


# WARNING! HAZARDS TO CHILDREN
## PESTICIDES IN OUR SCHOOLS

**Fall 2008**

OREGON TOXICS ALLIANCE

**AUTHOR:** Lisa Arkin, Executive Director, Oregon Toxics Alliance

**COVER:** John Herberg, Oregon Toxics Alliance
Elena Fox, Graphic Designer, Cottage Grove

**LAYOUT:** John Herberg, Oregon Toxics Alliance

Oregon Toxics Alliance (OTA) is a statewide organization working for all Oregonians to expose root causes of toxic pollution and help communities find solutions that protect human and environmental health.

1192 Lawrence St

Eugene, OR 97401

541-465-8860

www.oregontoxics.org

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## EXECUTIVE SUMMARY

This report uses data from the Oregon Department of Agriculture, the Oregon Department of Human Services and the Oregon Department of Forestry to develop a better understanding of how and why Oregon school children are being exposed to pesticides during their schools activities.

Reviewing pesticide complaint logs, Oregon Toxics Alliance found that highly toxic pesticides linked to cancer, reproductive effects, nervous system damage, and learning disabilities are routinely used in and around Oregon's schools.

We begin with several real life examples of exposure. An overview of recent medical and scientific research pertaining to children's health and pesticide exposures follows. As the research shows, children are highly vulnerable to pesticides, because they are still developing and growing.

Subsequent sections cover data collected about Oregon schools. Fifty-six separate cases of childhood pesticide exposure have been reported in Oregon since 1990 – forty-three occurring within the past ten years. Fourteen of these complaints resulted in school evacuations, treatment in emergency rooms or by physicians, and citations for a violation of state pesticide laws. Some students came in direct contact with pesticides for what was termed "instructional purposes".

The data also shows pesticides from agricultural or timber operations drifting away from the application site and onto schools or school bus stops. In some cases pesticide drift was severe enough to cause school evacuations. A study using GIS mapping techniques demonstrates that large-scale aerial and ground applications of pesticides routinely occur within one mile of a school and that these applications are often repeated year after year.

These exposure incidents have come to light because concerned school administrators, teachers, neighbors and parents took the trouble to contact one of the two state agencies that investigate pesticide poisonings.

These recorded cases are only the tip of the iceberg. The records under-represent the actual number of pesticide poisonings at school activities because the association between a child's illness and a pesticide exposure is often not apparent to an adult. Children are often unaware or cannot express that they have been exposed. Furthermore, acute symptoms often mimic flu or respiratory ailments so teachers and

parents simply assume that the problem is a common illness and do not seek medical attention. Illnesses with long latency periods associated with pesticides (such as hormone disruption or cancer) will likely never be accounted for. Without laboratory tests or medical verification, state agencies will not classify an incident as a pesticide exposure or at best, will categorize the evidence as "inconclusive."

The report concludes with specific recommendations to protect children from pesticide exposures at schools and public facilities. First on the list is requiring Integrated Pest Management (IPM) practices in all schools, pre-schools and daycare facilities. Enacting comprehensive pesticide protections during childhood is a serious issue that lawmakers must address without delay because children's reproductive, immune and nervous systems are still developing, making them especially susceptible to pesticide poisons.

# EXAMPLES OF PESTICIDE EXPOSURE IN OREGON'S SCHOOLS

**February 2000 Wilsonville Primary School, Wilsonville:**

Three pesticides were applied to the interior, attics and exterior of an elementary school. During the following week, four teachers experienced illness and "about half of one class [in the sprayed wing] left school . . . with strep throat or other illness." One teacher's symptom of a tongue covered with blisters was confirmed by a physician as probably resulting from pesticide exposure.

**October 2001 Chehalem Valley Middle School and Antonia Crater Elementary School, Newberg:**

A mix of herbicides was applied to a grass seed field about 3/8 mile north of the middle school during a football game and other sports activities. Staff, students, and parents reported a "strong disagreeable odor" and headaches. The activities were canceled and "custodians left the building due to the smell." The next morning the odor was detected inside the middle school. As a result, both the middle school and the elementary school were closed for the entire day. When the pesticide applicator realized the schools were closed, he resumed the spray operation. A letter of advisement was issued to the applicator who was the owner of the grass fields.

**April 2003 Canby High School, Canby:**

Students were assigned an experiment using 50% malathion. According to the Department of Human Services, organophosphates such as malathion "can result in acute toxic exposures, as they are readily absorbed into the body by inhalation, ingestion and skin penetration." A pint of malathion was accidentally spilled inside the classroom, the glass container shattered and one student was exposed immediately when "the contents splashed into his eyes." Two more students were directly exposed - one who tried to ignite the spill with a lighter, and one who tried to pick up glass shards. When staff from an adjoining classroom attempted to assist, it was discovered that the eye wash station in the room did not work. The first student was taken to another eye wash station and then made to rinse off completely in the gym shower. Three students reported inhalation of malathion vapors, and received medical treatment. Staff members first initiated an evacuation of the classroom and then the entire school was evacuated when "the odor permeated other teaching spaces."

**March 2004 Wy'east Middle School, Hood River:**

An anonymous caller contacted the Oregon Department of Agriculture (ODA) to report that she had seen spray of a nearby pear orchard drift onto school grounds. Subsequent tests revealed pesticide residue on goal posts, grass, and the fence. Many of those pesticides were labeled, *"Do not apply this product in a way that will contact workers or others either directly or through drift."* Complaints about drift onto school grounds had been noted in previous years. The pesticide applicator was cited.

**April 2007 Linnton Community Center Day Care and After School Program, Multnomah County:**

A daycare center was evacuated after pesticides drifted onto the grounds from an excessive herbicide spray nearby. Several children were taken to the hospital for treatment for rashes, coughing, malaise and breathing problems. They had to be decontaminated in showers outside of the hospital emergency room before entering. Samples and swabs confirmed herbicide was deposited on the daycare site. The pesticide applicator was found to be in violation of the law.

**October 2007 Lebanon High School, Lebanon:**

Students taking an agricultural science course were assigned to use 2,4-D and Triclopyr BEE on school property. 2,4-D is a major component of Agent Orange, and a 100 yard buffer zone is required around salmon habitat for Triclopyr BEE. Students were not given personal protective equipment, nor were they informed about clean-up measures. Students were allowed to use equipment that was not working properly. Furthermore, the teacher who made the assignment did not have a public pesticide applicator license as required by law. One or more students were sprayed when equipment malfunctioned which resulted in skin rashes for several days. The teacher was cited for violation of state and federal law.

## INTRODUCTION

This report represents one segment of OTA's research into the safety and health of Oregon school children as related to pesticide[1] exposures at school activities.

In 2006, OTA began to study the occurrence of pesticide applications on school grounds or in close proximity to schools. Upon finding a pattern of pesticide use and evidence of resulting problems, we brought the subject to the attention of parents, school administrators, medical professionals and elected officials.

In 2007, the Oregon Senate Committee on Environment and Natural Resources held a hearing on the issue of pesticides and school children's health, spurred by OTA's preliminary evidence. The hearing resulted in the establishment of the 2008-2009 Senate Workgroup on Pesticides In and Around Schools.

As Oregonians learn more about the frequency of school children's exposure to pesticides, their concern and uncertainty increase. Concerns for children's safety and health are paramount, but deciding on a course of action to reduce children's exposures is difficult because of confusion over the easy availability of products, their widespread usage and the lack of information about their relative safety. Little is known about the synergistic effects of pesticides from multiple routes of exposure, including cumulative exposures from school, home, public buildings, parks, and food.

***Records kept at state agencies show that Oregon school children are being exposed to pesticide poisons at school sites and at school bus stops.***

This report is guided by the moral standard that society has the responsibility to protect children's health and well-being. OTA has chosen to study the problem of children and pesticide exposures in Oregon's schools for the following five reasons:

- Children are uniquely vulnerable to harm from pesticides and deserve to be protected.
- Records kept at state agencies show that Oregon school children are being exposed to pesticide poisons at school sites and at school bus stops.
- State or federal laws that set standards based on public health criteria for pesticides used in or near schools are absent or deficient.
- The State of Oregon is charged by law (ORS 329.005) with the responsibility of creating a healthy learning environment for school children.
- A secondary population of adults who work or volunteer in schools is also being exposed to pesticides on school sites (although this report is not intended to explore exposure to adults in a school setting).[2]

## CHILDREN'S HEALTH RISKS FROM PESTICIDE EXPOSURE

Advances in scientific awareness, medical research and public health policy have forever changed the assumption that pesticides in any amount are safe around school children. At the heart of this transformation in scientific and public opinion about pesticides is evidence that children face greater health risks from pesticide exposure and that the list of banned pesticides known to harm humans continues to grow.

***A growing body of scientific evidence confirms that even minute amounts of pesticides can adversely affect a child's neurological, respiratory, reproductive, immune, and endocrine systems.***

Children face magnified hazards from pesticide exposure due to their small size and because their bodies are still growing and developing. The rapid changes in their organ and neurological systems make them more sensitive to toxic exposure. According to the US EPA's fact sheet, *Pesticides and Their Impact on Children*, a child's developing organs are less capable of detoxifying and excreting harmful chemicals than adults. Government researchers have also concluded "children's systems provide less natural protection than adults."[3] A landmark review by the National Academy of Sciences similarly determined that children may be especially vulnerable to detrimental health effects from pesticides.[4]

Pesticide poisoning involving children includes both acute as well as chronic health impacts. Acute impacts are frequently misdiagnosed as the flu or upper respiratory illness because the symptoms are similar in their presentation: headache, asthma attacks, fever, lethargy, nausea, diarrhea, rashes, scratchy throats and watery eyes, and irritability. Parents and teachers may not think to link these symptoms with a possible pesticide contact and as a result do not seek timely medical attention for the illness.

Chronic health impacts may take months or years to develop. In fact, the medical research suggests that there are different latency periods for health problems for each pesticide class.[5] From pediatric oncologists to health scientists, researchers are focusing on the increased risk of childhood cancers from pesticide exposures, particularly brain cancer, bone cancer and leukemia.[6]

Despite the limited understanding of how pesticides may lead to cancer, a number of associations between pesticides and childhood cancers have been reported in epidemiologic studies as a possible explanation for the rising incidence of childhood cancers.[7] According to the National Cancer Institute, cancer is now the leading cause of death by disease among U.S. children 1 to 14 years of age.[8]

A growing body of scientific evidence confirms that even minute amounts of pesticides can adversely affect a child's neurological, respiratory, reproductive, immune, and endocrine systems.[9], [10] For example, one study found that exposure to very low, biologically relevant concentrations

of a pesticide could harm male fetuses by reducing testosterone secretion and potentially leading to subtle dysregulation of reproductive development and adult infertility.[11] Evidence from a longitudinal study of women born in the 1950's and 1960's suggests that women who were exposed to DDT at a young age have a greater risk of developing breast cancer as adults. The authors concluded that the health significance of DDT exposure in early life may be large.[12] These studies increase awareness that seemingly insignificant exposures early in life may have damaging health results decades later.

***A nationally recognized team of scientists ... concluded that environmental contaminants, including pesticides, are an important cause of learning and developmental disabilities.***

A child's ability to reach his or her full learning potential may also be at risk. A nationally recognized team of scientists issued the 2008 *Scientific Consensus Statement on Environmental Agents Associated with Neurodevelopmental Disorders* and concluded that environmental contaminants, including pesticides, are an important cause of learning and developmental disabilities.[13] These medical researchers stated that existing animal and human data indicate that a greater proportion of neurological disorders are environmentally influenced than has yet been generally acknowledged.

## WHERE ARE PESTICIDES BEING USED?

### ON SCHOOL GROUNDS

Children are being exposed to pesticides at school sites because most Oregon schools routinely use pesticides inside buildings and on playgrounds, ball fields, gardens and open areas.[14] ,[15], [16], [17]

Children may receive amplified exposures because they tend to place their hands in their mouths and engage in activities on or near the ground. When classrooms or hallways are sprayed or fogged for pests, pesticide residues can linger on floors, carpets, toys, furniture and indoor dust. The vapor of some pesticides can hang in the air at ground level, precisely at the level where small children inhale. Vapors can remain for hours or days in an indoor environment. The half-life of the pesticide classes of chlorpyrifos and pyrethroids is estimated to be 30 days indoors, but some studies show these chemicals present in interior air up to eight years post application.[18] [19]

Pesticides used outdoors can persist in soil, on vegetation and on lawns. They also travel from outdoors to indoors through ventilation systems or open windows. Products used on lawns and fields can later be tracked inside buildings on the bottom of shoes, increasing the chances of prolonged exposure.

It is commonly assumed that pesticides will "wear off." However, several studies looking at the migration of the lawn chemical, herbicide 2,4-D, measured indoor exposure levels at ten times higher on surfaces such as table tops and floors than pre-application levels.[20] The Centers for Disease Control (CDC) and others published studies are finding lawn care pesticide residues in the bodies of children ages 6-11 at significantly higher levels than all other age categories.[21]


The herbicide 2,4-D, which is among the pesticides detected in children's bodies, happens to be the sixth most heavily used product in Oregon in forestry, farming and roadside maintenance. According to the 2007 Oregon Pesticide Use Report, 1,270,276 pounds of 2,4-D were used in Oregon.[22] This particular herbicide is highlighted, because it is also commonly applied to school playing fields. For example, soccer fields are typically treated with a mixture of pesticides designed to kill fungus, weeds, and insects. Many of these products contain the herbicide 2,4-D. Considering its universal use in the "pesticide toolbox" it should be noted that its prevalence at school sites should be scrutinized immediately, especially in view of recent studies indicating that 2,4-D exposure in childhood correlates with an increase in leukemia and non-Hodgkin's lymphoma incidence.[23] [24] [25]

Often, the person using the pesticide is a well-intentioned school employee, not a trained and licensed applicator.[26] School employees are not always licensed as pesticide applicators. This also means they are not licensed to supervise a pesticide application. Yet, some schools have students apply pesticides at the school site under the guise of "instructional activities." In several cases, Oregon school children using pesticides as part of an assignment were not provided with personal protective equipment or wash-up stations, nor were they under the supervision of a licensed applicator. In some cases, students were not being supervised at the time of a spill or equipment malfunctioned occurred.

## AROUND SCHOOLS

Exposure can also occur from pesticide use that takes place outside the school grounds. Many rural schools are adjacent to forestry and agricultural areas. When pesticides are applied by helicopter, airplane, or airblast, the toxic vapors can drift onto school grounds or cover school bus stops on rural roads. These vapors can then be inhaled or absorbed by children. Evidence of pesticide residues in children's bodies has been documented. Some of the cutting edge research is taking place in Oregon, performed by scientists at the Oregon Health and Science University. Researchers tested urine samples for exposure to agricultural pesticides in 176 children 2–6 years of age in three Oregon farming communities, and found that proximity to orchards and fields where air blast spraying and drift transport occurs increases the likelihood that pesticide metabolites will be detectable in children's urine.[27]

> ***"Off-target spray can affect human health and the environment. … Drift can also contaminate a home garden or another farmer's crops, causing illegal pesticide residues and/or plant damage."***
>
> ***- US EPA***

Drift is an unavoidable consequence of pesticide spray. Drift is defined as any pesticide vapor, droplets or mist that leaves the target area, either at the time of application or later as volatilizing gases.

Pesticide drift can travel over long distances depending on topography, wind and weather.[28] Pesticides with high vapor pressures result in small droplets that can stay suspended in air and be carried by air currents until they contact a surface or drop to the ground. Higher application rates (pounds per acre) also contribute to drift that can travel long distances. These factors make pesticides nearly impossible to keep on the application site. Pesticide drift following typical aerial applications ranges from 330 feet to over 5,000 feet.[29] Drift from orchard mist blowers has been measured at distances greater than 700 feet.[30] Drift from pesticides is often invisible, making it difficult to detect without finely tuned monitoring equipment.[31] Detection by smell is sometimes difficult because manufacturers and applicators can apply odor maskers (e.g., pine scent) or odor neutralizers. Masking the chemical smell of pesticides deprives people

of an important means of detection, reporting and avoidance.

In the case of Oregon's school children, it is important to emphasize that pesticide exposure at a school or a school bus stop can result from nearby pesticide applications. Schools in close proximity to grass seed fields, orchards, forests, Christmas tree farms, nurseries, and fruit and vegetable crops are at risk of impacts from pesticides that drift off-site.

Traveling pesticide gases, vapors and droplets may impact school or residential property both immediately at the time of application and over the course of the following days as the chemicals re-volatilize and continue to move through the air. For example, in 2007 and 2008, air monitoring was conducted at elementary schools in Florida's agricultural regions. Test results show that during multiple months the air at the school was contaminated with pesticides known to contain neurotoxins and carcinogens. A number of these detected pesticides have been or will soon be banned in Europe.[32] A number of such other cases have been documented around the country prompting states like California to pass laws that allow a quarter mile no-spray buffer zone to be set around schools. [33]

Slash, burn and spray operation next to Triangle Lake School

## DATA SHOWING PESTICIDE EXPOSURE RISKS IN OREGON SCHOOLS

The Oregon State Department of Agriculture Pesticides Division and the Oregon Pesticide Analysis Response Center receive numerous complaints of pesticide misuse. Over fifty-six pesticide exposure complaints involving schools have been documented since 1990.

### A Quick Glance at Ten Years of Pesticide Exposures at Oregon Schools – 1998-2007:

- At least forty-three (43) cases of pesticide exposure complaints were collected by the Oregon Department of Agriculture and the Department of Human Services since 1998. Eleven (11) of these took place in the past five years.
- In thirteen (13) cases involving schools, state investigators found that pesticide users had violated the law or that there was sufficient evidence to require a letter of advisement.
- In at least six (6) cases, children and school staff complained of illness and in some cases, medical attention was required for exposure symptoms.
- In four (4) cases students had to be evacuated from classrooms or ball fields due to noxious pesticide vapors.
- In three (3) cases children were exposed while waiting at school bus stops. In two (2) of those cases children suffered adverse effects from aerial sprays. In the third case, a parent removed children from the bus stop.

These recorded cases are only the tip of the iceberg. The records under-represent the actual number of pesticide poisonings. There are a number of reasons why agencies have incomplete data.

First of all, the association between a child's illness and a pesticide exposure is usually not apparent to an adult. Children are often unaware or cannot express that they have been exposed. Furthermore, acute symptoms often mimic the flu or respiratory ailments. Teachers and parents simply assume that the problem is a common illness and do not seek medical attention.

In the majority of cases where parents, staff and teachers did report that the school children in their care were displaying symptoms of pesticide poisoning (headache, asthma attacks, nausea, skin rashes, coughing, eye irritations, etc.), they were still reluctant to take the child to a doctor.

Illnesses with long latency periods associated with pesticides (such as hormone disruption or cancer) will likely never be accounted for. Without laboratory tests or timely medical verification, state agencies will not classify an incident as a pesticide exposure, or at best, will categorize the evidence as "inconclusive."

A physician's group pointed out a second reason for a lack of medical verification in a study. This investigation found that clinical manifestations of acute poisoning have only been studied for a small fraction of pesticides commonly used and that doctors are

generally unfamiliar with the exposure symptoms.[34]

The bar to establish clinical verification is very high. The Oregon Health Division published a Pesticide Reporting Guideline for physicians in 1995. The Guideline helps explain the difficulty of making a pesticide exposure diagnosis:

"There are over 8,000 pesticides registered in Oregon. . . . The acute effects of pesticide exposure may occur within minutes, or up to 12 hours after an acute exposure. Low level chronic exposure may manifest itself only after several days or weeks of exposure. The latency period for chronic health effects associated with pesticide exposure varies with the specific chemical and effect, and is often not well established."

- Oregon Health Division Publication, February 1995

Many physicians and other clinicians do not file reports because they are unaware of the reporting requirements in suspected pesticide poisonings. By law, under Oregon Administrative Rules Chapter 333, Division 19, all Oregon physicians and other health care providers are required to report, within one working day, patients whose symptoms they suspect may be caused or exacerbated by exposure to pesticides. Even when reports are made, residue swabs, soil samples or blood or urine analyses are rarely gathered, making it difficult to verify beyond doubt that poisoning and/or a violation of law took place.

A third reason why the records on file do not reflect the full scope of the problem is that people are often reluctant to report to state agencies, or do not know where to file a complaint. It takes a person with the time and inclination to find the government agency contact information and initiate the call. After that, the person must have enough evidence and confidence in what they observed to participate in a follow-up investigation. As is often the case a complainant files anonymously, which can prohibit a complete follow-up.

The fact that there *are* reported cases of suspected exposure episodes in or near schools resulting in illness, evacuations and citations points to a more pervasive problem than has ever been suspected. However, no state agency or medical center is attempting to collect data on pesticide-related illnesses that have delayed effects, such as learning disorders, the onset of asthma, cancer, or a lifetime of chemical sensitivity.

New ways of estimating the various exposure pathways for Oregon's school children are needed. To illustrate the potential problem of adverse effects from off-site sources, Oregon Toxics Alliance has supported a *Schools and Forestry Pesticides Mapping Project* (see Appendix C) that looks at the use of pesticides (mostly herbicides) on forestry holdings within one mile of schools.[35] The data is gathered by studying records of forestry pesticide notifications required by the Oregon Department of Forestry. The maps reveal a pattern of aerial pesticide sprays occurring close to rural schools and residential areas. In many cases pesticides are applied repeatedly at the same location near a school, often over the course of multiple years.

Federal and state laws have established buffer zones that protect aquatic habitat and endangered species of fish from pesticide

drift. The State of Oregon also promotes agricultural techniques that control drift on crops such as grapes and other "sensitive vegetation" from harm caused by pesticide spray.[36] However, the State of Oregon does not protect children at school with any safety buffer zones. There is no requirement that a school or school district receive a notice if a large-scale forestry or agricultural pesticide application is planned close to a school.

Clearly, our school children are at unnecessary risk. So, what can we do to better protect them?

## SOLUTIONS

As this report has shown, children are at great risk when exposed to pesticides, and they are being exposed within our public school system. The solution is to reduce pesticide use in and around schools, and adopt the use of pest control methods that are safe for children.

> ***"I believe very strongly that we need to look at ways to minimize the exposure of school children to pesticides and other harmful chemicals while at school."***
>
> ***- Susan Castillo, Oregon Superintendent of Public Instruction 04/25/2007***

Thirty-three states have taken action to address pesticide use in and around schools, and 25% of all states have specifically adopted Integrated Pest Management (IPM).[37] In contrast, Oregon is moving in the reverse direction. Our state lacks a statewide policy to promote safe pest management practices on and near school sites.[38] Worse yet, amendments to Oregon State Statutes in 2001 abolished the Statewide Integrated Pest Management Coordinating Committee.[39] As a result, there is no longer any statewide coordinated effort to improve pest management.

Oregon Toxics Alliance recommends that Oregon take immediate action to establish requirements for verifiable and comprehensive IPM programs in all schools and school districts. IPM is a pest control method that:

- requires a science-based and systematic approach to addressing pest issues,
- is successful in the school environment because proactive pest prevention techniques, such as behavioral (sanitation) and mechanical (exclusion) strategies, can be incorporated into the existing custodial and maintenance activities such as sanitation, energy conservation and infrastructure maintenance,
- has been found to save money for school districts,
- reduces pesticide use overall in favor of safe, non-toxic alternatives,
- prioritizes human and environmental health, and
- guarantees the right to know about pesticide applications that may affect children participating in school activities.

Oregon's lack of attention to the need to protect children from pesticide exposure is prompting volunteer groups to take on vital environmental health advocacy work. One such organization working toward solutions is Oregon Pesticide Action Workgroup (OPAWG). OPAWG is a coalition of rural residents, farmers, health care professionals, agricultural workers, environmental health and human rights advocates. The coalition has developed a *Seven-Point Plan to Protect Children from Exposure to Pesticides* (see Appendix C). Implementing this plan can successfully reduce pesticide exposures for children while promoting sustainable agriculture and timber harvesting. The plan

responds to Governor Kulongoski's call-out on children and pesticides[40] and is aligned with his Sustainable Oregon and Toxics Use Reduction Roadmap.

> ***"Lane Eugene School Distract... feel[s] it is our responsibility to create healthy learning environments where our students can work at their full potential. We applaud efforts to implement Integrated Pest Management in Oregon schools and protections from pesticide drift."***
>
> ***- Debbie Egan, Lane ESD Superintendent, and Lane ESD Board 03/18/08***

Oregon Toxics Alliance's efforts in 2007 alerted state legislators to the problem of pesticides, children's health and schools and prompted members of the Oregon State Senate to convene a workgroup. Under the leadership of Senator Suzanne Bonamici, the Workgroup on Pesticide Use In and Around Schools was formed in October 2007. The goal of the Workgroup is "to minimize exposure – especially of children – to pesticides."[41] School-related organizations and administrators, state agencies, agricultural and natural resource interests, businesses, environmental health and other nonprofit organizations are working together to determine how to solve the problem. The Workgroup delivered a progress report to the Senate Committee on Environment and Natural Resources in February 2008. There may be a Workgroup proposal for legislation related to school integrated pest management policies submitted for consideration by the 2009 Legislature.

## CONCLUSION

School children are being exposed to toxic chemicals as an unavoidable consequence of pesticide use in and near schools. Oregon can look at data from other states to confirm that pesticide drift is detectable in the air surrounding schools that are near farming and forestry activity. Data from Oregon's own agencies confirm that pesticides used in schools or deposited directly onto school grounds from drift have sickened teachers and school children. In the short term, Oregon must do more to protect children at school and in all public places and facilities. Ultimately, a solution must include ways to shift facility maintenance personnel and natural resources managers away from the use of toxic pesticides. We can and must do more to promote pest management practices that protect children's health and encourage research on alternatives to pesticides.

Under the Endangered Species Act, there are laws requiring pesticide applicators to observe pesticide buffer zones on streams that are home to Oregon salmon.[42] Our government protects salmon because we understand their vulnerability and the benefits of maintaining their health and well-being. Our children deserve the same consideration.

The weight and authority of the medical data confirming that children are particularly susceptible to health risks from pesticides, along with irrefutable evidence of pesticide exposures in Oregon schools, suggest profound implications for the family, school system, local community and greater society.

To reverse the trend of increased rates of childhood health and developmental impairments, Oregon must immediately raise the level of safety and health protections across the state to meet the highest possible standards for children at all stages of their development.

## APPENDIX A

## SCHOOLS AND FORESTRY PESTICIDES MAPPING PROJECT

The following maps represent pesticide spray operations on timber land next to various Oregon schools over the last sixteen years. Note: the maps do *not* include agricultural sprays, because that information is not available. Therefore, the actual amount of pesticides being used next to schools is actually *under represented* here.

### Key:

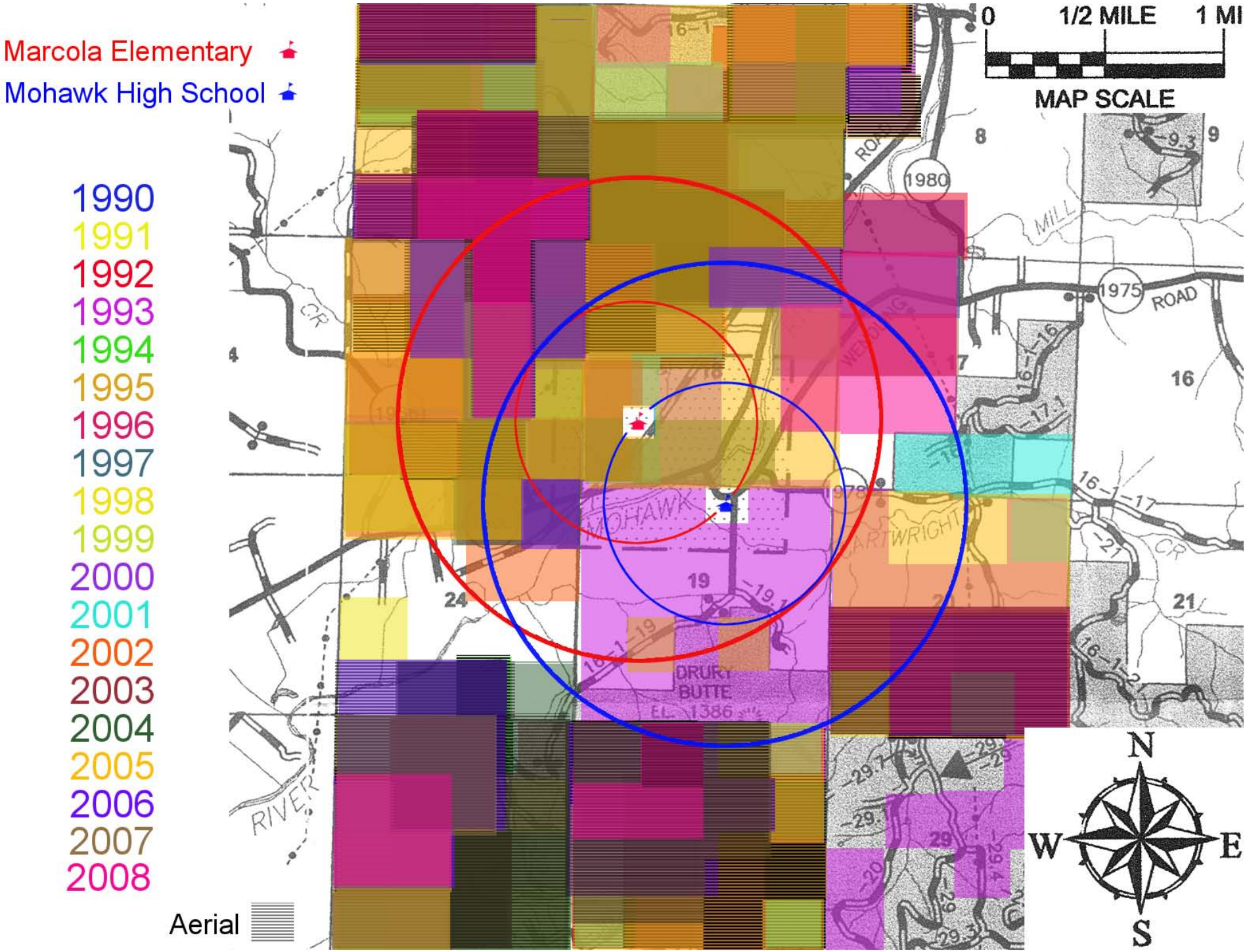
- The red circular lines around the schools represent ½ and 1 mile radii
- Sprays occurring within each year are denoted by a different color

The *Schools and Forestry Pesticides Mapping Project* is a project of the Forestland Dwellers and Oregon Toxics Alliance.

## MARCOLA ELEMENTARY/MOHAWK HIGH SCHOOL

Marcola Elementary School, 2007


Mohawk High School, 2007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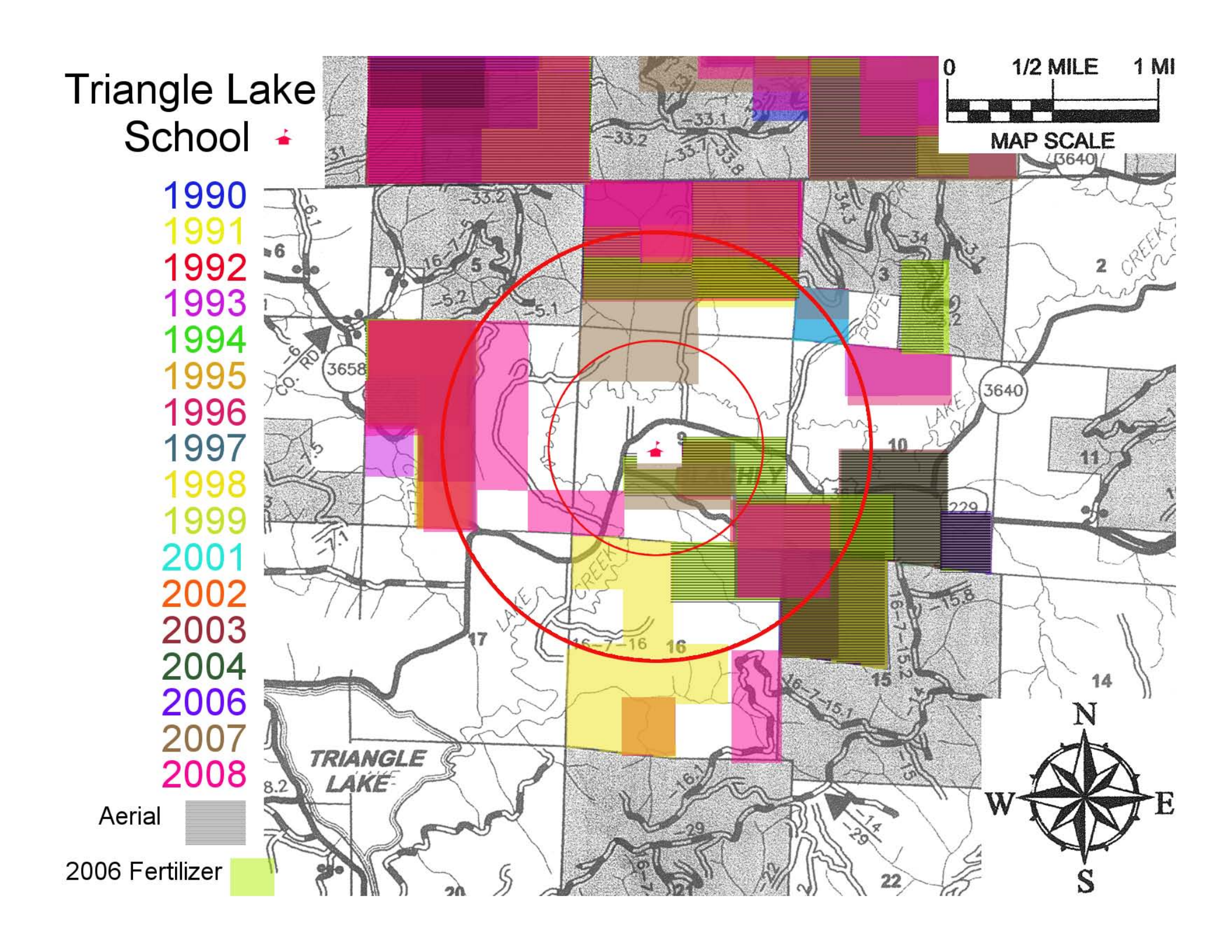
## TRIANGLE LAKE SCHOOL

Triangle Lake School, 2008


Triangle Lake School
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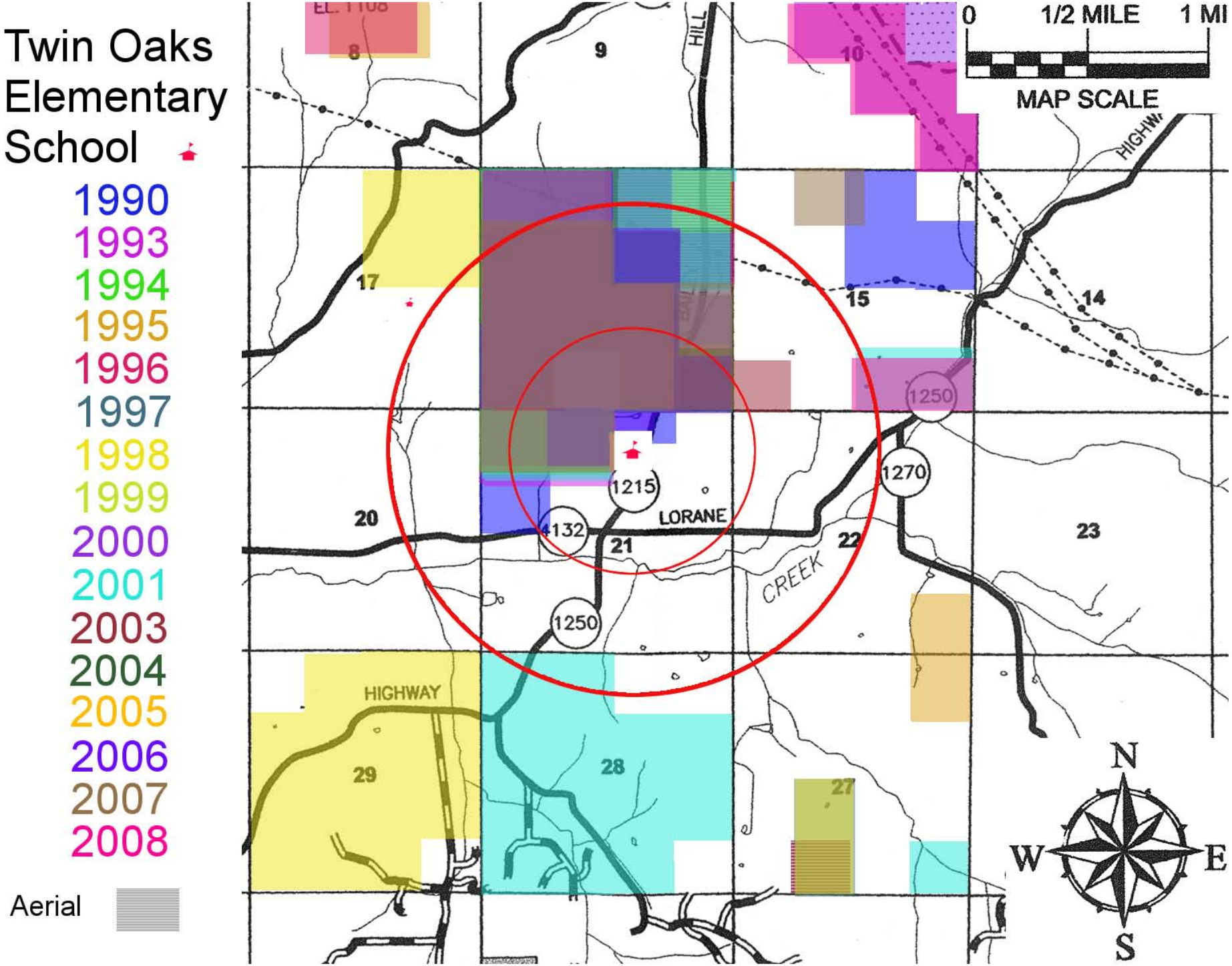
## TWIN OAKS ELEMENTARY

Twin Oaks Elementary, 2007


Twin Oaks Elementary School
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MAP SCALE
HILL
HIGHWAY
LORANE
CREEK
HIGHWAY
1250
1270
1215
1132
1250
8
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# APPENDIX B

## TABLE 1 - PESTICIDE EXPOSURES AT SCHOOLS

The following is a list of fourteen cases of pesticide exposures at schools from 1998-2007. All cases resulted in detection of pesticides on school grounds, a pesticide use violation or letter of advisement, medical treatment, and/or evacuation of the school.

**Key:** Violation issued by ODA

Medical treatment sought

School/Children Evacuated

| | ODA Log Number | Date | Narrative | Location |
|---|---|---|---|---|
| 1 | 984406 | 9/23/98 | Malathion was used indoors in high school daycare resulting in misuse of product. Children smelled pesticides through vents. Children were removed from classroom. Staff felt sick – sought treatment at emergency room of hospital. Applicator found in violation. | West Albany High School, Albany, Linn County |
| 2 | 992148 | 3/19/99 | Chlorpyrifos drifted onto 3 teachers and 18 children at recess. Samples taken at 146 feet were found positive for Lorsban 4E. Violation of ORS 634. | Head Start School , Milton-Freewater, Umatilla County |

| | | | | |
|---|---|---|---|---|
| 3 | 002201 | 3/10/00 | Permethrin, Esfenvalerate, Cyano-3-phenoxyphenal were sprayed w/in school. Illnesses occurred over next few days. Four teachers became ill and "about half the class left school . . . with strep throat or other illness." Letter of Advisement was issued. | Wilsonville Primary School, Wilsonville, Clackamas County |
| 4 | 002217 | 3/14/00 | Aerial fungicide Chlorothalonil sprayed on filberts near Ewing Young Elementary. Students were not allowed outside and school requested future ODA notifications. Resulted in drift violation. Chemical detected on school grounds. | Ewing Young Elementary School , Newberg, Yamhill County |
| 5 | 011071 | 8/10/00 | Mec Amine-D sprayed by unlicensed applicator during school hours. Found in violation of ORS.634. | Floyd Light School, David Douglas School District, Portland, Multnomah County |
| 6 | 022137 | 10/24/01 | Grass seed field spray drifted onto school grounds. There were complaints of illness. Owner of the nearby orchard received a Letter of Advisement (flufenacet, oxyfluorfen, 2,4-D, pendimethalin). Two schools were closed as a result of spray odors permeating the building. | Chehalem Valley Middle School, Newburg, Yamhill County |
| 7 | 034398 | 4/28/03 | During a student experiment, Malathion 50 spill occured in classroom laboratory. Four students were treated for exposure. Odor permeated "entirety" of the school, so school was evacuated. | Canby High School, Canby, Clackamas County |

| | | | | |
|---|---|---|---|---|
| 8 | 043345 | 3/9/04 | Pesticides applied with air-blast sprayer on pear orchard. They drifted onto school grounds. ODA swab tests revealed (Lorsban) chloropyrifos and lambda-cyhalothrin on goal posts, grass, and fence. Complaints had been noted in previous years. Applicator found in violation of ORS.634. | Wy'east Middle School, Odell, Hood River |
| 9 | 064341 | 5/3/06 | Pesticide applied on grass seed field. Parent reported "spray moving across the road toward the school grounds." Samples were taken by ODA. 2-4,D was detected on school grounds. | Jefferson High School, Salem, Marion County |
| 10 | 064357 | 6/23/06 | Student ingested ant bait. Violation of ORS.634 issued to the Lakeview School District. | Lakeview High School, Lakeview, Lake County |
| 11 | 071015 | 7/25/06 | Odor of pesticides smelled inside child development building with 32 children, 10 teachers and other staff. Illegal application took place 15 feet from building and damaged plants growing on school property. Letter of Advisement was issued for spraying a product in violation of its labeling requirement (not for urban uses). | Oregon Child Development Center and Head Start Facility, Klamath Falls, Klamath County |
| 12 | 071056 | 10/2/06 | Repeated use of an insecticide that was labeled "*Never use indoors*" inside a classroom. Teaching staff member became increasingly ill and sought medical attention at a hospital. Applicator(s) cited for violation of ORS.634. | Dallas High School, Dallas High School, Dallas, Polk County |

| | | | | |
|---|---|---|---|---|
| 13 | 074221 | 4/06/07 | The entire enter was evacuated after herbicides were sprayed on railroad tracks nearby. Several people, including children taken to Legacy Emanuel Hospital for "rashes, throat irritation, and breathing problems." Applicator cited for violation of ORS.634 | Linnton Community Center Day Care and After School Care Program, Linnton, Multnomah County |
| 14 | 082085 | 10/19/07 | Students assigned to use 2,4-D and Triclopyr BEE on school property. [Note: Triclopyr BEE requires a 100 yard buffer zone for salmon habitat.] Students were not given personal protective equipment, were not informed about clean up measures. Students used equipment that was not working properly at times. Teacher who made the assignment did not have a public pesticide applicator license. Student exposed to the spray developed a rash. Instructor was cited for violation of ORS.634. | Lebanon High School, Lebanon, Linn County |

## TABLE 2 – PESTICIDE EXPOSURE AT BUS STOPS

The following is a list of three cases of pesticide exposures at school bus stops from 1998-2007.

**Key:** Violation issued by ODA

Medical treatment sought

School/Children Evacuated

| | ODA Log Number | Date | Narrative | Location |
|---|---|---|---|---|
| 1 | No Log # | 4/19/04 | Fertilizer applied by air next to school bus stop. Coughing/hacking and reactions resulted. Students were in vicinity of bus stop. | Estacada High School Eagle Creek, Clackamas County |
| 2 | P04-033* | 5/6/04 | A bus driver smelled odors and observed spray drifting from an aircraft adjacent to the bus stop. Children were coughing and yelling to get on bus due to strong odor. A farmer had applied Bravo, Lorsban and MCPA to a grass field nearby. | Junction City School District, Junction City, Lane County |
| 3 | 054434 | 5/23/05 | An aerial application of Foray 48B leaked pesticides close to a school bus stop. A parent took all the students into car for protection. The applicator was found in violation of ORS 634 for faulty and negligent application because two drain valves were left open and "two course streams of liquid were seen coming from underneath the helicopter." | Estacada School District, Eagle Creek, Clackamas |

* Oregon Public Health Division Case Number

# APPENDIX C

## SEVEN POINT PLAN TO PROTECT CHILDREN FROM EXPOSURE TO PESTICIDES

1. **Require Kid-Safe Integrated Pest Management (IPM) Policies:**

   Require that all Oregon public schools (pre K through college) adopt and implement an Integrated Pest Management Policy (IPM) by 2012. IPM emphasizes environmental and human health goals by using preventative measures and non-chemical alternatives as the first steps in solving pest problems. Secure dedicated funding from the legislature to enable all school districts to implement IPM programs.

2. **Licensed Applicators:**

   Any application of chemical or bait must be done by a licensed pesticide applicator trained in IPM methods, using the least toxic alternatives.

3. **Notification and Posting:**

   Require that schools notify students, parents, faculty, and staff prior to pesticide application. Require that schools post notices of pesticide use before and after application on school grounds and include information about safe reentry times. Such notifications will also be supplied to user groups such as community or sports groups that are on school grounds on days when posting is necessary. Notifications must include exposure information (acute symptoms, delayed symptoms, medical resources, etc).

4. **Responsible Recordkeeping:**

   Support and fully fund Oregon's Pesticide Use Reporting System (PURS). Require information about pesticide use in all schools and within one mile of schools to be reported to the Department of Agriculture; this requirement should be included in the Pesticide Use Reporting statute.

5. **Protection from Off-Campus Pesticide Drift:**

   Require adequate buffer zones (suggested 300 yards) for aerial or airblast applications of organophosphate, phenoxy herbicides, fumigants and restricted pesticide classes based on level of toxicity and volatility.

6. **Invest in Sustainable Agriculture & Forestry by expanding Oregon's Pesticide Stewardship Partnership Program:**

   Require agricultural and forestry pesticide users within 1 mile radius of a school to participate in Oregon's Pesticide Stewardship Program, a joint program of OSU, ODA, and

DEQ. The program helps chemical users adopt best management practices, reduce drift and run-off, and monitor for pesticide residues, with the goal of protecting water, air, and soil quality. Provide the necessary funding to expand the Pesticide Stewardship Program.

### 7. Update ORS 634.650 – Oregon's original statute on IPM

- include human and environmental health as priorities
- emphasize least toxic alternatives as first solutions
- recommend the use of pesticides only as a last resort
- re-instate the requirement to use IPM at all state agency facilities
- require IPM in all public educational settings: preschools, K-12, colleges and universities
- reinstate the State IPM coordinator and funding for the program

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