because I don't

believe that despite what has gone on, the State is aware of the data. They are not really educated enough to understand these papers which they may be able to argue against very effectively in terms of statistics, but they really don't understand the medicine. So they need to have some advisors there who understand the medicine who can speak to them, who can see the forest and not just get all wrapped up in one tree at a time. Secondly, we certainly need to educate the people. And the first thing that has to be done towards educating the people is accept that there is a risk. Now, I am not suggesting that we go overboard and start hysterically saying that everybody is going to go blind, but let's start talking about what are the true symptoms, and what aren't the serious ones so people can do a little bit of self-selection. Thirdly, I think we need to educate the physicians. I would like to see a small set of guidelines describing the disease and problem sent to all the ophthalmologists, for that matter all the physicians, in the Southern California area so that they would be in a position to make these evaluations.

WACHS: Could I interrupt you for one moment to follow up on that? To your knowledge has there been any real effort to educate physicians?

SADUN: Amazingly, the education seems to be coming from the worse source in the worse way. I've had several of my physician colleagues say "my goodness" they did not know this when I sent out a report about my patient who was exposed to malathion. And they will pull out a little document and read to me what they had mailed to their home just before their home was sprayed. "It says right here by the State officials that there is no danger. How could I have thought about it for my own patients"! So it appears that the State, that doesn't have the "know how" and the credentials, these are individuals in the State who don't know anything about ophthalmology are informing the ophthalmologists about malathion.

WACHS: So it is proper to conclude that if they have not, the State has not educated the practicing physicians. The practicing physicians may well not be aware of, or not know what to look for when examining patients, or may be looking for other things?

SADUN: That's fair to say.

WACHS: And you had two other points.

SADUN: A proper two sets of studies need to be established, clinically and experimentally on animals. And then finally, I think that a responsible middle-road approach is to say that until such time as these studies suggest that things are safe, that we hold off on the aerial application in the indiscriminate fashion it is done now.

WACHS: Dr. Sadun, I really appreciate you being here. We've had several physicians who expressed a great reluctance to come to the Committee. They have spoken to us. Some have even written to us. But there is little bit of a fear of perhaps things, retaliation or other things that come with rocking the boat. I think that the city is very grateful that someone of your prominence, and a full professor of medicine at the University of Southern California, would be willing to come before us and make such candid and complete remarks, and I think that all of us are very grateful to you for doing that.

SADUN: You're very welcome.

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INFORMATION ON PESTICIDE RESIDUES IN FOOD

Americans for Safe Food
Center for Science in the Public Interest
1501 Sixteenth St., NW
Washington, D.C. 20036
(202) 332-9110

National Toxics Campaign
Consumer Pesticide Project
10 Gold Mine Drive
San Francisco, Ca. 94131
(415) 826-6314

Public Citizen
215 Pennsylvania Ave., SE
Washington, D.C. 20003
(202) 546-4996

Mother's and Others
617 So. Olive St., Suite 210
Los Angeles, Ca. 90014

WHO TO CONTACT: GENERAL INFORMATION ON PESTICIDES

CalPirg Pesticide Watch
1147 S. Robertson Blvd. #203
Los Angeles, Ca. 20035
(213) 278 9244

National Coalition Against the Misuse of Pesticides
530 7th St., SE
Washington, D.C. 20003
(202) 543-5450

Northwest Coalition for Alternatives to Pesticides
P.O. Box 1393
Eugene, Oregon 97440
(503) 344-5044

Natural Resources Defense Council
90 New Montgomery #620
San Francisco, Ca. 94105
(415) 777-0220

Pesticide Hotline
National Pesticide Telecommunications Network
(800) 858-7378 (24 hours/7days)

US Public Interest Research Group
215 Pennsylvania Ave., S.E.
Washington, D.C. 20003
(202) 546-9707

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Malathion: Toxic Time Bomb is a complete and comprehensive treatment of the organophosphate malathion, its toxicity, and health effects. This book can be a resource for other communities as they weigh the indefensible risk of aerial pesticide spraying against soil and air contamination, and the possibility of organophosphate poisoning with serious health implications.

William J. Rea, M.D., F.A.C.S., F.A.A.E.M.
ENVIRONMENTAL HEALTH CENTER
DALLAS, TEXAS

This is required reading for all who care about the health effects of malathion. And it is a real eye-opener for those who think their government has been telling them the truth.

Councilman Joel Wachs
LOS ANGELES, CALIFORNIA

The book, Malathion: Toxic Time Bomb, has well documented the toxicity of malathion and the physical and mental symptoms and degeneration that can occur from exposure to malathion.

William H. Philpott, M.D.
CHOCTAW, OKLAHOMA

This book is a compilation of relevant documents, data, opinions and testimonies on the medical, scientific, political and ethical issues raised by the aerial spraying of malathion over urban populations. Betsy Russell-Manning has produced that rare example of a book that deals with a burning issue in an informative, authoritative, comprehensive, well organized and timely manner.

Jorge R. Mancillas, Ph.D.
Assistant Professor of Anatomy and Cell Biology
University of California Los Angeles
LOS ANGELES, CALIFORNIA

Malathion: Toxic Time Bomb provides a valuable compilation in documenting the reality and extent of citizen concerns regarding aerial malathion spraying for medfly control.

NATIONAL COALITION AGAINST THE MISUSE OF PESTICIDES
WASHINGTON, D.C.

This is a valuable and comprehensive resource book for people worried about toxic chemical pollution in America.

Alan Levin, M.D., Immunologist
SAN FRANCISCO, CALIFORNIA

An accurate and detailed report, an important reference in respect to the widespread use of malathion.

Theron G. Randolph, M.D.
Pioneer in Clinical Ecology
NORTH AURORA, ILLINOIS

This is an amazing compilation of interviews and antidotal information on malathion. This book is sure to interest malathion exposure victims and community activists!

Norma Greer, Executive Director
NORTHWEST COALITION FOR ALTERNATIVES TO PESTICIDES
EUGENE, OREGON

Malathion: Toxic Time Bomb is a very thorough compilation of the malathion medfly issue in California.

Wm. Jordan Ph.D., Entomologist
LONG BEACH, CALIFORNIA

The aerial spraying of malathion by government officials is a complete waste of taxpayers money. There are less expensive and safer alternatives. The overpowering stranglehold that the agricultural interests have had for the past 50 years on California politics is being diminished by knowledgeable consumer activists. The first step to bring this progress about is to read Malathion: Toxic Time bomb!

Congressman Jim Bates
SAN DIEGO, CALIFORNIA