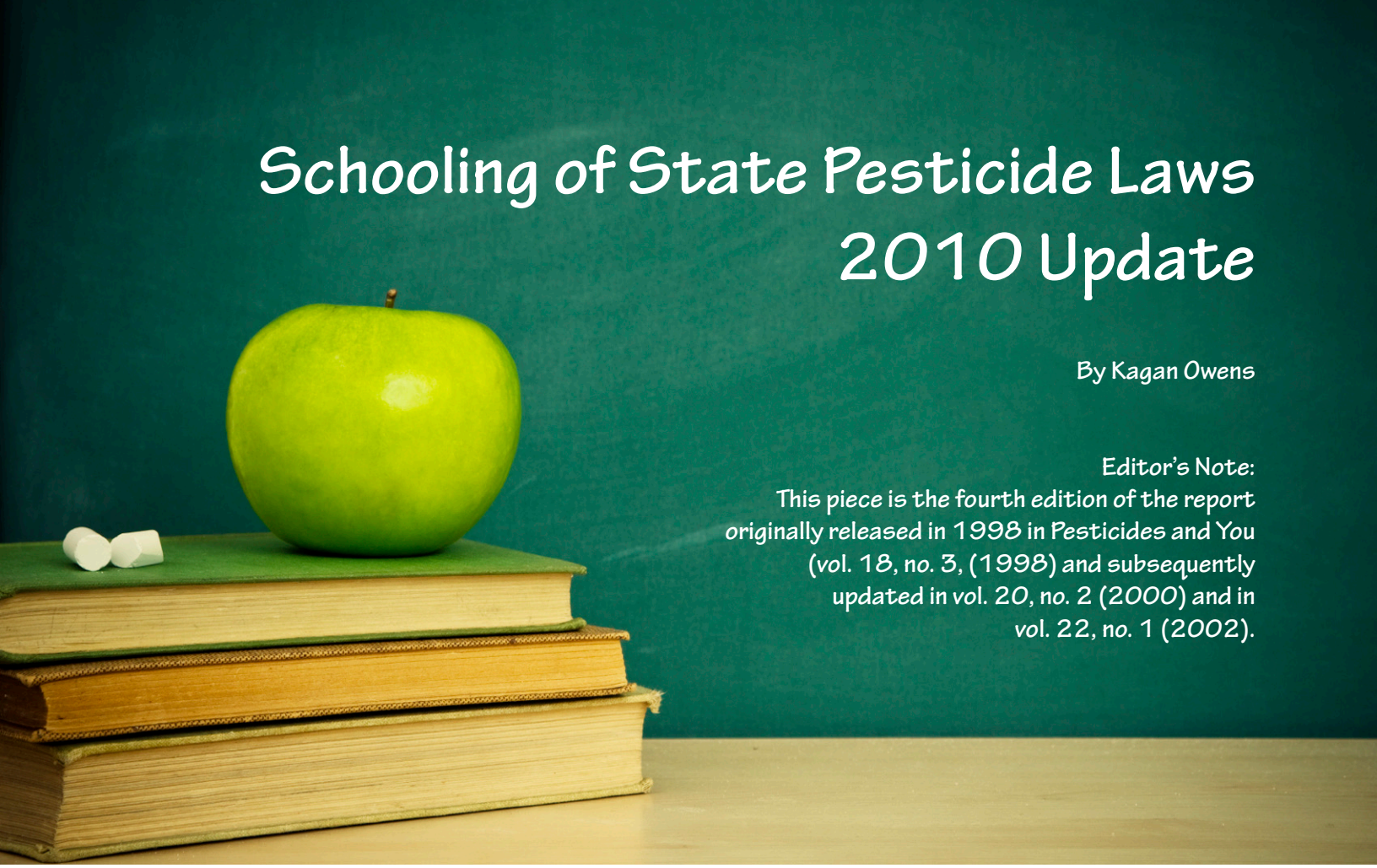


Schooling of State Pesticide Laws 2010 Update

By Kagan Owens

Editor's Note:
This piece is the fourth edition of the report originally released in 1998 in Pesticides and You (vol. 18, no. 3, (1998) and subsequently updated in vol. 20, no. 2 (2000) and in vol. 22, no. 1 (2002).

School is a place where children need a healthy body and a clear head in order to learn. Despite a successful trend toward non-chemical strategies, pesticides remain prevalent and are widely used today in schools and daycare facilities. Due to the large amount of time children spend in school, eliminating toxic pesticide use through the adoption of school pest management policies and programs at the local, state, and federal level will create a healthier learning environment. The goal is to get schools off the toxic treadmill. This review provides an analysis of our nation's progress.

The U.S. Environmental Protection Agency (EPA),[1] National Academy of Sciences,[2] World Health Organization (WHO),[3] and American Public Health Association,[4] among others, have voiced concerns about the danger that pesticides pose to children. Children have different susceptibilities due to physiological, metabolic, and behavioral characteristics that differ from adults. They are especially sensitive to pesticide exposures as they take in more pesticides relative to their body weight than adults and have developing organ systems that are more vulnerable and less able to detoxify toxic chemicals. Even at low levels, exposure to pesticides can cause serious adverse health effects. Nausea, dizziness, asthma, respiratory problems, headaches, rashes, and mental disorientation, may appear even when a pesticide is applied according to label directions. Real world exposure results in complex chemical interactions and makes it difficult to conclusively draw causal associations, especially taking into account synergistic effects, leaving a clear and vital need to exercise the precautionary principle by avoiding toxic pesticide use.

The easiest and safest solution is to avoid chemical use and exposure by using non-chemical strategies that prevent and manage pest problems and only allow defined least-toxic pesticide use as a last resort in a comprehensive Integrated Pest Management (IPM) program. IPM is not about minimizing pesticide use, but ultimately eliminating toxic chemical use. Yet, despite an increase in successful non-chemical pest management methods, schools and policy makers continue to allow toxic pesticides as part of an IPM program. While pesticide use notification requirements, in place in dozens of states, attempt to educate parents on toxic chemical use, IPM is undermined to the extent that dependency on toxic pesticides continues.

PESTICIDE USE AT SCHOOLS

Pesticide poisoning of student and school staff is not uncommon. The Government Accountability Office (GAO) in 1999 documented over 2,300 reported pesticide poisonings in schools between 1993 and 1996.[5] Because most of the symptoms of pesticide exposure, from respiratory distress to difficulty in concentration, are com-

Integrated Pest Management (IPM)

IPM utilizes pest prevention and management strategies that exclude pests from school facilities through habitat modification, entry way closures, structural repairs, sanitation practices, natural organic management of playing fields and landscapes, other non-chemical, mechanical and biological methods, and the use of least-toxic pesticides only as a last resort.

mon in school children and may be assumed to have other causes, it is suspected that pesticide-related illness is highly prevalent. A 2005 study published by researchers at the National Institute for Occupational Safety and Health and state health department, printed in the *Journal of the American Medical Association*, found that students and school employees are being poisoned by pesticide use at schools and from drift off of neighboring farmlands after analyzing 2593 poisonings from 1998 to 2002.[6] The authors state that the study omits incidents for which medical attention is not sought or reported. A 2008 review of pesticide poisoning complaints in Oregon reveals an on-going pattern of pesticide exposure to school children in classrooms, on playgrounds, on ballfields and at school bus stops.[7] At least 56 cases of Oregon school children experiencing pesticide poisoning were reported in Oregon since 1990, 43 of them filed in the past ten years. In 14 cases, the risk from pesticide exposure was severe enough to result in school evacuations, trips to emergency rooms, and citations from a violation of state pesticide law.

Of the 40 most commonly used pesticides in schools, 28 can cause cancer, 14 are linked to endocrine disruption, 26 can adversely affect reproduction, 26 are nervous system poisons and 13 can cause birth defects.[8] Many pesticides affect the immune system,[9] which can result in increased problems with allergies, asthma, hypersensitivity to chemicals and a reduced ability to combat infections and cancer. A study found organophosphate pesticides cause genetic damage linked to neurological disorders such as attention deficit hyperactivity disorder and Parkinson's disease.[10]

Of the 30 most commonly used lawn pesticides, 19 can cause cancer, 13 are linked to birth defects, 21 can affect reproduction and 15 are nervous system toxicants.[11] The most popular and widely used lawn chemical, 2,4-D, which kills broad leaf weeds like dandelions, is an endocrine disruptor with predicted human health hazards ranging from changes in estrogen and testosterone levels, thyroid problems, prostate cancer and reproductive abnormalities.[12] 2,4-D has also been linked to non-Hodgkin's lymphoma.[13] Other lawn chemicals, like glyphosate (Roundup), have also been linked to serious adverse chronic effects in humans.[14]

Pesticide Residues Linger

Research has been accumulating for years that show the extent to which hazardous pesticides are present in indoor environments and threaten public health. Several recent studies have found that pesticides persist in dust and air in significant concentrations for months after they are applied, disproving the popular myth that they are not long-lasting.[15] A 1996 study found that 2,4-D can be tracked from lawns to indoor spaces, leaving residues of the herbicide in carpets and rugs.[16] EPA's 1990 Non-Occupational Pesticide Exposure Study (NOPES) found at least five pesticides in indoor air, at levels often ten times greater than levels measured in outdoor air.[17] Another EPA study found residues of pesticides in and around the structure even when there had been no known use of them on the premises.[18]

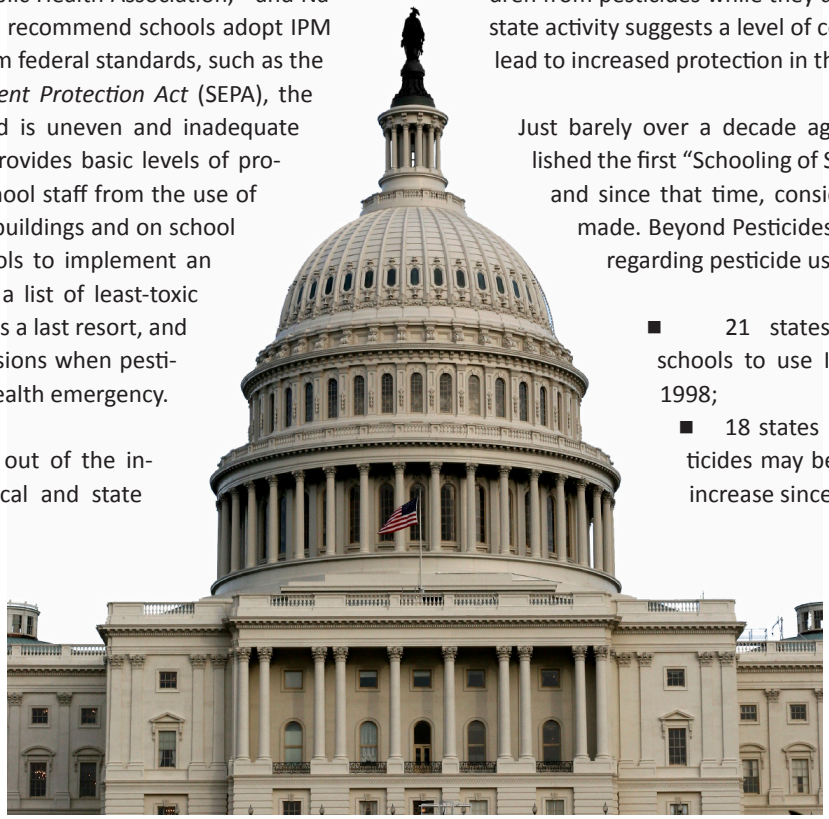
FEDERAL PROTECTION LACKING

The vast majority of pesticide products registered for use by EPA and state governments have never been fully tested for the full range of potential human health effects. Pesticides can be registered even when they have been shown to cause adverse health problems. The regulatory system justifies allowable risks by characterizing them as *de minimis*, even though deficiencies and uncertainties in the review protocol are well-documented. Due to the numerous pesticide formulations on the market, the lack of disclosure requirements, insufficient data requirements, and inadequate testing, it is impossible to accurately estimate the hazards of pesticide products, much less lifetime exposure or risk. There is no way to predict the effects in children solely based on toxicity testing in adult or even adolescent laboratory animals, which is EPA's procedure for evaluating adverse effects.

> To truly protect children from pests and toxic pesticide use, schools must adopt a comprehensive IPM program that includes organic land management and prohibits the use of hazardous pesticides.

School Environment Protection Act (SEPA)

The federal government is also deficient at putting safer pest management practices, such as Integrated Pest Management (IPM) programs, in place nationwide in schools. While the EPA,[19] U.S. Department of Agriculture,[20] Centers for Disease Control and Prevention,[21] American Public Health Association,[22] and National PTA,[23] among others, recommend schools adopt IPM programs, without minimum federal standards, such as the proposed *School Environment Protection Act* (SEPA), the protection provided a child is uneven and inadequate across the country. SEPA provides basic levels of protection for children and school staff from the use of pesticides in public school buildings and on school grounds by requiring schools to implement an IPM program, establishing a list of least-toxic pesticides to be used only as a last resort, and requiring notification provisions when pesticides are used in a public health emergency.



This legislation has grown out of the incredible success at the local and state level. Since SEPA was first introduced in Congress, the record of successful state and local policies and programs has grown considerably. A form of SEPA has passed the U.S. Senate twice and, together with other legislation, indicates broad support for a national mandate to stop hazardous pesticide use in schools.

REVIEW OF STATE SCHOOL PESTICIDE LAWS

Although two-thirds of the states, or 35 states, have adopted laws that address pesticide use at school, these pesticide use policies and practices remain deficient in the protection of children. Overall, however, the review shows progress in the adoption of policies that improve protection of children. Since 1998, in the two most important areas of reform, IPM and chemical restrictions, there is a 24 percent and 22 percent increase, respectively, in state policies. The following review, based on current state pesticide laws, looks at what the states have done as it affects children and schools, using the following five evaluation criteria: (i) adoption of an integrated pest management (IPM) program; (ii) prohibiting when and where pesticides can be applied; (iii) requiring posting signs for indoor and outdoor pesticide applications; (iv) requiring prior written notification for pesticide use; and, (v) establishing restricted spray (buffer) zones to address chemicals drifting into school yards and school buildings. These five criteria are all basics not provided for under federal law and are essential ingredients to protect children from pesticides while they are at school. The degree of state activity suggests a level of concern that can and should lead to increased protection in the future.

Just barely over a decade ago, Beyond Pesticides published the first "Schooling of State Pesticide Laws" report and since that time, considerable progress has been made. Beyond Pesticides' 2009 survey of state laws regarding pesticide use at schools shows that:

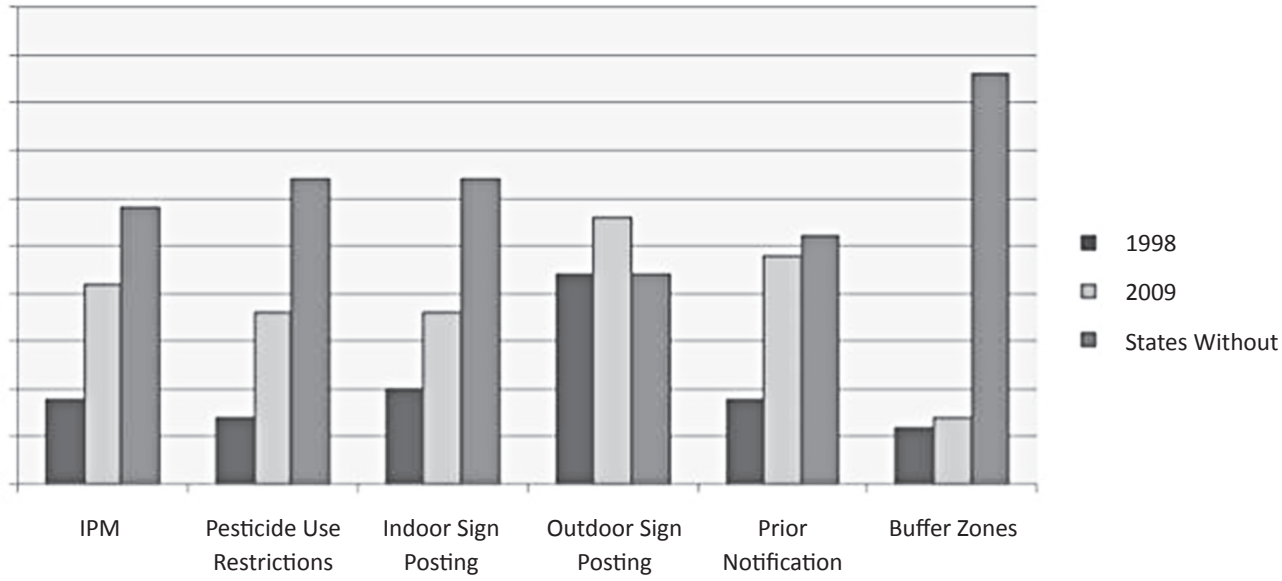
- 21 states recommend or require schools to use IPM, a 24% increase since 1998;
- 18 states restrict when or what pesticides may be applied in schools, a 22% increase since 1998;
- 18 states require the posting of signs for indoor school pesticide applications, a 22% increase since 1998;
- 28 states require the posting of signs for pesticide applica-

How States Around the Country Protect Children from Pesticide Exposure at School

State	Buffer Zones	Posting Signs	Prior Notification	IPM	Prohibition of Use
Alabama	Aerial application, 400 feet.				
Alaska		Indoor & outdoor, post sign, remain 24 hours. When school out & open to public, post sign 24 hours prior to application.	Parent & staff registry or universal notification, school decision, 24 hour notice.		Children prohibited from entering treated area for 24 hours, or the reentry interval stated on the label.
Arizona	Ground & aerial application, ¼ mile, certain toxic pesticides.	Indoor & outdoor, post immediately after application.	Parent & staff, universal 48 hour notice.		
California	Methyl bromide application, schools within 300 feet, completed 36 hours prior to start of school day.	Indoor & outdoor, post sign 24 hours prior to application, remain 72 hours.	Parent & staff registry, 72 hour notice.	Recommends.	No conditional, interim, experimental or new active ingredients/pesticides.
Colorado		Outdoor, post sign.			
Connecticut		Outdoor, post sign, no specifics on time to remain posted.	Parents & staff registry, 24 hour notice.	Recommends.	Prohibits pesticides on K-8th grade school grounds. Prohibits pesticides during operating hours.
Florida		Outdoor, post sign beginning of application.			
Georgia		Indoor, prior posting, remain 24 hours. Outdoor, prior posting, remain until the following day.			Pesticide applications prohibited if students present. Minimum 3-hour restricted entry interval. Certain pesticides with no reentry restriction require application made at least 10 feet from students. Outdoor applications made at least 20 feet from students.
Illinois		Outdoor, post sign, remove following day.	Parent registry or universal notification, indoor application, 48 hour notice; outdoor application 4 day prior notice.	Requires.	Application area must remain unoccupied for 2 hours following applications made at day care centers.
Indiana		Outdoor, post sign.			
Iowa		Outdoor, post sign.			
Kentucky		Outdoor, post sign immediately following application, remain following day.	Parent & staff registry, 24 hour notice.	Requires.	
Louisiana	Aerial application, 1000 feet, during school hours.		Parent registry, medical verification required, no time specified.	Requires.	Pesticide applications of restricted use pesticides, entry restricted for 8 hours after application.
Maine	Aerial application, prohibited within 1,000 feet of a school unless the wind is between 2 and 10 mph.	Indoor & outdoor, post signs 48 hours prior to application, remain 48 hours.	Parent & staff registry or universal notification, school decision, 5 days prior notice.	Requires.	Indoor application of pesticide with no reentry, 24 hour restricted reentry. Only allow indoor spray application for public health pests, determined by IPM coordinator.
Maryland		Indoor & outdoor, "in-school notification." Outdoor, post sign at time of application, remain 48 hours.	Parent & staff, elementary school, universal 24 hour notice; secondary school, registry, 24 hour notice.	Requires.	
Massachusetts	Aerial crop application, 150 feet.	Indoor, post prior to application. Outdoor, post sign 48 hours prior to application, remain 72 hours.	Parent & staff, universal notification, outdoor applications. Parent & staff registry, indoor application, no time specified.	Requires.	Pesticide use prohibited when children present. Outdoor, pesticides that are known, likely or probable carcinogens, contain a "List I" inert ingredient or for aesthetic reason alone are prohibited from use. Indoor, aerosol/liquid spray pesticides are prohibited.
Michigan		Indoor, post sign, remain 48 hours. Outdoor, post sign after application, remain 24 hours.	Parent registry, indoor applications, 48 hour prior notice.	Requires.	Indoor, spray or aerosol insecticide application while occupied, entry restricted for 4 hours after application. Outdoor, prohibits spray insecticide, 100 ft outside occupied area.

Minnesota			Parent registry, notification at "reasonable" time before application.	Recommends.	
Montana		Indoor, post sign at time of application, remain "until dry."		Recommends.	
New Hampshire	Aerial application, during commuting hours & outdoor activity.	Outdoor, post sign, remain 24 hours.			Pesticides cannot be applied "where exposure may have an adverse effect on human health."
New Jersey	Ground & aerial gypsy moth application, during commuting hours, 2 m. grade school, 2 ½ m. high school. Aerial application, 300 feet.	Indoor, permanent posting at central bulletin board, states next application. Outdoor, post sign at start of application, remain 24 hours.	Parent & staff registry, no time specified.	Requires.	Pesticide application prohibited during normal school hours or when area will be occupied within time for product to dry.
New Mexico		Indoor & outdoor, no specifics on time.	Parent registry, no time specified. Parent and staff universal notification, child care center, 48 hour notice.		Prohibits use of certain pesticides when area occupied or will be for next 6 hours. Licensed childcare centers use of pesticides prohibited when children on premises.
New York		Outdoor, post sign, remain 24 hours.	Parent & staff registry, 48 hour notice.	Requires.	
North Carolina	Aerial application, 300 feet, when school occupied.		Parent registry, 72 hour notice.	Requires.	
Ohio		Indoor, post sign. Outdoor, post signs.	Parent & staff registry, indoor applications, "as soon as possible."		For structural application , area must be unoccupied for at least 4 hours following the application.
Oregon		Indoor & outdoor, post sign 24 hours prior to application, remain 72 hours.	Parent & staff universal notice, 24 hours prior notice.	Requires.	Pesticides may not be used for aesthetic/cosmetic purposes or on a routine, preventive basis. Carcinogens and EPA toxic category I and II pesticides prohibited.
Pennsylvania		Indoor & outdoor, post sign 72 hours prior to application, remain 48 hours.	Parent registry or universal notice, 72 hour notice. Staff, universal 72 hour notice.	Requires.	Prohibits pesticide applications when students will be present in school building or on school grounds for 7 hours following application.
Rhode Island		Outdoor, post sign, remain 72 hours.	Parent & staff registry, 24 hour notice.	Requires.	No applications during regular school hours or during planned activities at a school.
Texas		Indoor, post sign 48 hours prior to application, no specifics on time to remain posted. Outdoor, post sign at time of application, remain through reentry interval .	Parent registry, indoor & perimeter application, no time specified.	Requires.	Pesticides are grouped into lists based on risk. No application while students present. Green Category Pesticides: 10 foot distance from application area; Yellow Category: 10-foot distance & minimum 4 hour reentry interval; Red Category: 25-foot distance, minimum 8 hour reentry interval.
Vermont		Outdoor, post signs.		Recommends.	
Virginia				Recommends.	
Washington		Indoor & outdoor, post sign at time of application, remain posted for 24 hours.	Parent & staff registry, 48 hour notice.		
West Virginia		Indoor, day care center, post sign 24 hours prior to application, no specifics on time to remain posted.	Day care employees, automatic 24 hour notice, level 3 or 4 pesticide. Parent registry, schools & day care centers, 24 hour notice of level 3 or 4 pesticide.	Requires.	Pesticides are grouped into levels. Students & employees restrict entry for 4 hours after level 3 pesticide & 8 hours after level 4 pesticide.
Wisconsin		Indoor & outdoor, post sign at time of application, remain 72 hours.			
Wyoming		Indoor & outdoor, post sign 12 hours prior to application, remain 72 hours.	Parent & staff, universal prior notice.		

Figure 1. Number of States With Different School Pesticide Provisions



tions made on school grounds, a 12% increase since 1998;

- 24 states require prior written notification to students, parents, or staff before a pesticide application is made at schools, a 30% increase since 1998; and,
- 9 states recognize the importance of controlling drift by restricting pesticide applications in areas neighboring a school, a mere 6% increase since 1998.

Although these laws are instrumental in improving protections, for a state to truly protect children from pests and toxic pesticide use, schools must adopt a comprehensive IPM program that includes organic land management and prohibits the use of hazardous pesticides such as carcinogens, endocrine disruptors, reproductive and developmental toxicants, neurological poisons, and toxicity category I and II pesticides. The least-toxic pesticide should only be used after non-chemical strategies have been exhausted. It is critical to incorporate a strong IPM definition into policies and laws to guide implementation of an effective least-hazardous pest management program. Restrictions on pesticide use must go hand-in-hand with an IPM program. Allowance of any toxic pesticide under an IPM program undermines the health and safety of the students and school staff.

> Beyond Pesticides' experience in working on-the-ground with health care facilities shows that a defined least-toxic approach to an IPM program is highly effective. If it can work in health care facilities, it can work in schools .

Beyond Pesticides' experience in working on-the-ground with health care facilities shows that a defined least-toxic approach to an IPM program is highly effective.[24] If it can work in health care facilities, it can work in schools, and states are beginning to move in this direction. States that are addressing pesticide use through IPM and/or notification recognize that EPA's registration of pesticides does not ensure safety, especially in a school environment. Pesticides are not necessary to achieving pest management goals, and because of their hazardous nature emphasis is shifting to their elimination whenever possible. In this context, a school IPM program puts preventive practices first and allowable products as a last resort.

A group of IPM experts and stakeholders have documented effective school IPM strategies in the USDA supported document, *School IPM 2015: A Strategic Plan for Integrated Pest Management in Schools in the United States*,[25] developed in partnership with EPA. The document acknowledges the hazards and risks that pesticides pose and describes an IPM program that includes a list of pre-approved pesticides that excludes pesticides labeled as "Danger" or "Warning," or classified as possible, known, probable or likely carcinogens, reproductive toxicants, endocrine disruptors, or nervous system poisons. In a press statement, USDA staff states, "Poor pest management and the use of pesticides can affect students' learning abilities and

long-term health, especially asthma, which is the number one cause of school absences." The document categorizes different pest management options, focusing on non-chemical prevention strategies and sets up a step-by-step process for management, with pesticides a last option. It also cautions against the use of certain pesticides due to hazards associated with their ingredients and acknowledges that pest managers should go with non-chemical strategies first and implies a recommendation to avoid the more toxic options.

Not one state law is completely comprehensive in protecting students from pesticides, yet several states have components that are exemplary. Connecticut and Massachusetts prohibit pesticide applications on school grounds (public health emergencies are exempt). Massachusetts and Oregon prohibit the use of the most hazardous pesticides inside school buildings and outside on their grounds. Although their state laws do have some limitations, only four states (California, Maine, Massachusetts and New Jersey) have provisions in all categories that the analysis evaluates, and only two additional states (Oregon and Pennsylvania) have provisions addressing all criteria regarding indoor and outdoor school pesticide applications. State school pesticide and pest management laws have also been shown to be important in setting a precedent for others to follow. For example, Connecticut law that prohibits pesticides from being applied on school grounds has resulted in several municipalities finding success in implementing pesticide-free, organic turf programs on their property.

Although most state laws target public schools, many state laws have provisions that include private schools (such as in Connecticut, Georgia, Maine, Michigan, Minnesota, Oregon and Rhode Island), as well as preschools and childcare facilities (such as in California, Connecticut, Georgia, Illinois, Massachusetts, Michigan, New Mexico, New York, Rhode Island, Texas and West Virginia).

Traditionally, state school pesticide bills and laws go through state agriculture legislative committees and departments where they are up against the pro-pesticide lobby that has a vested interest in keeping pesticides in schools. Yet, several states have had success with going through education committees and departments, such as in Illinois and North Carolina.

Passage of policies and laws do not ensure acceptance by the pesticide lobby. Over the past decade, two states have seen a weakening of their school pesticide laws. Texas has decreased its reentry intervals and Ohio has repealed a school safety bill, *Jarod's Law*, that had required schools to adopt an IPM program.

Integrated Pest Management

Analysis. Chemical-intensive pest control tends to ignore the causes of pest infestations and instead relies on scheduled pesticide applications or unnecessary toxic chemical use. Pesticides typically provide a temporary fix and are ineffective over the long-term. In addition, the most common insects are now resistant to many insecticides. Because certain insects and toxic pesticides pose a health risk to children, schools need to implement a comprehensive school IPM program to prevent and manage pest problems. Unfortunately, IPM is a term that is used loosely with many different definitions. More and more, pest control programs are inaccurately described as IPM. For example, the application of pesticides on a routine basis, whether pests are present or not, is not part of an IPM program. A comprehensive IPM program utilizes pest prevention and management strategies that exclude pests from the school facility through habitat modification, entry

way closures, structural repairs, sanitation practices, natural organic management of playing fields and landscapes, other non-chemical, mechanical and biological methods, and the use of the least-toxic pesticides only as a last resort. Laws and policies must specifically restrict hazardous pesticide use in IPM. If a school has an IPM program that only allows a defined list of truly least-toxic pesticides, then a notification can be scaled back.

IPM in schools has proven to be an effective and economical method of pest management that, when done correctly, can eliminate pest problems and the use of hazardous pesticides in school buildings or on school grounds. IPM strategies and techniques are relatively simple, such as mulching to prevent weeds or caulking cracks and screening openings where insects and rodents can enter a building. Since unwanted plants (weeds) tend to like soils that are compacted, the solution is not the temporary control achieved by killing them, but the adoption of practical strategies to make the soil less attractive to them. Improving a school's sanitation can eliminate cockroaches and ants. Constant monitoring ensures that pest buildups are detected and suppressed before unacceptable outbreaks occur.

Findings. Twenty-one states address IPM in their laws, but only 15 of these require schools to adopt an IPM program. Of the 21 states, California, Illinois, Maryland, Massachusetts and Minnesota, have comprehensive definitions of IPM, and allow only the least-toxic pesticide to be used as a last resort. Four states, Massachusetts, Oregon, Texas and West Virginia, approach the issue of defining least-toxic pesticides. Only two states, Massachusetts and Oregon, prohibit certain toxic pesticides from being used in an IPM program. For example, Oregon IPM law only allows a "low impact pesticide" to be used, which is defined as a pesticide that is not an EPA toxicity category I and II pesticide product (bares the words "Warning" or "Danger" on its label), or contains an ingredient listed by EPA as a known, probable or likely carcinogen. (There is an exemption for a public health emergency.) In addition, pesticides may not be used for routine, preventive purposes. Massachusetts and Maine prohibits the use of aerosol/liquid spray pesticides inside school buildings, with an exception for approved public health emergency situations. Their laws also prohibit the use of known, probably or likely carcinogens as well as products that contain EPA List 1, Inerts of Toxicological Concern. Although its law does not prohibit toxic chemical use, Texas defines "green category pesticides" and West Virginia defines "least hazardous pesticides" as products that EPA considers less acutely toxic. These are listed as toxicity category III and IV pesticide products (bares the word "Caution" on its label), excluding the more toxic categories I and II pesticides. Oregon and Texas also require the

The Eight Essential Components to a Comprehensive IPM Program:

1) Education/training - information for stakeholders, technicians;
2) Monitoring - regular site inspections and trapping to determine the types and infestation levels of species at each site;
3) Pest prevention – the primary means of management calls for the adoption of cultural practices, structural changes, and mechanical and biological techniques;
4) Action levels – determination of population size that requires remedial action for human health, economic, or aesthetic reasons;
5) Least-toxic pesticides – pesticides, used as a last resort only, are least-toxic chemicals not linked to cancer, reproductive problems, endocrine disruption, neurological and immune system effects, respiratory impacts and acute effects;
6) Notification – provides public and workers with information on any chemical use;
7) Recordkeeping - establishes trends and patterns in problem organisms and plants, including species identification, population size, distribution, recommendations for future prevention, and complete information on the treatment action;
8) Evaluation - determines the success of the species management strategies.

school districts' IPM coordinator to approve the use of higher hazard pesticide applications Maine only allows an indoor pesticide spray application for public health pest problems.

Prohibitions on Pesticide Use

Analysis. Although changing, the pesticide lobby has advanced the conventional wisdom that suggests that without toxic pesticides school buildings and lawns will be overcome by disease-carrying pests and weeds. However, practitioners have shown this not to be the case. School pest problems can be effectively managed without toxic pesticides. With a quality IPM program, examples prove that there is never a real justification or need to use pesticides in a school environment. When pesticides are found to be needed in those rare circumstances of last resort, limiting when and what pesticides are applied in and around schools is important to the reduction of pesticide exposure. Most insect and plant pests may be a nuisance, or raise aesthetic issues, but they do not pose a threat to children's health. Increasingly, policies say that in these instances children should never be exposed to potentially harmful pesticides. In reality, no matter what type of pest management program the school implements, certain types of pesticides, such as carcinogens, endocrine disruptors, reproductive and developmental toxicants, neurotoxic poisons and pesticides listed by EPA as a toxicity category I or II pesticide should never be used around children. Sprays invade the indoor ambient environment and baits must be evaluated carefully for off-gassing or volatility. Pesticides should never be applied when students or staff will be in the area within 24 hours of the application.

> Without federal legislation like the proposed *School Environment Protection Act*, safer school pest management program adoption will likely remain spotty across the country as it is now.

Findings. Eighteen states restrict the type and/or timing of pesticides that may be used at a school. Of those, five states have specific prohibitions on certain pesticides. For example, Connecticut prohibits the use of pesticides on school grounds. Massachusetts and Oregon prohibit the use of pesticides for purely aesthetic purposes. These two states also prohibit the use known, probable, or likely carcinogens. Oregon also prohibits the use of pesticides that are EPA toxicity category I or II, as well as the application of a pesticide for purely cosmetic/aesthetic purposes or a scheduled routine preventive application. Massachusetts and Maine ban the use of pesticide sprays indoors, allowing baits, gels and pastes to be used.

Thirteen states have restrictions on the timing of pesticide applications and establish re-entry intervals (the amount of time between an application and the return of students and staff to the application area). Alaska and Maine have the longest re-entry restrictions, requiring that the area treated with certain pesticides remain unoccupied for 24 hours after the application. In a law passed in 2009, the Illinois Department of Public Health is directed to recommend a pesticide-free turf care program for all public schools and day care centers.

Posting Notification Signs

Analysis. If a school does not have a comprehensive IPM program that prohibits the use of toxic pesticides, then a pesticide

use notification program is imperative. Posted notification signs warn those at the school when and where pesticides have been or are being applied. Prior posting enables people to take precautionary action. Because of the residues resulting from an application, signs should remain posted for 72 hours. It takes time for pesticides to start breaking down and some pesticide residues can remain for weeks or more. Signs should be posted at all entrances to the application area. Posted signs should state when and where a pesticide is applied, the name of the pesticide and how to get additional information, such as a copy of the material safety data sheet (MSDS) and the product(s) label.

Exemptions that waive notification requirements before or after pesticide use, such as during school vacations, undermine protection. Many states exempt baits, gels or pastes from notification requirements. However, notification should occur for any formulation containing toxic ingredients that are volatile or contain toxic synergists. Just because a pesticide is applied in baits, gels or pastes does not mean these products do not contain a chemical that is a carcinogen, mutagen, teratogen, reproductive, developmental or neurological toxicant, endocrine disruptor, or an immune system toxicant.

Findings. Eighteen states require posting of signs for indoor school pesticide applications. Pennsylvania, the strongest state in this regard, requires posting warning signs at least 72 hours in advance of the application, while four states, California, Oregon, Wisconsin and Wyoming, require that signs remain posted for 72 hours, the longest time frame among the states. Twenty-eight states have posting requirements when pesticide applications are made on school grounds. Six states, California, Massachusetts, Oregon, Rhode Island, Wisconsin and Wyoming, require that outside signs remain posted for at least 72 hours. Seventeen states require posting for both indoor and outdoor pesticide applications.

Prior Written Notification

Analysis. Written notification prior to each pesticide use is the best way to make sure that all parents, children and staff are aware and warned. There are basically two types of notification – registries and universal, and modified systems that incorporate elements of both. Requiring that individuals place themselves on registries affords only those who already know about toxic exposure the opportunity to be informed about pesticide use in the school. Registries also tend to be more costly and time consuming for the school because of the time associated with list management. Prior notification is required 72 hours in advance to ensure the information has been received, to obtain further information on the pesticide(s), and to make arrangements to avoid the exposure, if necessary. Notification should include the name of the pesticide(s), the day and time, and area of the application and how to obtain a copy of the MSDS and label.

Findings. Twenty-four states have requirements to notify parents or school staff in writing before a pesticide application is to occur. Of these, three states have provisions for universal notification prior to each pesticide application. Fourteen states have provisions that establish a registry, allowing individuals to sign up for prior notification. Seven states let the schools have the choice of providing notice either via a registry or universal notice, or the state law has provisions for both registries and universal notice depending on the type of school. Maine requires the greatest amount of advance notice with a 5-day prior notification mandate, while

Illinois requires four-day prior notification. The widest range of notification activities, requiring posting signs for indoor and outdoor applications and providing prior notification of a school pesticide application, are met by only 15 states.

Restricted Spray (Buffer) Zones

Anaylsis. Pesticide drift is an inevitable problem in pest management strategies that rely on liquid spray and dust pesticide formulations. When sprayed outside, pesticides drift into the community resulting in off-target residues. Although of greatest concern is the aerial application of pesticides, where at least 40% of the pesticide is lost to drift,[26] pesticides can also drift when applied from a truck or hand held applicator. Buffer zones can reduce exposure from spray drift on to school property. In order to adequately protect against drift, buffer zones ideally should be established, at a minimum, in a 2-mile radius around the school's property. Aerial applications should have a larger buffer zone, at least three miles encircling the school. Buffer zones should be in effect at all times of the day. It is especially important, as nine states require, for spray restrictions to be in place during commuting times and while students and employees are on school grounds.

Findings. Nine states have recognized the importance of controlling drift by restricting pesticide applications in areas neighboring a school that range from 300 feet to 2 1/2 miles. Eight states require spray restriction zones for aerial applications. Only Arizona and New Jersey require buffer zones for both ground and aerial pesticide applications.

CONCLUSION

Concerns about the known and unknown hazards of pesticide use, as well as deficiencies in the regulatory review process, have prompted a variety of legislative and administrative responses by states and individual school district policies across the country. Raising the level of protection across the nation to meet the highest possible standard of protection for children is essential. Without federal law like the proposed SEPA, safer school pest management program adoption will likely remain spotty across the country as it is now. For effective nationwide change, the provisions of SEPA are critical to providing a safer school environment.

Schools should be environmentally safe places for children to learn. It often takes a pesticide poisoning, repeated illnesses, or a strong advocate to alert a school district to the acute and chronic adverse health effects of pesticides and the viability of safer pest management strategies. IPM has proven to be a vital tool to reducing student and school staff's exposure to hazardous pesticides.

Action. Where another state offers protection that is not provided by your state, advocate for it. Where policies exist, make sure that they are enforced. Enforcement of existing pesticide laws is also critical and often the most difficult phase of community-based efforts. Both the adoption of laws and ensuring their enforcement once adopted, require vigilant monitoring and public pressure. Parents and community members can help school districts improve their pest management practices by contacting district officials and encouraging them to implement an IPM and notification program. School administrators will be more conscious of their pest management policy if they know parents are concerned and tracking their program.

For information on state pesticide laws, school district policies, the hazards of pesticides, safe practices and tools getting policies adopted, please contact Kagan Owens, senior project associate, Beyond Pesticides, 202-543-5450, info@beyondpesticides.org, www.beyondpesticides.org.

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