

**LETTER OF CRITICAL CONCERN  
REGARDING  
CHEMICAL EXPOSURE FROM PESTICIDES**

March 3, 2010

To: City of Boise  
Boise School District  
Boise Parks and Recreation Department

Dear Leaders of Our Community:

This letter is prompted by a critical concern regarding the routine and numerous applications of chemicals made to grounds within Boise parks, schools, and other public places to control insects and weeds. Please carefully consider the merits of this letter before scheduling such applications this coming spring. *Specific immediate and long-term requested actions are found on pages 5 & 6.* We have spent considerable time researching this matter and have learned a great deal about healthier approaches to control pests. Citations and support for all of the statements in this letter as well as additional important information are included in the attached Supplemental Information. Please note that all references to “pesticides” below include herbicides.

**I. Cause for Critical Concern**

**There is a strong, undeniable association between pesticide exposure and disease. Countless studies associate pesticides with cancer, neurological damage, reproductive impairment, respiratory disease, and other debilitating chronic disorders.**

As pesticide use has increased over the last 50 years, so has the incidence of childhood cancer. Childhood cancer is growing at the rate of 1 percent per year, and is now the **leading disease-related cause of death in children.** Dr. David Cassidy, a Chlordane pesticide research toxicologist in Texas, stated that pesticides are able to cause at least two biological changes in the body that enable cancer to grow. First, pesticides have been shown to damage human DNA and genetic structure. Second, pesticides seriously weaken the human immune system, the body’s mechanism for fighting cancer. Numerous epidemiological studies describe the statistical relationship between high environmental toxicity from pesticides and increased incidence of new cases of specific cancers.

In addition to the relationship between pesticides and cancer, research correlating pesticide exposure and neurological disorders is abundant. Today, 17% of U.S. children under 18 years old suffer from some type of neurological impairment ranging from attention deficit disorder to severe autism; 45% of the neurotoxins (which cause

neurological impairment) that are identified in the Hazardous Substance Data Bank of the U.S. National Library of Medicine are **pesticides**. Experts have concluded that, **“Given the likely environmental aetiology of neuro-developmental deficits and their importance to families and society, prevention of exposure to neurotoxic pesticides should be made a public health priority. Existing uncertainties should not be used as an excuse for rejecting precautionary action.”**<sup>1</sup>

According to the EPA and other authorities, a number of pesticides commonly used in schools have been identified as neurotoxins or possible or known carcinogens or developmental and reproductive toxins (US EPA 2000, 2006; California EPA 2006). Children in our communities are being exposed to serious and known health risks.

The science is voluminous and complicated. But the simple truth is that when chemicals designed to kill insects enter the human body, they harm human cells in the same way they harm the cells of other living things. Chemical companies market their products as “safe,” but their standard of “safe” is driven by profit rather than by health concerns. Chemical testing for safety is done by the very companies marketing those chemicals, and there is little challenge to their right to secret both their ingredients and their testing methodologies. The US EPA has often simply accepted corporate claims without any further testing. So although entities applying pesticides may assume that the chemicals are safe because they are EPA approved, there are numerous examples of “approved” pesticides being subsequently banned after experience and independent research have shown them to be harmful, e.g. DDT, Dursban. The assumption of safe also fails to consider repeated exposure to any one individual and the cumulative effect of toxin exposures to many different pesticide “cocktails.” The EPA simply engages in “single chemical” risk assessment analysis which fails to consider the synergistic effect of exposure to more than one chemical over time.

### **Children are more susceptible to pesticide poisoning.**

Children are more likely than adults to come in contact with surfaces treated with pesticides, often have greater duration of contact, have greater skin surface area in contact with surfaces, and ingest dirt and dust via hand-to-mouth behavior (Zartarian et al. 1997; Reed et al. 1999). Thus, children are likely to receive more dermal and oral exposure to pesticides than adults in similar surroundings. Children may also be more exposed than adults via inhalation because children tend to be more active and thus have a higher respiratory rate. Children also spend more time outside than most adults, particularly in the spring and summer, which are peak spray seasons.

A leading authority on the association between pesticides and disease in children is Dr. Philip J. Landrigan, Chairman of the Department of Community and Preventative Medicine at the Mount Sinai School of Medicine in New York (also a professor of pediatrics and preventative medicine). In a June 1999 article, Dr. Landrigan discussed the

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<sup>1</sup> Potential developmental neurotoxicity of pesticides used in Europe, Environmental Health Journal 10/22/2008, 7:50

unique vulnerability of infants and children to pesticides<sup>2</sup> and concluded, “In addition to being proportionately more heavily exposed to pesticides than adults, infants and children are biologically more vulnerable to them.”

### **Cumulative Exposure.**

It is almost impossible to say categorically that impaired health results from one exposure to pesticides, although cases certainly exist: in February 2010, two young sisters died in Layton, UT apparently from the application of a pesticide used to kill voles in the family’s lawn. But more typically, serious health problems result from *cumulative* exposure. The appropriate question is not whether a particular application “caused” a disease but rather whether exposure to pesticides over time can be associated with later pathology. It is not appropriate for applicators to ignore the risks each application presents simply because there is no immediate negative health consequence to one particular pesticide exposure. Like second hand smoke and air pollution, each party contributing to toxic exposure is responsible for contributing to destructive cumulative exposure, and lack of immediate negative health consequences is not a shield for this responsibility.

Further, because the potential for multi-pathway exposure to pesticides is high, particularly for children, it is important to consider pesticide deposition, pesticides in air, and also pesticide volatilization to obtain a complete exposure picture. Most of the droplet fraction is deposited within a short time after a spray, but gas phase emission can continue from treated areas for several days, and skin contact with treated areas can result in dermal absorption and ingestion from hand-to-mouth contact. Although a pesticide is directed at one particular spot at one particular time, toxicity can travel beyond that spot and time to expose individuals outside the immediate area and time of the application.

### **Applications in Boise – not monitored, coordinated or evaluated for health risks.**

Boise experiences an excessive number of chemical applications. Applications are made by numerous entities, often in the same area, with no apparent coordination or evaluation of the cumulative health risk arising from frequent exposures. Applications are made by the City of Boise, the Boise School District, Ada County, the Irrigation District, the Mosquito Abatement District, ACHD, businesses, homeowners’ associations and numerous individuals and private companies over private properties. Frequently, pesticide applications occur within the same area within a very short period of time. For example, in March 2009, parents of children at Riverside Elementary School observed three scheduled chemical applications (one of which was scheduled but stopped before it started) over the same area of land within a span of three days. Children who were outside at recess when the spraying occurred were exposed to two chemical applications within three days and would have been exposed to a third if that application had not been stopped.

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<sup>2</sup> The Unique Vulnerability of Infants and Children to Pesticides, Philip J. Landrigan, et al. EHP v. 107, Supp. 3 June 1999

It is not unusual to witness several trucks in a single neighborhood making pesticide applications. Many companies put their clients on a spray schedule which ensures constant, repetitious exposure to chemicals. In one spray schedule provided by one chemical landscaping company for just one short street (Portside Avenue) and only four homes, an astonishing **twenty-six** applications were scheduled over the spring and summer spray season. In five years of applications for four homes, the neighborhood experiences over **125** applications. And of course the evaluation of cumulative toxic exposure to residents of this particular neighborhood must include not only these applications but all of the applications for the other homes in the neighborhood, the common areas, the nearby parks, the nearby Greenbelt, the nearby school, the nearby New York Canal and mosquito abatement.

While you, the recipients of this letter, do not now have direct control over private pesticide applications, you do have the ability to educate parties to the dangers of pesticide exposure, and we feel you have a responsibility to consider these exposures in evaluating the additional exposures contributed by public entities. If a child is exposed to five neighborhood pesticide applications in one week, school, city, and other governmental entities must consider this in evaluating the health risks of additional applications that will further expose that same child.

### **Casual Execution of Application - Lack of Precautions.**

The authors of this letter have repeatedly observed that the overwhelming majority of applications in Boise, whether made by public entities or private companies, are conducted with few precautions for health and safety (with the exception of Boise Parks and Recreation which uses yellow flags to mark sprayed areas). These applications are undertaken in a shockingly casual manner: no prior notification, no blocking off of areas to be sprayed, no advisory signs that an area has just been sprayed. Applicators for the most part treat these chemicals as if they were water. A stark example of this is the application which was to be made by the Boise School District at Riverside School last spring where the applicator was going to apply enough Roundup to (in his own words) “kill everything” while the children were outside during recess, directly exposed to the chemical application. As noted above, although that application was stopped, two other spray incidents occurred (other entities) within 3 days of the scheduled application where pesticides were sprayed directly into the Riverside field while children were outside playing at recess.

## **II. Other Jurisdictions Addressing the Problem**

Communities all over the world are taking action to reduce pesticide exposure (and some have been doing so for many years). A few powerful examples are:

1. In 2009, Oregon passed SB 637 requiring all public and private schools, K-college, to adopt comprehensive pesticide avoidance policies with the goal of protecting children’s health by **avoiding all exposures to pesticides in schools.**

2. In the U.S. Congress, the School Environment Protection Act of 2009 (SEPA) is pending - the purpose of this bill is to **manage schools without toxic pesticides** and to provide parents, guardians, and employees with notice of the use of pesticides in schools, and for other purposes. A full description of this bill is attached in the Supplemental Information.

3. In Canada, the provinces of Quebec, Ontario and New Brunswick have all enacted **bans on the sale of lawn care pesticides**, and other provinces including British Columbia are currently considering similar measures to **ban the cosmetic use of pesticides**. Dozens of cities across Canada have also banned cosmetic use of pesticides.

4. Portland, Oregon began a **Pesticide Free Parks program** in 2004; there are now five such parks in the City with more to come.

5. New Hampshire has introduced House Bill 1456, to create a committee to “study the effects of a moratorium on the use of...pesticides and herbicides...in residential neighborhoods, school properties, playgrounds, and other places children congregate.”

### **III. Immediate Action Requested**

The undersigned recognize that there are longstanding practices in Boise of liberally using pesticides to solve insect and weed problems, and that these practices are often highly consistent with public expectations. We understand that education is absolutely necessary, and that healthy pest/weed management can be a challenge at times. But pesticide reduction has practical and cost/benefit solutions both short-term and long-term; other communities offer good examples for successful healthy approaches. And we cannot wait for change while the health calamities continue to pile up. Therefore, we ask that all public entities in Boise immediately take the following short term actions to reduce pesticide exposure:

- Do not apply pesticides to schools during school hours or when any children are present.
- Schedule all school applications at the beginning of school vacations which are at least a week long.
- Do not spray parks or other city areas when people are present and create reasonable buffer zones around area to be sprayed.
- Give advance notification of all applications which include the names of the chemicals used, reason for application, safety precautions and scheduled date and time of application.
  - Schools need to notify parents via letter from the principal sent home with students.
  - Notices need to be posted in other public areas in advance of spraying. Notices should be highly visible, easy to read, and contain the same information listed above.

- All areas in which pesticides have been applied need to be clearly flagged so as to give citizens a reasonable chance of avoiding the area where volatile chemicals may be present.
- Keep logs of all applications with chemicals used, date, amount applied, and make information easily accessible to the public.

#### **IV. Long-term Action**

- Reduce chemical use and replace with other methods.
- Educate public on risk of pesticides.
- Educate children in schools on risk of pesticides (incorporate into curriculum).
- Evaluate cumulative exposure resulting from applications and associated health risk.
- Create pilot programs for pesticide-free parks and schools.
- Move towards landscaping which is not chemically dependent.
- Undertake and publicize cost analyses of chemical applications and other costs associated with turf landscaping versus lower maintenance and environmentally friendly landscaping.
- Create organic urban gardening programs in parks and schools to promote productive, healthy, environmentally friendly and economic use of land.

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As the leaders of the City of Boise, you have the right and responsibility to act on behalf of the health and well-being of the citizenry. We strongly urge you to act upon this letter with all due speed this spring and immediately create a healthier and more environmentally friendly urban environment for all of us. We believe now is the time to take action, stop poisoning our children and ourselves, and move to a more responsible approach to personal and environmental health. We are ready and willing to work with you to educate and implement effective solutions.

Sincerely,

Charlie Smith  
 Trevor Schaefer  
 Susan Medlin  
 Mark Masarik  
 Rebecca Hardesty

## SUPPLEMENTAL INFORMATION and CITATIONS

1. Sustained Exposure to the Widely Used Herbicide Atrazine: Altered Function and Loss of Neurons in Brain Monoamine Systems, by Veronica M. Rodriguez, Mona Thiruchelvam, and Deborah A. Cory-Environmental Health Perspectives • VOLUME 113 | NUMBER 6 | June 2005
2. Organophosphate Pesticide Exposure and Neurobehavioral Performance in Agricultural and Nonagricultural Hispanic Workers, by Joan Rothlein, Diane Rohlman, Michael Lasarev, Jackie Phillips, Juan Muniz, and Linda McCauley, Environmental Health Perspectives • VOLUME 114 | NUMBER 5 | May 2006 691
3. Variation in Organophosphate Pesticide Metabolites in Urine of Children Living in Agricultural Communities, by William E. Lambert, Michael Lasarev, Juan Muniz, Jennifer Scherer,1 Joan Rothlein, Juanita Santana, and Linda McCauley, VOLUME 113 | NUMBER 4 | April 2005 • Environmental Health Perspectives.
4. In a study published in the American Journal of Public Health in February 1995, researcher associates use of home pesticides to various forms of childhood cancer. In another study, researchers found associations between brain cancer and the use of pesticides in homes and yards (Archives of Environmental Contamination and Toxicology, 1993). The National Cancer Institute found that pest control operators in the study experienced twice the normal rate of brain cancer. Dr. Jack Leiss and David Savitz reported in the 1995 American Journal of Public Health of several studies showing pesticide exposure increases risk for childhood cancer including one study which found over twice the risk of brain cancer for children exposed to household insecticide extermination. A study by Dr. Ellen Davis showed that children with brain cancer had 6.2 times greater exposure to certain pesticides. A study conducted in 1987 by the University of Southern California found children exposed to home and lawn pesticide use had 6.5 times the increased risk of developing leukemia.
5. Numerous epidemiological studies describe *association* or statistical relationship between the environmental variable (residence in area extensively sprayed with pesticides) and incidence of new cases of specific cancers. Increased incidence of certain cancers among farmers and workers employed in agricultural settings has been reported in a variety of epidemiological studies, raising concerns about exposure to agricultural chemicals in general and agricultural pesticides in particular (Blair and Zahm 1991, 1995; Blair et al. 1993; De Roos et al. 2003). Increased incidence of certain cancers among children living in highly agricultural cropland areas have been reported in a few recent studies (Walker et al. 2007; Carozza et al. 2008). Childhood leukemia has been associated with household insecticide exposure from professional spray treatments (Ma et al. 2002).

- 6. 17% of U.S. children under 18 years old suffer from a development disability in most cases affecting the nervous system. <sup>3</sup> 45% of the neurotoxins (which cause nervous system disease) identified in the hazardous Substance Data Bank of the U.S. National Library of Medicine are pesticides. According to Dr. Marty L. Hinz, MD, President Clinical Research, NeuroResearch Clinics, Inc, in an article entitled “Neurotoxin”, “A neurotoxin is substances which cause damage to the structures of the brain leading to chronic disease.”<sup>4</sup> Dr. Hinz stated that “In 1998, NeuroResearch Clinics began to connect the dots on other chronic neurotransmitter diseases. When a neurotoxin does enough damage to the neuron bundles of the brain chronic depression, chronic anxiety, attention deficit (ADD and ADHD), chronic panic attacks, chronic insomnia, chronic fibromyalgia, chronic dementia (deterioration of brain function), and a host of other diseases develop. . . . There is a host of reasons why one person will develop disease and another person will not develop disease when exposed to the same level of a neurotoxin. The important thing is to manage the situation properly, prevent further brain damage, remove the toxins, and compensate for neuron damage causing disease symptoms. In studying the situation it is apparent that as the United States became more industrialized using more chemicals the incidence of neurotransmitter related disease has increased. This is no coincidence that the increase in disease parallels the neurotoxin load in the environment.”<sup>5</sup> The foregoing has led experts to conclude that “Given the likely environmental aetiology of neurodevelopmental deficits and their importance to families and society, prevention of exposure to neurotoxic pesticides should be made a public health priority. Existing uncertainties should not be used as an excuse for rejecting precautionary action.”<sup>6</sup>**
- 7. According to the EPA, a number of pesticides commonly used in schools have been identified as neurotoxins or possible or known carcinogens or developmental and reproductive toxins by US EPA and other authorities (US EPA 2000, 2006; California EPA 2006) which means that children in our communities are being exposed to serious and known health risks.**
- 8. Organophosphate (OP) pesticides are a health hazard if people are exposed to a sufficient amount, given their inherent human toxicity and children’s increased susceptibility to toxic effects. Children’s organ systems are not yet fully developed, and cannot metabolize and detoxify acetylcholinesterase-inhibiting compounds such as OP pesticides as rapidly as adults. Recent evidence has suggested that the OP**

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<sup>3</sup> “Prevalence and health impact of developmental disabilities in US children” *Pediatrics* 1994, 93:399-403.

<sup>4</sup> “Neurotoxin”, written by Marty L. Hinz, MD, President Clinical Research, NeuroResearch Clinics, Inc, Cape Coral, Florida USA Research Office.

<sup>5</sup> Neurotoxin, written by Marty L. Hinz, MD, President Clinical Research, NeuroResearch Clinics, Inc, Cape Coral, Florida USA Research Office.

<sup>6</sup> Potential developmental neurotoxicity of pesticides used in Europe, *Environmental Health Journal* 10/22/2008, 7:50.

pesticide chlorpyrifos may delay neurodevelopment in fetal and juvenile rats, causing persistent cholinergic presynaptic deficits after neonatal chlorpyrifos exposure (Slotkin et al. 2001). Also, chlorpyrifos and its metabolite TCP caused inhibition of neurite growth in the absence of cholinesterase inhibition in cell lines, suggesting an alternate mechanism may induce this growth inhibition (Das and Barone 1999). This evidence suggests this mechanism could also occur in children.

## **School Environment Protection Act of 2009 (SEPA)**

### **Bill Summary**

The School Environment Protection Act (SEPA) ensures a healthy learning environment for children through the management of school buildings and school grounds without toxic pesticides.

**Children need better protection from toxic chemical exposure while at school.** Numerous scientific studies find that pesticides typically used in schools are linked to both cancer and asthma. Published in the *Journal of the American Medical Association*, a study, *Acute Illnesses Associated with Pesticide Exposure at Schools*, (Vol. 294, No. 4, pp455-465), documents ongoing pesticide poisoning in schools across the country. Authored by Walter A. Alarcon, M.D. (National Institute for Occupational Safety and Health) and numerous state health departments, the study analyzes 2593 poisonings from 1998 to 2002 from three surveillance systems. While the analysis finds overall incident rates of 7.4 cases per million children and 27.3 cases per million employees, the authors conclude, “\*These results should be considered low estimates of the magnitude of the problem because many cases of pesticide poisoning are likely not reported to surveillance systems or poisoning control centers.” The authors recommend the adoption of strategies to reduce school pesticide use. In its report *Third National Report on Human Exposure to Environmental Chemicals*, the Centers for Disease Control’s (CDC) contains striking data on widespread exposure to commonly used neurotoxic pyrethroid pesticides, documenting residues of this chemical in the bodies of over 50 percent of the U.S. population. The chemical is linked to endocrine disrupting effects, respiratory illness and asthma. According to the National Institutes of Health, asthma affected an estimated 14.9 million people and has been increasing over the past 20 years, especially among children.

Children are among the group least protected from pesticide exposure according to the National Academy of Sciences report, *Pesticides in the Diets of Infants and Children*. The report finds that EPA generally lacks the data necessary to protect children. Due to their small size, greater intake of air and food relative to body weight, developing organ systems and other unique characteristics, children are at higher risk than adults from pesticide exposure.

Thirty-five states have taken some protective action to address pesticide use in, around or near their schools. These include a mixture of pesticide restrictions and parental notification and sign posting before certain pesticide use. However, the state protection is uneven across the country and children in 15 states are provided no protection at all.

**Safer practices.** The legislation requires that the safest methods of pest control are used in school buildings and on school grounds to protect children. As a first step, it requires public schools to use a defined Integrated Pest Management (IPM) program that focuses on using non-chemical strategies that prevent and manage pest problems and only allows least-toxic pesticide use as a last resort. IPM relies on a combination of methods that address sanitation, structural repair, mechanical measures, biological controls and other non-chemical methods inside buildings and additional approaches for turf and ornamental plant management that build healthy soil and natural resistance to pests. The legislation prohibits synthetic fertilizer use on school grounds because of its adverse impact on soil health and waterways.

**Least-toxic pesticides.** The legislation defines least-toxic pesticides to prohibit the use of carcinogens, reproductive and developmental toxins, nervous system toxicants, endocrine disruptors, and those chemicals that have not been fully evaluated for health effects. In addition, outdoor pesticides are excluded that adversely affects wildlife, have high soil mobility, or are groundwater contaminants. Specific least-toxic pesticides that may be used at a school include containerized boric acid, silica gels, diatomaceous earth, nonvolatile baits, microbe-based insecticides, and botanical insecticides. There is annual notification of the IPM plan, and individuals may contact the IPM coordinator to find out the specific product use schedule.

**Public health emergency provision.** If a school determines that there is an urgent need to mitigate or eliminate a pest that threatens the health or safety of students or staff members who cannot otherwise be protected through the use of its IPM program's non-chemical strategies and least-toxic pesticides, the legislation allows for emergency pesticide use of pesticides. The IPM Coordinator must approve the pesticide to be used for the public health emergency. In addition, notification is required to be provided to all parents, guardians, student and staff at least 24 hours prior to the application, the application must be made by a state certified applicator, the application area must be unoccupied for 24 hours following the application, and signs notifying school users of the pesticide application are required to remain posted for 72 hours.

**Notification of IPM program.** Notification regarding the school's IPM program and IPM coordinator contact information is required to be provided in school communications at the beginning of each school year. This notification also includes a statement that the IPM coordinator maintains pesticide product labels and material safety data sheets on each pesticide, including least-toxic pesticides, that may be used at the school, all of which are available from the IPM coordinator.

**National School IPM Advisory Board.** The legislation establishes a 12-member National School IPM Advisory Board made up of stakeholders without a conflict of interest who are nominated by the public. Board members will meet at least twice a year and are not compensated except for travel. The Board, with the help of a technical advisory panel, will develop school IPM standards and the list of least-toxic pesticide products.

**IPM Coordinator.** Each local educational agency is required to designate an IPM Coordinator who will be the contact person for all inquires regarding the IPM program. The IPM Coordinator maintains and makes available to the public information about pesticide applications, pesticide material safety data sheets, labels, EPA fact sheets, official EPA information related to the pesticides in use, and generally acts as a contact for inquiries. Each school is required to maintain all pesticide use data for at least three years.

**Pesticides defined.** Pesticides includes "any substance or mixture of substances intended for: (i) preventing, destroying, repelling, or mitigating any pest; (ii) use as a plant regulator, defoliant, or desiccant; or (iii) use as a spray adjuvant such as a wetting agent or adhesive. The term 'pesticide' does not include cleaning products, other than those that contain pesticidal agents."

**Legislation does not preempt states or localities.** A state or locality can exceed the provisions of this act. States or localities that already have policies that meet or exceed this act can continue with their implementation.

**Authorization.** The bill authorizes \$7 million for each fiscal year 2011 through 2015.

**For more information.** Contact Jay Feldman, executive director, or Kagan Owens, senior project associate, Beyond Pesticides, 701 E Street SE, Washington DC 20003, 202-543-5450,