

Agritoxins: Ventura County's Toxic Time Bomb



**Produced by
The Wishtoyo Foundation
Oxnard, California**

EXECUTIVE SUMMARY

Maria Luisa worked in the strawberry fields of the Oxnard plain; Michele lives in the hills of Ventura. Two people, who appear to have little in common, are nevertheless bound by their exposure to pesticides in Ventura County: Maria Luisa was exposed to methyl bromide, Michele to Agri-mek. Their experiences changed their lives forever.

We live in an agricultural community; thus, we are all at risk. Forty-four percent of the land in Ventura County is used for agriculture. Harmful and even deadly exposures can reach our farm worker community as well as our families. Toxic pesticide "agritoxin" use in Ventura County is polluting the air we breathe and the water we drink. *Agritoxin* refers to the toxic pesticides used in agriculture.

This preliminary report by the Wishtoyo Foundation's California Coastal Agritoxin Monitoring Program (CCAM) addresses the hazards associated with living in a community where vast acreage is dedicated to agricultural lands dependent upon large amounts of hazardous chemicals. This report demonstrates that (1) some of the most hazardous agritoxins are widely used in Ventura County agriculture; (2) these chemicals are extremely toxic and have been linked to numerous adverse health effects, including neurological impairment, birth defects, infertility and cancer; (3) in Ventura County, the general public, farmworkers, children, and elderly are readily exposed to agritoxins; and, (4) agritoxins pollute our air, water, and soil. This report will also highlight the ineffective nature of current legislative regulations purportedly put in place to ensure that these hazardous chemicals do not harm people and the environment.

In 2001, Ventura County ranked 9th in its use of agritoxins and 4th in its use per square mile among all 58 California counties.¹ Agritoxins are the toxic pesticides used in agriculture. Consider the following words: Pesticide, homicide, suicide, insecticide, herbicide; what do these words have in common? They share the Latin suffix "cide" meaning to kill, to murder, to cause death, and slayer. World War II scientists, experimenting with nerve gas, synthesized the insecticide, parathion. In 1998, Californians for Pesticide Reform (CPR) reported that parathion is still used in California. Chemicals and technologies originally developed for waging war have made their way into our homes, water, food supplies, schools, workplaces, parks and roadsides.

Agritoxins can cause human suffering. It is important to recognize that unlike more obvious health threats, such as tobacco smoke, exposure often occurs without an individual's knowledge or consent. Since children sit or play in outdoor public parks and playgrounds, on floors, lawns and playground equipment, they are prone to a significant increase of risk from pesticide exposure.

Pesticides can cause both short and long term adverse health effects. Immediate (acute) health effects include blindness, blisters, diarrhea, dizziness, nausea, rashes, stinging eyes, and death. Long-term (chronic) adverse health effects can occur months or years after initial exposure. These include birth defects, cancers, and developmental and neurological damage. In addition, pesticides can poison and disrupt immune systems and endocrine systems. A damaged or compromised immune system limits one's ability to fight infections and diseases. The degradation of the human immune system may indeed be the most significant health effect caused by contact with toxic chemicals in the environment. Studies show that some pesticides mimic the effects of natural human hormones, especially estrogen and thyroxine.

Birth defects, stillbirths and developmental effects may be some of the consequences of these endocrine disrupters.

The effects of long-term, low-level exposures are difficult to diagnose. Chronic diseases associated with pesticides may not manifest for decades after exposure. There are few, if any, research studies addressing delayed-onset or chronic effects. Literature review conducted for this report indicates a tremendous need for an epidemiological study of local farmworkers. Also identified was the urgency for a health study of residents living adjacent to agricultural operations and of students and staff at schools within a quarter mile of agriculture.

The need for *independent* monitoring and research in Ventura County is highlighted by the release of a study conducted for and paid by the Alliance of the Methyl Bromide Industry. The following is an excerpt from that report describing the increased concentration of methyl bromide in those areas near agricultural fields:

“The highest concentration recorded in both Camarillo and Santa Maria appear to have been impacted directly by the fumigations occurring close by. The magnitude of the concentration values at those sites during the heaviest fumigant usage nearby is not consistent with the general concentrations that occur when a large number of fumigations occur over a larger area.”²

Does this mean that if you live, work or attend school adjacent to agricultural operations, you are at greater risk than if you are further away? The answer is yes, but the pesticide industry’s language is confusing to community members.

Ignoring and minimizing the impacts of agritoxin use in Ventura County leads to tremendous societal costs - including lost work days and increased medical costs - ultimately paid for by taxpayers.

Stormwater and irrigation runoff carry residual agritoxins (up to 80% of the amount used in some cases¹⁵) into Ventura County’s coastal rivers, estuaries, and seashores - the primary nurseries for aquatic life and migratory birds and some of the most heavily used recreational areas in the State of California. Swimmers, surfers, and children just playing in the shore-break surf are especially vulnerable to liquid-borne pesticides/insecticides since they often ingest water as a consequence of their activities. Many of the most commonly used agritoxins in Ventura County disrupt the immune systems, reproductive abilities, nervous systems, and morphology of both plant and animal life. What happens to even a few living creatures - as toxins transport up through the food chain - disrupts the balance of nature. Agritoxins pollute our air and water and the bodies of living organisms (including humans) in ways we do not yet fully understand, yet the agritoxin users do not pay to monitor, regulate, and clean up the pollution. Diminishing natural resources are thus, paid for by those who live in communities near agricultural activities.

Federal and State regulations were set up to protect our health and our environment. Severe inadequacies, however, prevent the efficacy of these laws. The cost/benefit analyses required by these regulations are daunting and usually under-report the associated total health and economic costs. The pesticide industry’s data routinely minimizes risk factors; agricultural storm water runoff is exempt from most regulations; and, the focus of these laws is on labeling and registration rather than elimination or reduction of use and research of safer methods. On the state and local level, monitoring tasks are often compromised or non-existent (for example, in Ventura

County, no air monitoring program exists, although it is required by law). County agricultural commissioners are compromised by their close relationship with the agricultural community. No studies are being conducted on farm worker health, and although the Department of Pesticide Regulation (DPR) is mandated to encourage use of less harmful alternatives, this is not being done because of a lack of urgency in the DPR and because insufficient funds are available to research these methods.

Our recommendations to alleviate the enormous health risks and environmental damage caused by use of agritoxins in Ventura County include: Elimination of proven dangerous pesticides; more thorough analysis of public waters to ascertain the impact of water-borne pesticides; initiation of an air monitoring program; a ban on drift-prone application methods; an ongoing study of farm worker health; physician training; bi-lingual outreach; citizen water monitoring; adequate buffer zones around agricultural fields near homes and schools; public notification of scheduled pesticide applications; and emphasis on safer alternatives to pesticides.

TABLE OF CONTENTS

Executive Summary	1
List of Figures	5
Introduction	6
Chapter 1:	
Agritoxin use in Ventura County	7
Locations of Use	10
Health Effects on People of Ventura County	12
Children at Risk	15
Farm Workers Most at Risk	17
Two Case Examples	18
Environmental Effects on Ventura County	22
Works Cited – Chapter 1	26
Chapter 2:	
Introduction: Federal and State Laws & Regulations	31
Federal Pesticide Laws	32
State Pesticide Laws	34
Summary: California Pesticide Regulations	39
What To Do If You Are Exposed to Pesticide Drift	40
Recommendations	41
Works Cited – Chapter 2	43
Participatory Research Committee	46

LIST OF FIGURES

- Figure 1. Use of active toxic pesticide ingredients in Ventura County.
- Figure 2. Bad Actor Pesticide use trends in southern California counties.
- Figure 3. Trends in most used active toxic pesticide ingredients.
- Figure 4. Map of pesticide use in Ventura County (1999).
- Figure 5. Comparison of death rates due to female breast cancer among CA counties.
- Figure 6. Results of the Environmental Working Group testing for methyl bromide.
- Figure 7. Comparison of drawings from a case study of pesticide exposed children.
- Figure 8. Photograph of helicopter spraying Agri-Mek.

INTRODUCTION

Ventura County is known for its beauty. Its lush green agricultural fields and bountiful orchards stretch from the coast to the foothills. Interspersed through these verdant areas are homes, schools, workplaces, hospitals, churches, daycare centers, parks and shopping malls. By appearances it is a safe environment in which to live and raise a family. But what we don't see or smell is adversely impacting the health of its residents.

Pesticides, herbicides, fungicides, insecticides, and other toxic substances are used extensively in agriculture, especially for sensitive high value crops such as Ventura County's strawberries. The County is also home to some of the largest sod farms in the world, another agribusiness commodity that employs vast quantities of harmful "agritoxins". "Agritoxin" refers to the toxic substances used in agriculture. The term includes pesticides, insecticides, and herbicides.

Agritoxins threaten Ventura County's health and environment in a variety of ways. Polluted irrigation water and stormwater runoff destroy fragile coastal wetlands, along with their plant and animal communities. Agritoxins percolate into groundwater, polluting both drinking and irrigation water supplies. Many types of these chemicals are bioaccumulative, meaning that they are stored in the bodies of humans and animals, slowly building up to lethal doses. Agricultural workers and children are the most at risk and the least able to defend themselves from exposure. Agritoxins also pollute the air. Application methods do not restrict these poisons to the crop fields alone. Aerial spraying and wind drift distribute agritoxins over a wide area.

The goal of the California Coastal Agritoxin Monitoring Program is to quantify and disseminate information concerning the human health and environmental hazards resulting from prolonged exposure to agricultural pesticides. We will use a multifaceted approach including a review of existing scientific studies, identification of primary industrial pesticide users in the region, investigation of farm operations and safety practices, interviews with farm workers, field monitoring of toxicity levels and photo documentation of pesticide application. The project outcome will be a preliminary report that quantifies the health risks to Ventura County residents, especially farm workers and children. It will include recommendations for resolving the potential hazards that our community currently faces.

There must be something in the rain
I'm not sure just what that means
Abuelita (grandmother) talks of the sins of man
Of dust that's in our hands
There must be something in the rain,
Well, what else could cause this pain
Those airplanes cure the plants so things can grow
Oh no, it must be some thing in the rain.⁴

- Trish Hinojosa
From "Something in the Rain"

Chapter 1. AGRITOXIN USE IN VENTURA COUNTY

Agriculture is the dominant industry in Ventura County. California produces more than one-half of the nation's fruits and vegetables,⁵ and Ventura County ranks 10th in the state for agricultural production.⁶ It notably does this with proportionally less acreage per commodity than the other top ten counties.⁷ Ventura County ranks among the three highest in field crops and the highest in revenue, at \$7,442 per acre, and in percent of orchards. Local crops most commonly grown are lemons, strawberries, tomatoes, avocados, peppers (fruiting), and outdoor flowers.⁸ The value of agricultural production in Ventura County for the year 2001 was \$ 1.05 billion dollars. In 1997, Ventura County ranked 29th out of all counties in the nation in the number of farms.⁹

Industrial agriculture in Ventura County and throughout the United States is dominated by the use of agritoxins. For the past decade, more than six million pounds of active toxic pesticides were used annually in Ventura County.¹⁰ The term "active" indicates the ingredient in a pesticide which kills the target pest. Every pesticide has one or more active ingredients and one or more inert ingredients. Only active ingredients are reported, however. At least 382 inert ingredients, as of 1997, were once labeled active by the U.S. EPA and have adverse health effects.¹¹ Inert ingredients can account for up to 99% of the volume of pesticides.

In 2001, Ventura County ranked 9th among all 58 counties in California in use of active toxic pesticides¹; it ranks 6th for use of the most toxic "California Bad Actor"^{*} pesticides.¹² (Fig. 1) It should be noted that Ventura County is the 4th most concentrated area of pesticide use among the top ten counties of highest pesticide use, at 3,485 pound of active ingredients per square mile of land. Of these top ten counties, Ventura County is one of only two along California's coast. Therefore, Ventura County should have a special awareness of how agritoxins are impacting the near-shore ocean and related beach areas.


	Active Toxic Pesticide Ingredients Used in Ventura County in Pounds			
	1998	1999	2000	2001
Total	6,556,058	6,589,411	7,154,172	6,430,535
State Ranking	9th	10th	8th	9th

Fig. 1. Use of active toxic pesticide ingredients in Ventura County.¹⁰

* A California Bad Actor Pesticide is a classification which means the pesticide is either an acute poison, known or probable carcinogen, neurotoxin, reproductive or developmental toxicant, or known to have contaminated California groundwater.

In Ventura County, the use of active toxic pesticide ingredients has increased 63% since 1989, when the total was 4,027,744 pounds.¹⁰ The percent change in California Bad Actor Pesticides from 1995-1998 was the highest in the South Coast Region.¹² (Fig. 2) The continuing industrialization of farming has fueled this growth in pesticide use.

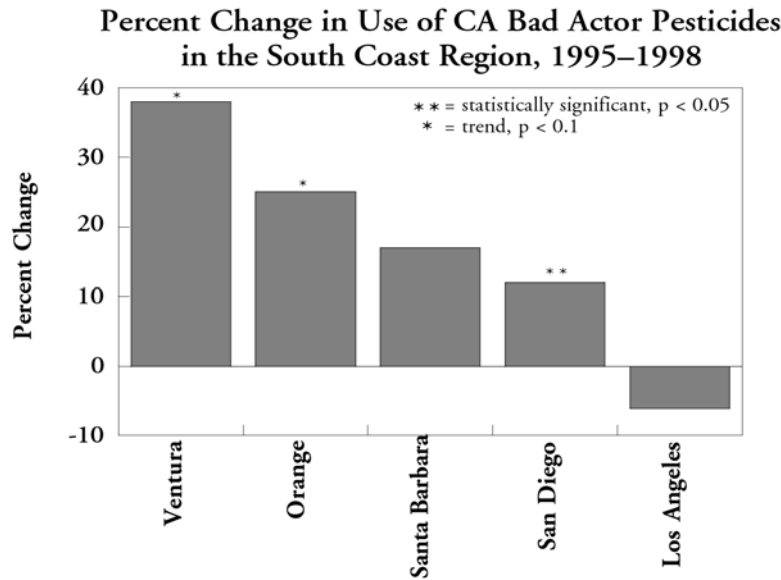


Fig. 2. Bad Actor Pesticide use trends in southern California counties.¹²

From 1995 to 2000, the most commonly used agritoxin ingredients in Ventura County were methyl bromide, chloropicrin, petroleum oil, metam-sodium, chlorothalonil, glyphosate, and mineral oil.(Fig. 3) Six out of these seven are considered by the EPA to be acute poisons, ranging from carcinogens and neurotoxins, to reproductive system and developmental toxins.

Type	Pounds of Most Used Toxic Active Ingredients in Ventura County			
	1995		2000	
	Total	Aerial Application	Total	Aerial Application
Petroleum Oil	2,472,578	24,457	2,549,498	145,196
Methyl Bromide	1,012,037	19,833	1,728,696	221
Chloropicrin	287,482	5,976	753,005	0
Glyphosate	128,412	12	132,677	397
Mineral Oil	7,724	0	475,342	2168
Chlorothalonil	101,152	31,929	60,868	6999
Metam-Sodium	197,612	0	275,195	0

Fig. 3. Trends in most used active toxic pesticide ingredients.¹⁰

In spite of California's overall reduction of methyl bromide use from 1995 to 2000, use in Ventura County rose by 59%, and reports now estimate its use at about the same level as in 1995. Although there will be a phasing-out of methyl bromide in 2005, except for exemptions, studies indicate that highly toxic replacements are increasing. For example, the use of the insecticide Telone has increased from 680 lbs in 1995 to 100,347 lbs in 2001.¹⁰

Technological advancement has brought a significant increase in the amount of pesticides applied aerially in Ventura County since 1995. For instance, whereas petroleum oil use decreased slightly from 1995 to 2001, aerial applications increased by 83%.¹⁰ Pesticide drift studies have shown that spray drift could be significantly less from precision applications than from conventional applications.¹³ Nearly every application of agritoxins results in some drift. Under certain wind and temperature conditions, up to 80% of the applied pesticide never reaches the target crop.¹⁴ Broad dispersion methods such as aircraft applications increase the risk that non-target plants, wildlife, children, farmworkers, and neighborhoods will be sprayed. (Refer to Case Example, p. 23.)

Across the nation, regions adjacent to heavy agritoxin use receive agricultural tailwater and stormwater runoff that transport the toxins.¹⁵⁻¹⁶ Sediment at the shoreline and in bays, lagoons, and estuaries near agricultural fields often contain banned pesticides such as DDT and organochlorine pesticides. Unfortunately, these pesticide-contaminated waterbodies are commonly home to wildlife and may be prime recreational areas. Many of Ventura County's waterbodies and nearshore marine habitats are contaminated from agricultural effluent. All three of the county's watersheds and several Watershed Management Areas are listed on the Clean Water Act's 303 (d) list of impaired waterbodies. Waterbodies listed for agritoxin impairment include: Ventura River Estuary for DDT; Santa Clara River Estuary for toxaphene and Chem A pesticides (the sum of the chemicals aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, HCH (including lindane), endosulfan, and toxaphene); McGrath Lake for chlordane and DDT; Port Hueneme Harbor for DDT; and Calleguas Creek for chlorpyrifos, chlordane, DDT, and Chem A pesticides.¹⁷ Ventura County's Stormwater Monitoring Program, 2000-2001, released a Monitoring Status Report that found:

"...in Calleguas Creek, many more pesticides were detected than in the Ventura River,...eight historical pesticides (DDT and its derivatives and chlordane), diazinon, chlorpyrifos, and simazine were detected in at least one storm event."¹⁸

Many pesticides go undetected because the local technology to test for the presence of new agritoxins may not keep pace with the technology to create them or because the regulatory limits have not yet extended to a new generation of pesticides.²⁰ Thirty-three new pesticides were introduced into the California market last year alone.²¹ These new chemicals, with unknown long term health and

environmental effects, are steadily replacing pesticides used previously. As a testament to the strength of the agritoxin industry, the chemical pesticide industry manufactures agritoxins and is allowed to sell them before there is adequate and appropriate assessment of any long-term health risks. This is exactly opposite of what a regulatory agency, such as the California DPR, should allow and is an obvious breakdown in the State agency's mandate to protect the public from toxic substances.

LOCATIONS OF USE

A picture, or in this case a map, can tell the whole story. (Fig. 4) Camarillo, Oxnard, Santa Paula, Ventura, and the unincorporated areas surrounding them are historically the most agritoxin-saturated communities in Ventura County. Alas, within these communities, agritoxin use is often found to be in close proximity to schools:

“A survey conducted by the Ventura County Superintendent of Schools found 29 public or private schools situated adjacent to agricultural operations, defined as sharing a common boundary, across the street, or within 300 feet without intervening use”.²²

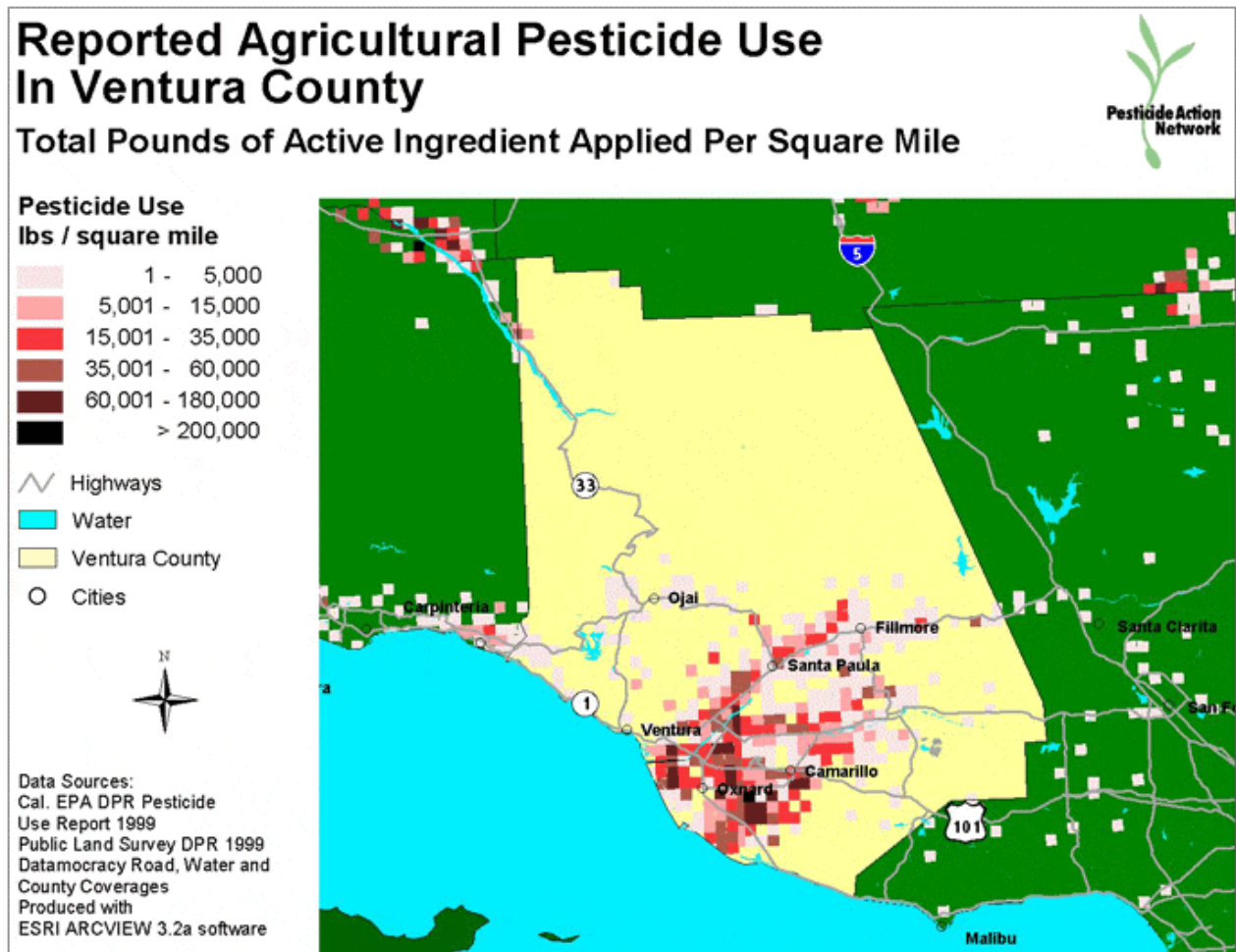


Fig. 4. Map of pesticide use in Ventura County (1999).¹²

In 1996, the Environmental Working Group examined the use of methyl bromide near schools and day care centers in California. The Group discovered that the five most vulnerable schools in the state were located in Oxnard. In addition, 10 of the top 15 most vulnerable schools in the state were in the City of Oxnard.²³ While more than a third of Ventura County is Latino, within the City of Oxnard more than 50 percent of the residents are Latinos.⁷ In this case, as in many others nation-wide, pesticide use correlates with a population center of an ethnic minority.

Urbanized areas are not immune to this ethnic imbalance of agritoxin exposure. With the increasing urbanization of agricultural land coupled with the intensified application of pesticides, some of the most vulnerable victims are young ethnic minorities. Two high schools in the Oxnard High School District demonstrate this disparity. Adolfo Camarillo High School, located in Camarillo, has a predominantly Caucasian student population, comprising almost three-quarters of enrollment. In 1998, 71,356 pounds of conventional agricultural pesticides were applied within 1.5 miles of this school. Methyl bromide accounted for 64% of this total. Chloropicrin represented 21% of the total and metam-sodium 4%. Ninety-one percent of these agritoxins were used on strawberries, 4% on parsley, 2% on lemons, and the remainder on a varied assortment of vegetables.²³

The other high school is Rio Mesa, located in Oxnard. Its student population is predominantly Latino: 65% Latino, 24% Anglo-European, 3% each Asian, Filipino, and African American, 1% Native American, and less than 1% Pacific Islander. In 1998, 207,609 pounds of conventional agricultural pesticides were applied within 1.5 miles of the school. This is almost three times the amount used near Camarillo High School. Again, methyl bromide, used on surrounding strawberry fields, was the most used agritoxin, representing 69% of the total. Chloropicrin accounted for 21% of the total agritoxins applied. Four percent of the total was Captan. Seventy-nine percent of the agritoxin total was utilized for strawberries, 11% for peppers, 6% for lemons. The remainder of these agritoxins were applied to vegetables, outdoor grown cut flowers or greens, and green house products.²³

Discriminate use of agritoxins clearly places some at more immediate risk than others. Eventually, however, everyone is affected by the decisions of where and how agritoxins are applied. Ventura County is suffering from declining groundwater and surface water quality, as well as air quality. This destruction is costly to all citizens of Ventura County; we are losing fish and wildlife resources, and we are increasing the hazards to human health.

HEALTH EFFECTS ON THE PEOPLE OF VENTURA COUNTY

With the multitude of agents in agritoxins that damage various cellular functions in plants and animals, it is not surprising that there are numerous adverse health effects. Toxic chemicals in agritoxins perform their tasks by disrupting genetic structure, cellular respiration, and organ functions. In the human body, toxic chemicals may cause harm directly or indirectly; they may act alone, or in conjunction with other chemicals. While immediate or acute exposure to agritoxins can be extremely dangerous, minute and repeated exposures to agritoxins can be similarly dangerous. The effects of cumulative exposures may not be expressed for 15 to 20 years or may only be pronounced in one's offspring.

Agritoxins can cause both short and long term adverse health effects in humans. Examples of acute health effects include severe headaches, blindness, blisters, diarrhea, dizziness, nausea, vomiting, rashes, stinging eyes, and death. Long-term (chronic) adverse health effects include birth defects, cancer, and immunotoxicity, as well as neurological and developmental impairment. Disruption of the endocrine system is another chronic adverse health effect caused by pesticides. Some pesticides mimic the effects of natural human hormones, especially estrogen and thyroxine.

The term "carcinogenic" describes substances known to cause cancer. Use of carcinogenic pesticides in Ventura County increased 59% from 1991 to 1998.²⁴ In May of this year, the Environmental Protection Agency (EPA) released an update of its List of Chemicals Evaluated of Carcinogenic Potential. This document lists chlorothalonil and methyl bromide as likely to be carcinogenic to humans, and metam-sodium as a "probable human carcinogen." These three agritoxins are among the seven most heavily used in Ventura County – more than a million pounds of methyl bromide was used in 2001 alone. Slight decreases in some of these pesticides since 1995 are offset by increases in other highly toxic pesticides, such as Telone and Enzone. Use of Telone and Enzone, from 1995 to 2001, increased 148-fold and 100-fold, respectively.

Adult cancers associated with the pesticides use include: Non-Hodgkins lymphoma, multiple myeloma, hairy cell leukemia, skin and lip cancer, brain tumors, respiratory tract cancer, gastrointestinal and urinary tract cancer, testicular cancer, and prostate, breast and thyroid cancer.²⁵ Cancers of the bone, pancreas, colon, liver, leukemia and soft tissue sarcoma are also associated with pesticide exposure.²⁶ Agricultural workers, exposed to herbicides, are listed in the occupational groups that are associated with increased risk for non-Hodgkin lymphoma.²⁷

It is difficult to scientifically prove that a substance causes cancer. Decades of research finally revealed that smoking is responsible for 90% of all lung cancer²⁸ and 33% of the total occurrence of cancer in the United States.²⁹ Since many factors must be interpreted when making a correlation between cancer and its causes, making links in local areas sometimes take decades, if not longer. As a result, we have to rely on studies done in other regions, general county statistics, and common sense. The evidence clearly shows that agritoxin exposure is a significant contributor to cancer incidence.

There is a correlation between the rise of pesticide use in Ventura County and the steadily increasing incidence of cancer. Since 1993 (and probably earlier - statistics for this report were calculated only for 1993 to 2003) cell malignancies in Ventura County residents have grown more common in cancers of the breast, colon and rectum, and lymphoma. This slow but steady increase is cause for concern. Placing carcinogenic substances in our local community can only contribute to the long-run risks of Ventura County residents contracting cancer. Many cancers are proven to take up to 20 years to appear. We are rightly appalled by the cancerous effects of radiation. How, then, can we be indifferent to the same effects from chemicals that are poisoning Ventura County's environment?

The Environmental Protection and Research Institute of Gaza performed a nine year long study on the association between pesticide exposure and recorded cases of human malignancy. Its results determined that breast cancer was the most common carcinogenic reaction among women.³⁰ In Mexico, higher rates of breast cancer recorded among farmers were attributed to continuous exposure to organochlorine pesticides.³⁰⁻³² Numerous other scientists have also made similar links to pesticides, ranging from herbicides to PCBs, DDT, and other organochlorine pesticides, finding "clear associations with increased risk of breast cancer".³³⁻³⁵ Not surprisingly, an article by M. S. Wolff, in *Environmental Health Perspectives*, found that research has succeeded in linking pesticides and breast cancer, but failed in informing policy.³⁶⁻³⁷ For Ventura County these studies could explain a disturbing trend. In reviewing the chart below (Fig. 5), we see that both San Diego and Ventura Counties share a similar high death rate for female breast cancer. What do these counties have in common? Both are agricultural counties and use millions of pounds of agritoxins each year. (Note: their rates are higher than that of smog polluted Los Angeles County.)

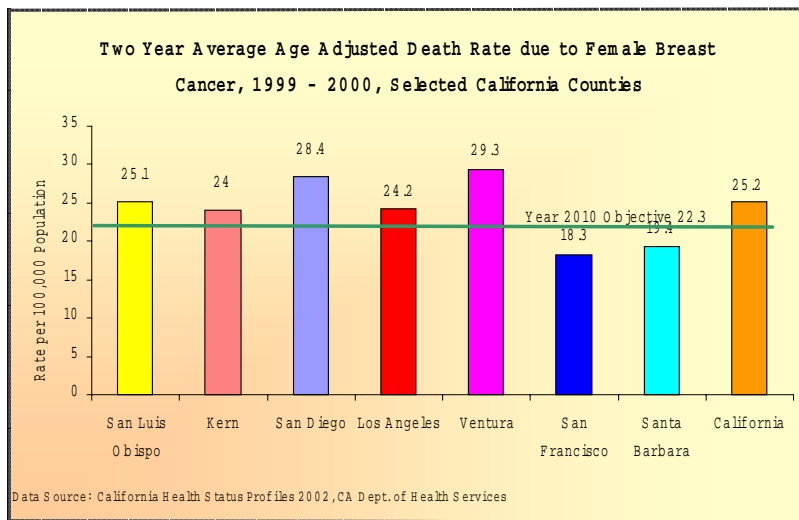


Fig. 5. Comparison of death rates due to female breast cancer among CA Counties.

The locations of pesticide application are as critical to health risks as the type and amount of pesticides used. This is exemplified by methyl bromide use in Ventura County. The California Environmental Protection Agency has recorded a number of health effects from exposure to methyl bromide. Rats and mice develop brain tumors,

and lose the ability to smell and to feel. After inhalation by rabbits a number of their internal organs cease to function. Dogs died after sniffing a small amount each day.³⁸ Tests are still being done on its toxicity in water. Enough clear adverse health indicators already exist to know that people should not be exposed to methyl bromide. A study on California pesticide use found that in the primary strawberry growing regions (Santa Cruz, Monterey, and Ventura Counties), many schools and homes exist close to fields where methyl bromide is used intensively.¹² An August-October 2001 report prepared for the Alliance of the Methyl Bromide Ambient Industry found:

“The implications for this study of this pattern are that fumigations occurring in the predominately agricultural areas south to southwest of Camarillo will tend to impact the population in that area... While it is a simple observation that methyl bromide ambient concentrations are somewhat related to the amount of methyl bromide fumigation usage, a rigorous scientific quantitative relationship for policy purposes is more problematic.”³⁹ Agritoxins do not always stay where they are applied; neither do their health effects.

Environmental Working Group conducted air testing around one of Ventura County’s farm fields:

“Residents of the (Ventura County) area were poisoned after the fumigation of an adjacent field the week before this monitoring was initiated. The buffer zone for this first methyl bromide application extended into the backyards of houses bordering the field, a practice that is legal, but clearly unsafe for the residents. One home doubled as a day care center for 14 local children. The FTIR (open-path Fourier Transform Infrared Spectrometer) monitoring path during the second series of fumigation days was set up along a dead end street between the field and the day care center/home that was impacted by the first methyl bromide fumigation. The dead-end street also has a basketball court popular with neighborhood kids.”⁴⁰

Air test results that far exceeded California's acceptable standard of 210 ppb over a 24-hour period are shown in Figure 6.

Environmental Working Group
Results of methyl bromide air testing.

Date/Location	Crop	Size of Field Fumigated	Total MB applied (pounds)	Testing Method	Distance from treated field to monitor	Positive MB Detections: range (ppb)	Comments
Ventura, Ventura County Field Fumigated: Aug. 12-15, 1996 Air Monitored: Aug 13-16, 1996	Strawberries	76 acres	15,276	Open Path FTIR* 24-hour continuous monitoring	30 feet	299 - 1,900	27 positive detections including 5 samples above 1000 ppb (1 ppm). The state buffer zone for this series of applications was 30 feet.

*FTIR: Infrared Fourier Transform Interferometer
Environmental Working Group • 1718 Connecticut Ave., N.W., Suite 600 • Washington, DC 20009
• info@ewg.org

Figure 6. Results of the Environmental Working Group testing for methyl bromide.

CHILDREN AT RISK

It started out as a normal day, with parents dropping their children off at school. Then, unexpectedly, a speed sprayer, or "airblaster", began spraying the lemon orchard next to the school. Some of the spray drifted over the parents, children, staff, school buildings and grounds. The agritoxin that was being sprayed was Lorsban® - one of the trade names for chlorpyrifos. This incident occurred in 2000, at Ventura's Mound Street School, and resulted in 35 students and school staff becoming ill.⁴¹ Chlorpyrifos is an acute nerve toxin and the fourth most common pesticide from 1998 to 2000 to be implicated in pesticide poisoning cases.⁴²

The principal rationale for restricting the use of many pesticides is to protect people, especially children, who are considered to be at increased risk.⁴³ Over 50% of all reported pesticide poisoning cases involve children under six years of age.² Children are more at risk from the effects of agritoxins than adults since their body weight, respiratory rate, and development rate make them more vulnerable to the effects of toxic chemicals. Also children are prone to sitting or playing in outdoor public parks and playgrounds, on floors, lawns and playground equipment, creating more opportunity for pesticide exposure. Residues on parents' clothing, soil carried on

shoes into the house, and contaminated water and food all lead to the mouths of tiny children unaware of the dangers.

Children whose parents work with pesticides have demonstrated higher than expected risk for leukemia, Non-Hodgkins lymphoma, childhood neuroblastoma, sarcomas, and Wilms Tumor.⁴⁴ In Ventura County, among children under 15 years of age, leukemia is the most frequently diagnosed cancer.⁴⁵ It has been known for more than 40 years that the younger an animal is when exposed to a cancer-producing agent, the more likely it is for the animal to develop cancer⁴⁶. Recent studies find a strong association between toxic pesticides and childhood leukemia.^{47,48}

A study, led by Elizabeth Gillette, illustrates childhood brain dysfunction from agritoxin exposure. The Yaqui Valley in Sonora, Mexico, was the site of the study. The research team studied two groups of 4-5 year old Yaqui children—one from the valley, one from the foothills. The children shared the same genetic backgrounds, similar diets, the same water, cultural patterns and social behaviors. The difference was in their exposure to pesticides. Agritoxins have been used in the valley since the 1940s; in the foothill region they are avoided. In 1990, high levels of multiple pesticides were found in the cord milk of newborns and in their mothers' breast milk.⁴⁹

The team developed a Rapid Assessment Tool for Preschool Children (RATPC) in order to evaluate growth and development. Tests of the two groups of children demonstrated that children exposed to pesticides had noticeably diminished memory, stamina and fine hand-eye coordination than those exposed to lower levels.

According to the study, one of the most telling differences between the pesticide-exposed valley children and the foothill children was in their ability to draw a person. "The drawing of a person, often used as a non-verbal screening measure of cognitive ability, could also indicate a breakdown between visual sensory input and neuromuscular output as found with brain dysfunction."⁵⁰ The valley children averaged 1.6 body parts per person while the foothill children averaged 4.4 body parts.⁵¹ Figure 7 is representative of the work produced by the four and five year old Yaqui children.

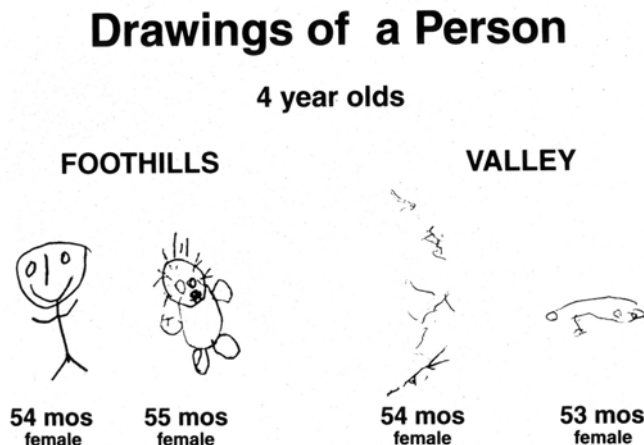


Figure 7. Comparison of Drawings from a case study of pesticides exposed children.

FARM WORKERS MOST AT RISK

Ventura County's agriculture industry today is estimated to provide \$3.6 billion to the local economy. Its farm workers have the lowest household incomes of any occupation, estimated to range between \$8,000 and \$25,000.⁵² These approximately thirty-six thousand people, of primarily Hispanic descent, are the population segment most at risk from agritoxin exposure.⁵³

Farm workers are constantly exposed to toxic chemicals. They routinely mix and apply carcinogenic substances on a daily basis often with inadequate protection. Language barriers may prevent them from reading labels on pesticides, including warnings, safety procedures, and directions. They plant, irrigate and harvest all types of crops in fields saturated with chemicals designed to impair living functions. Eating foods high in pesticide residues is common. A study using data from United States Department of Agriculture's (USDA) Pesticides Data Program found that post-harvest pesticides account for the largest share of residue detections in consumer diets.⁵⁴ In addition to these workplace exposures, farm workers often live near agricultural fields, increasing their own already high health risks even more.

Ventura County's farms can be dangerous workplaces: Five of its leading crops are among the ten that caused the most numerous acute poisoning cases in the years 1991-1996.⁵⁵ Strawberries, (the county's number one commodity), cut flowers, tomatoes, oranges and broccoli were grown with four out of the seven pesticides most frequently implicated in pesticide poisoning cases in California from 1998 to 2000.⁵⁶

A study by the Central California Cancer Registry (CCR) reports that United Farm Workers (UFW) members are at elevated risk for certain types of cancer in comparison to the general Hispanic population. The study identified 141,581 UFW members, of whom 1,001 had been diagnosed with cancer in California between 1987 and 1997.⁵⁷ 854 members of this total were classified as Hispanic by the CCR. In analyzing the results of this study, the CCR found that:

"...leukemia, brain and CNS cancer, skin melanoma, stomach cancer, and cancers of both the uterine cervix and corpus were found to be more common among the UFW workers than among the general California population. Results were significant for leukemia, stomach, uterine cervix and uterine corpus."⁵⁸

Further studies of the effects of agritoxins on the children of farm workers are needed. Ventura County mothers have the highest rate of early prenatal care in the state; nevertheless, the infant mortality rate among Latino babies in Ventura County was more than seven for every 1,000 births in 2001, higher than the state average. It is well documented that pesticides are found in farm workers' breast milk and food.⁵⁹ Could this be why many researchers have linked pesticide exposure in parents to risk of childhood cancer?⁶⁰⁻⁶²

Most violations of worker safety laws for farmworkers do not result in enforcement. From 1996 to 1997 more than 85% of documented pesticide safety violations statewide carried no fines and were not recorded in permanent centralized records. Between 1991 and 1996, an average of 665 cases a year of acute pesticide poisoning incidents of farmworkers were officially reported in the state, with many more cases going unreported. Of the reported cases, 77% were caused by exposure to pesticide spray drift and from pesticide residues in the field.⁵⁶ Agritoxins often drift in the wind as farmers work. A recent 2002 report on California farmworkers and pesticides found that workers are not often notified when fields are sprayed*. Drift protection for farm workers is urgently needed. Regulation and enforcement to protect workers from pesticide drift and unsafe residues is not working.⁶³

Pesticide related illnesses are not well documented, for several reasons. Farm workers may not report pesticide exposure for fear of losing their jobs, reprisal, language barriers, or lack of access to medical care. Consequently, the belief is that many agricultural pesticide exposure cases are not reported. Doctors in general receive little training in environmental and occupational health.⁶⁴ Also, the migratory nature of farmwork makes it difficult to correlate illnesses to specific locations. This contributes to the reason why pesticide poisoning is a commonly under-diagnosed illness in America today.⁶⁴

TWO CASE EXAMPLES

1- A Farmworker Faces Health Risks

Maria Luisa Alvarez worked in the strawberry fields from 1985 to 1991. She would begin the season in Oxnard and follow the crop to Salinas. A small tractor path separated her and her co-workers from a tractor spraying in the next section. They were told not to eat strawberries from that section because those berries could cause diarrhea or an upset stomach. Soon after she began working she began to experience bouts of nausea, vomiting, dizziness, as well as stomachaches and headaches.

Maria also developed two bumps on her back. Her employer sent her to a health clinic in Oxnard where she received a tetanus shot and anesthesia, after which they removed the foul-smelling bumps. In 1993, she was diagnosed with cancer. Maria's doctor told her that she had contracted a rare type of bone cancer. This bone cancer manifested as a tumor located between the bone and connective tissue. Surgery was performed on Maria's right shoulder and a piece of metal was inserted. New to this country, young, afraid of losing her job, and unable to speak English, she says that she did as she was told, did not ask any questions, and did not receive Workers' Compensation for her injury. The doctor told her that her cancer was caused by an old injury, despite the fact that neither Maria nor her mother remembers any such injury. Based on what she now knows, Maria believes that her cancer was a result of her exposure to pesticides. Maria was in this country legally, yet she was still afraid that she might be deported. She says that she can only begin to imagine the

* Many pesticides have warnings not to enter fields for a number of days after spraying.

fear of those who are here illegally. In her opinion, fear of deportation and job loss are the major reasons why more incidents of pesticide exposure are not reported.

Maria is concerned for her daughter, who was an infant at the time that Maria worked in the fields. Not knowing any better, she would come home, wash her hands and breast-feed her baby. She would not shower or change her clothes. Her daughter suffers severe headaches. Maria worries that these headaches are related to her pesticide exposure.

2- A Homeowner Faces Health Risks

Michele Smylie Clark is another Ventura County resident suffering from long-term illness due to her exposure to pesticides.

Michele's home is adjacent to an avocado orchard that has an intensive pesticide application schedule. As she heard the familiar sound of a helicopter spraying the crops behind her home, Michele was exposed to toxic chemicals in her own driveway. She would never have imagined that something which appeared to be so insignificant would ultimately lead to a lifetime disability. Michele was sprayed, and her eyes, central nervous system, respiratory system, and liver were severely damaged.

Within hours after her exposure, her eyes swelled, and by the next day, her entire head was swollen. She had burns on her face and left shoulder. Michele felt achy and had a terrible migraine. She felt a very distinct pain in her throat; swallowing was unbearable. By the time she sought medical help, she could not keep her balance and had no facial structure. She ballooned with fifteen pounds of weight, which increased to a thirty-pound weight gain within two weeks. Her heart, kidney and liver were all in a compromised state. Local doctors were unfamiliar with pesticide poisoning symptoms and assumed that Michele was experiencing an allergic reaction to something. The chemical Michele had been sprayed with that day was Agri-mek.

Within two weeks, her face stopped peeling off in sheets, and the aches and pains subsided along with the other discomforts. Six weeks later, Michele was again exposed near her home, as a result of another aerial application of Agri-mek. It was hot and windy, but Michele did not know that a helicopter spraying farther away could possibly trigger a secondary reaction. By evening, the swelling and the distinct and excruciating choking pain in her throat had returned.

When she arrived at the emergency room of the local hospital, the doctor was not interested in considering a pesticide connection, ordered a Demerol shot, and advised Michele to see her doctor in the morning, dismissing any seriousness. Within a half-hour of the injection, the pain's intensity magnified, and she started having alarming heart palpitations. It quickly became evident that Michele was experiencing a serious drug interaction. Within hours she started reacting to numerous chemicals in her system.

During another acute attack, just days later, she was taken back to the same emergency room physician. This physician was again not interested in her pesticide history and was unfamiliar with common problems associated with chemical exposures. Realizing that she was experiencing some kind of chemical sensitivity problem, Michele refused all treatment until a poison control expert was consulted. For reasons still being investigated, Michele received another shot of Demerol. Within minutes, her world went black. She couldn't finish full sentences, and would ramble on and on, not remembering what she'd just said. Her eyes would not open. She became combative, irrational, and a host of neurological problems surfaced. Michele's family and primary care physicians unfortunately were not informed of the serious drug interaction, nor were they told how opiates, combined with pesticide poisoning, can exacerbate the initial condition.

Even though Ventura County is considered one of the highest risk counties in the state of California for these types of agricultural accidents, apparently few - if any - physicians in our area have ever been trained on how to recognize or treat these serious poisoning situations, and most are not even aware that there is such a risk. It took countless phone calls to numerous state agencies and university hospitals before Michele finally found a doctor specializing in these complex cases.

Michele was diagnosed with a hypoxic and toxic encephalopathy and immune dysfunction. She now has blood indicators that show a very high risk for Alzheimer's, Parkinson's, multiple sclerosis, Lupus, and auto-immune dysfunction. Without frequent hyperbaric oxygen treatment, and other measures, Michele is unable to open her eyes, or function at even a limited ability. Her symptoms today, nearly two years later, are typical of chemical-induced Parkinson's. She also suffers from severe ADD, memory problems, lack of focus and energy, tremors, muscle spasms, etc.

Prior to this accident, Michele ran her own company, took care of a very busy family, and had lots of energy to spare. Now she feels lucky to be able to drive, on her good days, or to perform some of the most basic functions for family and self. As far as Michelle knows, her case was not reported to any of the mandated reporting agencies.



Fig. 8. Michele's husband snapped the picture above, in the spring of 2002. The helicopter is spraying Agri-Mek* in the orchards next to their home as the sun comes up over the horizon. Michele was sprayed in her driveway while getting in her car.

“Can anyone believe it is possible to lay down such a barrage of poisons on the surface of the earth without making it unfit for all life?” she asked. “They should not be called ‘insecticides’ but ‘biocides.’”-Rachel Carson, author of *Silent Spring*.⁴⁶

* On January 28, 2002, the California Department of Pesticide Regulation (DPR) issued a Section 18 emergency exemption for Agri-Mek.⁶⁵ This agritoxin is used on avocados for thrips. Avocado thrips are a major pest first discovered in California in the mid-1990's. They cause elongated feeding scars on maturing fruit. Its regulatory status is Class IV. This is the least toxic of EPA'S classifications - "practically nontoxic."⁶⁶ Agri-mek is a trade name. Other names for this agritoxin are Abamectin and Avermectin B1a. "Tests with laboratory animals show that ingested Avermectin B1a is not readily absorbed into the bloodstream by mammals and that it is readily eliminated from the body within two days via the feces."⁶⁷ Michelle's experience is a good indication that existing laboratory tests are inadequate predictors of agritoxins' effects on human health. Current pesticide regulations are not health or safety based laws. They are based on a risk-benefit analysis - meaning that *chemicals, which are hazardous to human and environmental health, may be used as long as the benefits outweigh the risks.*

ENVIRONMENTAL EFFECTS ON VENTURA COUNTY

Despite accelerating biodiversity loss countywide, use of lethal agritoxins continues to increase in Ventura County. Ventura County is home to 22 listed endangered species and 10 listed threatened species. Almost all of these species live in or near the water. All three listed fish are endangered - tidewater goby, southern California steelhead, and unarmored threespine stickleback. The others - wetland plants, shrimp, migratory birds, toads, and the southern sea otter, live at the thresholds where agritoxins are brought by stormwater. Many beneficial plants, insects, snails, and other indigenous organisms are killed by the application of pesticides. Last year alone, in Ventura County there were 67,067 such agritoxin applications.¹⁰

Of the top 50 pesticides used in Ventura County, 29 are classified by the U.S. EPA as toxic in the environment, either as an acute poison, groundwater contaminant, carcinogen, neurotoxin, reproductive or developmental toxicant. Four of the seven pesticides used in the largest amounts - methyl bromide, chloropicrin, chlorothalonil, and metam-sodium - are included in this classification.¹² The soil fumigants metam-sodium, methyl bromide, and Telone routinely drift off site and are listed as toxic air contaminants. Two of the other pesticides in this group include mineral oil which has been shown in laboratory studies to cause gene mutations in mice, and glyphosate which is a primary ingredient in Roundup®, a lethal poison. In 2001 alone, 141,295 lbs of Roundup® products were sprayed.¹⁰ Petroleum oils, the most used active ingredients in Ventura County, are major air pollutants in California. Petroleum oils are used in large amounts as insecticides. They are some of the most damaging substances to living creatures of all the categories of agritoxins.¹²

Pesticide use is closely tied to crop type. In California, strawberries are ranked as the top crop type for total intensity of pesticides used by pounds of active ingredient per acre planted. They ranked second for California Bad Actor Toxic Pesticide intensity.¹² Production of strawberries, the leading commodity in Ventura County, has increased by 67% since 1997. Commercially grown strawberries have been found to contain up to 64 different types of pesticides. Integral to commercial strawberry production is methyl bromide, a gas fumigant injected into the soil, which kills everything. Methyl bromide is classified by the Environmental Protection Agency as a Class 1 acute toxin--EPA's most deadly category of substances. Laboratory studies show it causes mutations and cancer to animals. Already the Department of Pesticide Regulation reports that methyl bromide was detected in two Ventura County community water systems. It was detected on May 7, 1991, in a small water system in Lockwood Valley, and again on April 4, 2002, in a large water system in Santa Rosa Valley.⁶⁸

While it is difficult to predict how pesticides will react in biological communities through field studies, an abundance of research indicates that non-targeted species are killed or injured by agritoxins.⁶⁹⁻⁷² Additionally, there is uncertainty regarding the levels of toxicity when diverse compounds of agritoxins are mixed or applied together. The combined applications can transform the pesticides into products of less, equal, or even greater toxicity.⁷³ Also, when a pesticide is ingested, inhaled, or absorbed, it is

metabolized in tissue into other products which can be either more or less toxic. Effects such as these, on a few living creatures, can have indirect effects that cascade through the entire ecosystem, disrupting the balance of nature.⁷⁴

Pesticides can travel by wind and atmospheric transport. Fog samples that were collected in agricultural regions of California showed evidence of 16 different agritoxins. The fog allows agritoxins to find their way into life in a variety of ways. Fog vapor that contains agritoxins can be inhaled directly into the lungs, swallowed, or absorbed through mucous membranes.⁷⁵ During foggy conditions, the pesticides are suspended and linger in the air. This situation allows for a thorough crop coverage, however, it also results in more health problems, especially felt by those with allergies, sensitivities, and asthma.

There is potential for pesticides to enter every part of the hydrologic system. Interconnecting rivers, streams, aquifers, and seas draw water to one another. Agricultural fields, as in Ventura County, are generally located in the coastal plains and the river valleys, so rivers receive agricultural runoff and carry the residues into estuaries and coastal seas. The US Geological Survey's (USGS) National Water-Quality Assessment (NAWQA) conducted an extensive pesticide study in which it collected data identifying 76 pesticides. It found pesticides in 96% of the agricultural streams they sampled.⁷⁶ They also discovered that fish from streams in urban and agricultural land-use settings had the highest organochlorine pesticide concentrations; one or more organochlorine pesticides were detected in fish at 89% of agricultural sites and 97% of urban sites.⁷⁶ As a result of this study and other research, the U.S. EPA finds that agriculture is the single largest non-point source of water pollution in the United States.⁷⁷ Thus, in Ventura County, it can be uncontested that streams, lakes, and coastal waters are universally contaminated with pesticides. Lack of water testing, however, allows this unseen pollution to persist.⁷⁸

In the Ventura River watershed, water quality issues from agricultural activities are designated a priority issue by the Los Angeles Regional Water Quality Control Board. In the fan-shaped Ventura River watershed, covering about 235 square miles, the runoff from this region flows into the estuary at the mouth of the Ventura River. This estuary serves as an important primary and nursery habitat for many species. Notable among these species are steelhead trout and tidewater goby. In fact, the estuary contains the largest tidewater goby population of the 43 known occurrences.¹⁷ In 1998, the LARWQCB found DDT in mussel and fish tissue from the estuary. This led them to place it on the 303(d) list for impaired waterbodies, a requirement of the Clean Water Act for states to list impaired waters. For bodies of water on the 303(d) list, a state must develop and implement a watershed-based cleanup and restoration plan.

In addition to Ventura River Estuary, McGrath Lake and Pt. Hueneme Harbor are also listed as impaired from DDT. Though banned, DDT provides a good example of the graveness of agritoxin pollution due to available water testing data and sufficient research. The breakdown of DDT takes more than 10 years, and DDT and its metabolites cause ruinous effects on birds' and fishes' digestive and reproductive abilities. In the Elkhorn Slough in Monterey Bay, in one breeding season, there was a 61% death rate in Caspian terns. Toxic concentrations of DDT, PCBs and toxaphene

were discovered in their eggshells. As in this example with DDT, the adverse health risks of agritoxin exposure for wildlife is often highest and most evident for birds, which spend most of their lives in coastal streams and shoreline areas. "Each year an estimated 67 million birds are killed by agricultural pesticides alone."¹² After entering insects and water, agritoxins are transported up the food chain, elevating in concentration as they move from birds and fish to predators such as sea otters, raptors, seals, and humans.

Fish in the coastal rivers of Ventura County face serious obstacles as they swim upstream. Not only do water diversions and dams limit their habitat, agritoxins can impair swimming ability, growth, development, behavior, reproduction, sexual development, and cause skeletal deformities.⁷⁹

Steelhead trout, an anadromous salmonid, once came to Ventura County rivers in numbers ranging in the thousands, however, recent reports number their population between 14-25.¹⁷ Born in rivers, steelhead mature and migrate to the sea where they spend as many as 4-5 years before returning to their native rivers to spawn. Because of this unique life cycle, steelhead are excellent indicators of water quality. Transitioning from freshwater to seawater requires a complex system of internal chemical changes that certain pesticides impair. Dr. Ewing, PhD. in *Diminishing Returns: Salmon Decline and Pesticides* states, "Pesticides have profound effects on Northwest salmon and may be a serious factor in their decline."⁷⁹ A scientist from the National Marine Fisheries Service published a study that showed the widely used insecticide diazinon, at very low concentrations (levels commonly measured in western river systems), can interfere with the Chinook salmon's sense of smell, a crucial behavior for predator avoidance.⁸⁰ More than 10,000 pounds of diazinon were used in Ventura County in 2001. Diazinon, as well as other pesticides, directly harms fish by disrupting the food chain and the endocrine system. Diazinon, chlorpyrifos, simazine, and eight derivatives of DDT have been detected in Ventura County streams.¹⁸ Representing the connection of land and sea, the salmonids' ability to survive represents our ability to preserve them both.

All agritoxins deplete the soil of its natural resources by killing beneficial microorganisms and insects. This is partly why the quality of commercial farmland is degrading. Methyl bromide greatly diminishes the quality of the earth's soil.⁸¹ As a result, after repeated use, large quantities of fertilizers are required to rejuvenate the soil. The vast and unrecorded amounts of fertilizers required to offset this process contain elements essential to plant and animal survival, such as nitrogen and phosphorus, but at high concentrations they are toxic. When fertilizers enter water, new compounds form. Algal blooms - excessive algae growth, are attributed to these nitrites, nitrates, ammonia, and phosphorus compounds. According to the USGS, algal blooms have caused major fish kills, infections to marine mammals, and pose human health risks. Excessive algae in the water leads to eutrophication*, a diminished oxygen level that suffocates aquatic life, basically trapping species in shrinking cages. The Ventura River and the Ventura Estuary are both on LARWQCB's 303 (d) list for algae.

* Eutrophication is the process by which a body of water becomes either naturally or by pollution rich in dissolved nutrients shallow and often with a seasonal deficiency in dissolved oxygen (Webster's 1989).

The use of agritoxins creates a vicious cycle. Contaminated creatures carry chemical residues to other parts of the ecosystem and pass chemical effects on to future generations. Also, toxic pesticides may fulfill their mission, eradicating the target insect “pest,” but then a new generation of resistant, hardier insects may emerge, requiring a new, more toxic chemical. The natural enemies of the insects, such as wasps, bees, and ladybugs, may suffer the effects of the insecticides or lose food sources, such as flowers, from the effects of herbicides. With natural predators of pests diminished or destroyed, small farmers trying to grow organically near large conventional farms are often forced to use agritoxins as well.

Agritoxins are determining the future of Ventura County resources. The presence of pesticides in our environment is undisputed. However, precisely attributing their effects is difficult and lengthy process. New toxins are produced each year, but the length of time it takes to conduct studies on their effects delays appropriate regulation. The public demands and deserves more information and better protection.

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Chapter 2. FEDERAL AND STATE PESTICIDE LAWS

Introduction

The California Department of Pesticide Regulation (“DPR”) is the state agency responsible for the registration, sale and use of pesticides in California. Language in the California Food and Agricultural Code mandates that the DPR provide for the proper, safe and efficient use of pesticides: “The mission of the DPR is to ensure that people and the environment are protected from adverse effects that may be associated with pesticide use.” The statute also dictates that the DPR is to encourage less harmful alternatives for controlling pests.¹

If it is determined that a certain pesticide presents a danger of harming public health or the environment, the DPR has broad authority to implement the following actions: (1) place restrictions on the use of a pesticide, including the quantity, and manner of application; (2) cancel or deny a pesticide registration; and, (3) designate a pesticide as a “restricted material.”²

Pesticide use in California’s 58 counties is monitored locally by County Agricultural Commissioners (CACs). Among other responsibilities, it is a CAC’s job to ensure that the citizens within their jurisdiction are protected from the potential dangers of pesticide use. CAC’s do not function solely, however, to protect the public. The CAC’s mission to protect and to serve agriculture can and often does come into conflict with the community’s need to be protected from dangerous pesticides.

California, the largest user of pesticides in the country, accounts for nearly one-fifth of the \$11 billion U.S. pesticide market. With roughly 6,430,535 pounds of pesticides released in 2000, Ventura County ranks 9th in the state for the amount of pesticides used. This number does not include the many urban uses that go unreported. Given the number of pounds of pesticides disseminated into Ventura County’s environment each year, it is indisputable that these substances contaminate our air, soil, drinking water, coastal waters, and wildlife, as well as endanger human health. However, what we don’t know is to what extent that contamination is affecting the daily lives of people residing in Ventura County communities in terms of specific health characteristics such as disease, illness, and chronic health problems.

The DPR has proposed to carry out its clear mandate of protecting human health and the environment through a series of regulations and state laws, the efficacy of which is based upon one very important assumption: Once applied, pesticides can be controlled so as to severely limit exposure through our water, air, soil, and food.

Unfortunately, like the proverbial “Pandora’s Box,” once pesticides are disseminated in our environment, the ramifications cannot even be accurately predicted, much less controlled. The California DPR mandate to protect human health and the environment appears to be compromised by the erroneous assumption all its decisions are based upon – that pesticide exposure can be limited (or controlled) after the pesticide is used. This is a highly illogical assumption to make from a regulatory

effectiveness standpoint. In fact, it appears to be anti-regulatory. This erroneous assumption allows the DPR to exercise a minimal effect on the Agritoxin industry operating within the State of California.

FEDERAL PESTICIDE LAWS

FIFRA

FQPA

Clean Water Act

Clean Air Act

The U.S. Environmental Protection Agency (EPA) has the authority to regulate pesticides under the “Federal Insecticide, Fungicide, and Rodenticide Act,” (FIFRA)³ the “Food Quality Protection Act,” (FQPA)⁴ the “Clean Water Act⁵, and the “Clean Air Act.”⁶ These federal laws, the legislative intent of which is to protect people and the environment from the harmful effects of pesticides, fail miserably due to a number of factors:

- (1) The determination of suspension or de-registration of a pesticide requires a cost-benefit analysis to be created by the EPA;
- (2) The determination of suspension or de-registration of a pesticide requires the EPA to substantiate an “unreasonable risk” standard⁷;
- (3) The expensive, information-intensive and time-consuming nature of pesticide risk assessment results in a complex process that yields uncertain and incomplete information, further delaying the suspension or de-registration of chemicals known to cause hazardous or deleterious environmental and human health consequences;
- (4) The EPA’s reliance on pesticide manufacturers’ own studies results in a strong incentive for manufacturers to provide minimum data and/or skew testing results which may indicate “unreasonable risk”; and,
- (5) The focus of these laws is on registration and labeling of pesticides instead of elimination or reduction of use in favor of safer alternatives. As will be seen, California’s regulations are similarly ineffective due to time-consuming risk assessments and an emphasis on registration and labeling instead of reduction in use.

FIFRA & FQPA

FIFRA’s cost-benefit analysis, which requires the EPA to consider the impacts of potential pesticide restrictions on food prices and agricultural profits, has allowed countless pesticides with known adverse environmental and health impacts to remain on the market for use in agricultural operations.⁸ With vast economic interests at stake, it is no wonder that restricting or canceling a pesticide results in a time-consuming morass of procedural and regulatory wrangling between manufacturers, lobbyists, legislators and enforcement agencies delaying enforcement for years. All the

while, with known environmental and health risks at stake, the marketing, sale and application of very toxic chemicals continue.

For example, testing of the pesticide chlorpyrifos showed brain damage to laboratory fetal rats, prompting the EPA to negotiate a multi-year phase-out, rather than implement an immediate ban on household products containing the chemical. EPA administrator Carol Brown stated that, “this is the fastest possible action that we could have taken . . . If we had been forced to go through the legal process [for an immediate ban] it would have taken . . . years.”⁹

Even if the EPA finally determines that exposure to a particular chemical may result in grave human and environmental health consequences, the EPA must allow individual states to permit application of the chemical if there is the possibility of “significant economic loss.”¹⁰ Thus, instead of canceling a registration, the easier route is to place warnings and use restrictions on pesticide labels. Even with adherence to label directions, however, contamination of air, water, and soil is extremely common when pesticides are applied in agriculture.

The difficulty in canceling pesticide registrations is exemplified in the case of two cancer-causing herbicides, atrazine and cyanazine. Because of studies indicating an unreasonable risk to the environment and human health, a review process for these chemicals began in the mid-1980's.¹¹ This review resulted only in labeling restrictions. Additional information uncovered in 1994 revealed still more evidence of the link between these two chemicals and long-term environmental and human health problems. Cyanazine was finally scheduled to be phased out in 2002; however, atrazine is still in use today.

Federal pesticide regulations are patently limited due to the complexity of pesticide risk assessment. How do you accurately assess the cumulative human and environmental risks of being exposed to literally thousands of chemicals, chemicals that are no doubt acting synergistically with one another, resulting in exposures to unknown and untested quantities?

Pesticide products are a combination of active and “inert” ingredients. Labeling an ingredient “inert” allows these ingredients to skirt regulatory testing and review. Despite the harmless sounding name, “inerts” include dangerous chemicals that can cause cancer, reproductive harm, nervous system disorders and other health effects.¹² Thus, how does a regulatory agency accurately assess the toxicity and exposure potential of pesticide products containing both active and “inert” ingredients?

Due to the EPA's budget and time constraints, the EPA relies upon manufacturers to supply the risk assessment data to produce its “unreasonable risk” determination.¹³ Given the complexity of accurately assessing the effects of real- world environmental and human exposure to the dissemination of thousands of chemicals, plus the industry incentive to skew test results and provide minimum, incomplete and inaccurate data, it is impossible to legitimately claim that current regulations are ensuring the protection of our health and the environment from exposure to highly

toxic chemicals.

The only way to protect public and environmental health is to focus on reducing or eliminating the use of these chemicals in support of less toxic alternatives.¹⁴ Current regulations, however, place little, if any, pressure on agriculture to implement safer alternatives. Instead of spending exorbitant amounts of time and money requiring and reviewing essentially inaccurate risk assessment studies and negotiating “unreasonable risk” determinations, the EPA should do what its name suggests: Protect the environment by requiring safer alternatives to replace chemicals that we know are polluting our air, water, and soil and causing cancer, neurological damage, infertility, birth defects, and endocrine damage.

Federal Clean Water Act and Federal Clean Air Act – Pesticides Escape Regulation

Both the Clean Water Act and the Clean Air Act contain exemptions for agricultural pesticide use. For instance, the Federal Clean Water Act specifically exempts “agricultural storm water discharges and return flow from irrigated agriculture” from regulation.¹⁵ The Federal Clean Air Act exempts aerial pesticide drift based on the determination that agricultural operations are not “stationary sources” subject to regulation.¹⁶ It is grotesque that toxic chemicals such as pesticides are exempt from laws that were enacted to protect the public and the environment from harmful chemical exposures. Pesticides are the most toxic chemicals that many people routinely come in contact with in their lives. The laws created to protect us from toxic chemicals should emphasize pesticides rather than ignore them. However, this is not the case, and serves as yet another testament to the political strength of the agritoxin industry in California.

CALIFORNIA PESTICIDE LAWS

Birth Defects Prevention Act (BDPA)

Pesticide Contamination Prevention Act

Toxic Air Contaminant Program

Food Safety Act

Proposition 65, Safe Drinking Water and Toxic Enforcement Act of 1986

Even as written, these regulations are inadequate in terms of “controlling” pesticide movement in our air, water, and soil. None of these laws require or advocate reduction in pesticide use. As well, these regulations are not enforced in terms of adequately monitoring for human exposure and environmental contamination.

A. The Birth Defect and Prevention Act

In 1984, the California legislature passed SB 950, the Birth Defect and Prevention Act (“BDPA”).¹⁷ In order to make a scientific determination that a

pesticide's continued use will not cause significant adverse health effects, the BDPA required specific types of chronic health effects studies to be on file with the State's pesticide regulatory program. The Act requires that these and other data be used to determine if use of a pesticide would cause human health problems. ¹⁸

If the use of an active ingredient presents potential significant adverse effects, the Act has been interpreted to require DPR to suspend or cancel the registration of pesticide products containing those active ingredients. Most registrants failed to complete and submit new chronic health effects studies within the time frames in the original law. These failures, however, have not resulted in the elimination of dangerous chemicals from use in California pursuant to the BDPA.¹⁹ According to the DPR, many pesticides are still used, despite significant data gaps; even with these omissions, registrants are allowed to continue to sell and market the products, so long as they are "attempting" to provide the required information. The process of suspending a pesticide's use involves a lengthy negotiation process between the registrant manufacturers and the DPR. Hence, since 1984, only one chemical has been actively suspended pursuant to the BDPA.²⁰

The BDPA requires that any exemptions to the data requirement be granted only to those pesticides with limited use and minimal exposure potential:

“. . . (2) The director may not, pursuant to this subdivision, exempt all pesticide products containing the same pesticide active ingredient unless it is determined that the pesticide active ingredient has only limited use, there is insignificant exposure to workers or the public, and the products are otherwise in compliance with federal law...”

In contravention of the letter and purpose of the BDPA, however, legislators have routinely granted extensions for high use pesticides that are applied in areas where the potential of human exposure is high. For example, methyl bromide, a highly toxic pesticide widely used next to homes and schools in Ventura County, has been the subject of repeated BDPA extensions. As required by the BDPA, the registration of methyl bromide was scheduled to be suspended in 1996 since the pesticide's manufacturers had not submitted health studies under request since 1984. These manufacturers missed two deadlines for submitting the required studies. Regardless, in 1996, the California Assembly's Environmental Safety and Toxic Materials Committee, under pressure from agricultural lobbyists, extended the registration of methyl bromide until December 1997. After thirteen years of delay, methyl bromide manufacturers finally submitted toxicity studies in December of 1997.

It was not until January 2003 that the DPR finally completed its review of these studies. According to these studies, methyl bromide tested positive for adverse health effects in all categories: chronic harm, cancer, reproductive harm, fertility harm, gene mutation, chromosome harm, DNA damage, and neurological damage. These studies confirm what has been known for years: Methyl bromide is an extremely toxic pesticide and should not be used at all. In Ventura County, however, it continues to be used in our most vulnerable areas - where people live and where children go to

school.

With these test results, what does the BDPA now require be done with methyl bromide? According to DPR, “the next step is labeling mitigation to minimize adverse effects.”²¹ DPR states that the BDPA does not require a ban on such a chemical; instead the BDPA requires the DPR to “re-evaluate” and “work with the manufacturers” to mitigate potential problems. The DPR has known about the dangers of methyl bromide since at least 1984; The DPR has conclusive studies indicating methyl bromide’s extreme toxicity; yet, the DPR does nothing to protect the public and the environment from this harmful chemical. “Re-evaluation” and “labeling mitigation” are two actions that serve only to further delay any meaningful, effective solution to the methyl bromide issue.

In light of our regulatory agency’s treatment of methyl bromide, it is obvious that the agricultural and chemical industries have ample power to control the laws that effect pesticide use and registration to the tremendous detriment of families, especially children, farm workers, neighborhoods, residences, and schools.

B. Toxic Air Contaminant Program

In 1983 and 1984, in an effort to protect the public from airborne contaminants, the California legislature adopted the Toxic Air Contaminant (TAC) Program.²² The statute defines a toxic air contaminant as “an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.”²³ The TAC program mandates that the DPR and the California Air Resources Board (ARB) evaluate the health effects of chemicals disseminated into the air to reduce the human exposure to these chemicals so that “no significant adverse health effects are anticipated.”²⁴ Nearly 30 million pounds of TAC pesticides were used in California in 1995.²⁵

Once a pesticide has been listed as a TAC, DPR regulations require evaluation and control of these pollutants in ambient community air to determine the appropriate degree of control measures for that pesticide. Captan, Lindane, Methyl bromide, and Xylene are listed as TACs and are four commonly used pesticides, fungicides, and fumigants used next to Ventura County homes and schools. Chlorpyrifos and chloropicrin are listed as candidate TACs and are two of the most heavily applied pesticides in Ventura County.

Pursuant to the TAC program, DPR’s own regulations specifically state that they are, along with the ARB, to conduct continuous air monitoring of ambient community air and pesticide applications near residential areas, hospitals, schools and waterways.²⁶ The DPR and the local agricultural commissioner, however, readily admit that there is no ongoing air monitoring program in Ventura County.²⁷ With the exception of a single air monitoring of methyl bromide, the DPR has not conducted any ambient community air monitoring of any TAC pesticides in Ventura County. The last chemical monitored by DPR in this county was for the pesticide chlorophalonil in 1990.²⁸

C. Pesticide Contamination and Prevention Act

The legislature enacted the Pesticide Contamination Prevention Act (“PCPA”) in 1985.²⁹ The PCPA requires the DPR to maintain a statewide database of wells sampled for pesticides and annually report detections and regulatory actions as part of a program to prevent pesticides from migrating to groundwater.

When a pesticide is found in groundwater as a result of agricultural use, the PCPA requires cancellation of the registration of that pesticide unless the DPR finds that the levels of pesticide found in the groundwater are not harmful or can be reduced by modifying the use of the pesticide.³⁰ Unfortunately, this mandate has been ineffective. From 1985-1997, pesticides were detected in 4,226 wells in 47 of 58 California counties. A total of 94 pesticides or their breakdown products were found.³¹ Even when pesticides are used legally and according to the label, they contaminate groundwater, which can remain polluted indefinitely. Exposure to pesticide-polluted drinking water poses a particularly serious threat to young children because such a large proportion of their diets is made up of water.

D. Food Safety Act

This Act requires the DPR to provide funds for research into alternative pest management practices “with an emphasis on projects that will result in the reduction of pesticide use, the use of safer pesticides, or minimizing pesticide residues.” In California, funding for integrated pest management, organic, and biocontrol programs by state agencies is minimal. The DPR has failed to meaningfully carry out this mandate by refusing to dedicate more than a very small fraction of their resources to the promotion of less toxic alternatives. Clearly, the promotion of safer alternatives is not a priority for the DPR.

E. Proposition 65, Safe Drinking Water and Toxic Enforcement Act

Passed in 1986, Proposition 65, the Safe Drinking Water and Toxic Enforcement Act (Prop. 65) prohibits any “person in the course of doing business”³² from knowingly discharging or releasing a listed toxic chemical into a source of drinking water or from knowingly and intentionally exposing any individual to such chemicals without first providing a warning.³³ These provisions apply to all toxic chemicals listed under the statute as “known to the state to cause cancer or reproductive toxicity.”³⁴ The statute requires the governor to revise and republish the list at least once a year.³⁵ Chemicals may be included on the list if: (1) they have been clearly shown to cause cancer or reproductive toxicity;³⁶ (2) a body considered to be “authoritative” by the state agency has formally identified the chemical as causing cancer or reproductive toxicity, or (3) a California or federal agency has required the chemical to be identified as causing cancer or reproductive toxicity. Based on the statutory language that a chemical must be “clearly shown” to be toxic, Prop. 65 enlists a high standard for listing chemicals.

One of the most unique aspects of this statute is that, unlike California’s other

statutory directives, Prop. 65 provides for enforcement by private citizens and places the burden on the pesticide industry and users to show that inadvertent exposures to pesticides pose an “insignificant” risk to the public. No other California pesticide statute provides for enforcement by private citizens. In addition, unlike the ineffective licensing requirements found in California pesticide laws, Prop. 65 utilizes the precautionary principle: Once a pesticide exposure takes place or a pesticide is detected in a source of drinking water, the statute is triggered - liability is automatic unless the polluter can demonstrate that the exposure or discharge was insignificant. Prop. 65 could potentially play a very significant role both in enhancing public awareness of the dangers posed by extensive agricultural pesticide use and in providing protection for public health.

Prop 65's warning requirement applies to any exposure of an individual to a listed chemical. Captan, a fungicide used heavily in strawberry production in Ventura County, is on the Prop. 65 list. Prop. 65 seems to prescribe that any aerial or other drift-prone spray application of captan include a warning pursuant to Prop. 65 because drift is very likely to occur with such application methods.³⁷ Where pesticide monitoring has occurred in California, pesticides have been routinely detected in air samples, often miles away from their source.³⁸ In fact, the president of the Ventura County Agricultural Association, Robert Roy has stated, “it is of vital importance to our local agricultural industry that crop protection chemicals are not unnecessarily added to the Proposition 65 list . . . it may be difficult for pesticides to comply with Proposition 65 discharge prohibitions.”³⁹ Currently, growers do not warn the public before they apply pesticides listed on Prop. 65.

Warnings pursuant to Prop. 65, however, would be a cause of great concern for the agrochemical industry. It is in this industry’s best interests to keep secret the timing of pesticide applications and the contents of their pesticide products. If neighboring communities were cognizant of the types of chemicals being sprayed next to their homes and the deleterious health effects linked to these chemicals, the agrochemical industry would reluctantly have to look to less toxic methods. Many of these neighborhoods would discover that they and their children have been exposed to these chemicals for years. As Rachel Carson so eloquently stated in her famous book, Silent Spring, “[w]e have subjected enormous numbers of people to contact with these poisons, without their consent and often without their knowledge . . . we should be concerned with the delayed effects of absorbing small amounts of pesticides that invisibly contaminate our environment.”⁴⁰ It should be made clear that the agricultural industry is not exempt from the protective and warning requirements of Prop. 65. It has been difficult to prosecute cases of agricultural pesticide contamination and exposure under Prop. 65, however, due to the fact that many of the most frequently used agricultural chemicals have failed to make it on the Prop. 65 list -- most likely due to political pressure.

Considering the potential for drift, large corporate growers are arguably acting in contravention of Prop. 65 when they apply listed chemicals to their crops. Hopefully, Prop. 65's warning requirement will be enforced in the future and can thus bring change to an arena where an emphasis on public health has been sorely lacking.

Summary: California Pesticide Regulations

Despite DPR's broad authority, it has consistently failed to impose more stringent restrictions on pesticide use and registration for those pesticides shown to cause adverse human health and environmental effects. DPR does not direct the regular monitoring for pesticides in ambient community air required by the Toxic Air Contaminant Program, nor does it implement restrictions for those pesticides identified as TACs. Despite DPR's authority under the BDPA to cancel pesticide registrations for lack of sufficient data, few registrations for current use pesticides have been canceled. Even with studies showing extreme adverse health effects for methyl bromide, the DPR's answer regarding re-evaluation and labeling mitigation is patently inadequate to address health and safety concerns. Proposition 65 could potentially provide the public with much needed reform in the arena of pesticide regulation in California. So long as the users of agricultural pesticides employ 10 or more people in the operation of business, and they discharge listed chemicals into sources of drinking water, or otherwise expose individuals to such chemicals, these users can potentially be prosecuted.⁴¹

In Ventura County, some of the most intensive use of pesticides occurs in agriculture adjacent to schools and homes; the method of application for most of these pesticides often occurs through speed sprayer or aerially, two of the most drift-prone spray technologies. Unless residents contact the local agricultural commissioner's office, virtually none of the pesticide applications near residential developments are monitored for drift.

How Does Our Government Purport To Protect Us From Pesticides?

People assume that all pesticide chemicals in use have been thoroughly tested. The governmental regulation of pesticides, however, allows the marketing and sale of these substances based upon testing performed by chemical manufacturers and prior to comprehensive testing for acute, chronic, sub-chronic, and long-term health effects.⁴² Registration of these chemicals takes places before their safety is proven. In fact, this system requires that regulatory agencies prove a pesticide unsafe rather than the opposite, allowing unsafe human and environmental exposures to continue even after independent studies have shown links to adverse health effects. Again, even with the studies, our enforcing agencies are unwilling to take any meaningful action to protect people and environment from highly toxic pesticides applied on high-cash crops.

The regulatory system responsible for pesticide registration and the protection of the public and environment from pesticides assesses a pesticide's risk through a process that takes into account not only a pesticide's toxicity but also the economic benefit it provides. When considering the registration of a pesticide, this cost-benefit analyses is usually supplied by the agricultural industry and they often emphasize the cost of regulatory controls to their operations while minimizing or ignoring potential health-related or environmental costs resulting from exposures. This questionable

process pits agricultural production against potential increases in cancer, neurological impairment, infertility, and birth defects.⁴³

Although the DPR claims it can control pesticides, this is an impossible feat. Pesticides are commonly dispersed into the environment by untrained workers who have little technical education and inadequate protective clothing, and who are rarely monitored for exposure. Regulations focus on one specific chemical, in one specific medium (air, water), and one specific health risk (cancer, neurological damage). Each day, however, we are all exposed to a complex mixture of chemicals in food, water, and air. Children living and attending schools next to chemically intensive agriculture may attend a daycare center regularly sprayed with pesticides and then play in a park that has been chemically treated. As well, these children consume pesticide contamination in food and water. Such exposures do not comport with the one-chemical-at-a-time evaluations touted by DPR as their tool to ensure the protection of public health and the environment.

Knowledge of delayed human health effects is crucial in determining any risk assessment. For most of the pesticides registered for use in California, however, relevant data to judge delayed human health effects is lacking. Thus, the difficulty in assessing pesticide risk to human health and the environment for any one chemical is extremely daunting given the fact that numerous health effects are latent for many years after exposure.⁴⁴

Failure to fully understand the toxicity of pesticides, especially the latent or delayed long term effects -- failure to understand how people are exposed to pesticides in the real world, through the air, water, food and soil -- failure to account for the increased susceptibility of sub-groups such as children, and failure to properly monitor and evaluate contamination levels in our air, water and food, have all lead to a drastic underestimation of the risks that pesticides pose to the health of people and the environment. Thus, in contravention of the assumption underlying the efficacy of DPR's regulations, controlling pesticide exposures under normal everyday conditions is virtually unattainable.⁴⁵

For the population as a whole, and for our most sensitive subgroups in general, we should be concerned with the delayed effects of pesticide exposures. Chemical manufacturers and agricultural interests have benefited greatly from human nature's ability to shrug off what may seem to be a vague threat of future harm. Despite supposed safeguards provided by regulatory agencies, people can be exposed to a known carcinogen for several years before the characteristically slow-to-act federal and state regulatory agencies takes steps to protect public health.

What Should You Do If You Are Exposed To Pesticide Drift?

If you have been exposed to pesticide drift you should immediately call the County Agricultural Commissioner's office. The CAC is required to send a staff person to come out and investigate. It is their responsibility to test for drift. The CAC has the

authority to restrict aerial applications of pesticides and can place restrictions on the grower's pesticide use (ie create large buffer zones, require notification, restrict aerial application, and end certain pesticide use.) The common response of the CAC, however, is to fine the grower and take no regulatory action to restrict future pesticide use.⁴⁶

RECOMMENDATIONS

We must respond to the vast power exercised by the agrochemical industry and demand elimination of pesticides known to contaminate our environment and endanger the health of residential and school communities. Pressure should be placed upon the DPR, agricultural commissioners, and our legislators to demand the elimination of methyl bromide and TACs known to be applied in sensitive areas.

We must insist on a detailed analysis of our community water supplies.

We must place pressure on the governor and elected officials to augment the Proposition 65 list to include all carcinogenic and reproductive toxins used in agriculture.

Pursuant to the mandate of the TAC program, we must demand that the DPR initiate a year round agritoxin air monitoring and water sampling program in Ventura County. As well, the public should demand that the DPR carry out its clear mandate by monitoring ambient community air for agricultural pesticide applications taking place near homes, schools, daycare centers, or places of business.

This county's intensive use of agricultural pesticides as well as pesticides used in urban settings has subjected large numbers of people to contact with these chemicals, without their consent and often without their knowledge. All individuals have a right to know the identity and potential health risks of substances to which they are exposed. Notification of all people likely to be impacted by pesticide applications in both agricultural and urban settings should be required.

Lobby legislators and place pressure on the DPR to ban the use of the most drift-prone spray technologies (such as aerial or speed sprayer applications) and phase-out use of the most highly toxic pesticides - -nerve toxins, acute toxins, carcinogens, reproductive or developmental toxins, endocrine disruptors, and known drinking water contaminants.

The use of all other toxic pesticides should be reduced and priority given to pesticides that are the least persistent, least mobile, least likely to bio-accumulate, and least toxic to non-targeted species. Special concern should be given to where these chemicals are used such as areas where permeable soils overlie groundwater aquifers; lands adjacent to waterways and streams; lands adjacent to residential or recreational facilities where drift could result in human exposure. Especially in counties like Ventura, where the agricultural/urban interface is heightened, these

precautions should be implemented.

Establish training program to assist physicians recognize the symptoms of pesticide exposure.

Establish a bilingual outreach program to raise community awareness of the human and environmental health risks associated with the use of agritoxins.

Develop and implement a strategic plan to educate elected County and City officials about the impact of pesticide exposure.

Conduct an epidemiological study of local farmworkers.

Conduct a health study of residents living adjacent to agricultural operations and of students/staff of schools within a quarter mile of agriculture.

Support organic farmers and integrated pest management programs.

Demand large buffer zones around agricultural fields be enacted to protect workers, homes and schools.

Initiate a program in Ventura County that includes the following parameters:

- ❖ Investigate agritoxin contact on humans, animals, and the environment;
- ❖ Investigate the concentration of agritoxins in food ingested by humans;
- ❖ Investigate the link between agritoxins and health effects in humans
- ❖ Document and publicize alternatives to farming with agritoxins

Long-term Goal: Promote alternatives to chemical solutions

The ultimate long-term solution is the implementation of state-supported efforts to help farmers and the public adopt more sustainable pest control methods. Educating the public in least-toxic integrated pest management techniques and prohibiting the use of toxic pesticides in these settings. In agriculture, organic farmers have successfully used least-toxic methods of pest control for years in Ventura County, California, and around the world.

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- ¹¹ Notice of Initiation of Special Review, 59 Fed. Reg. 60,412 60,415 (1994).
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- ¹⁴ Merrell V. Thomas, 807 F. 2d 776, 781 (9th Cir. 1986).
- ¹⁵ 33 U.S.C. Section 1362 (14) (1994).
- ¹⁶ 42 U.S.C. Section 7412(a) (1994).
- ¹⁷ CAL. FOOD & AGRIC. CODE Section 13127 (West 2001).
- ¹⁸ CAL FOOD & AGRIC. CODE Section 13,121 et seq. (West 2001).
- ¹⁹The use of high risk pesticides, including methyl bromide, metam sodium, chloropicrin, telone, chlorothalonil, sulfuryl fluoride, paraquat dichloride, chlorpyrifos, and diazinon increased significantly from 1991 to 1995 and has continued to rise. Rising Toxic Tide: Pesticide Use in California, 1991-1995 (1997).
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The Wishtoyo Foundation's Central Coast Agritoxin Monitoring Program

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