Pesticides and You

News from Beyond Pesticides: Protecting Health and the Environment with Science, Policy & Action

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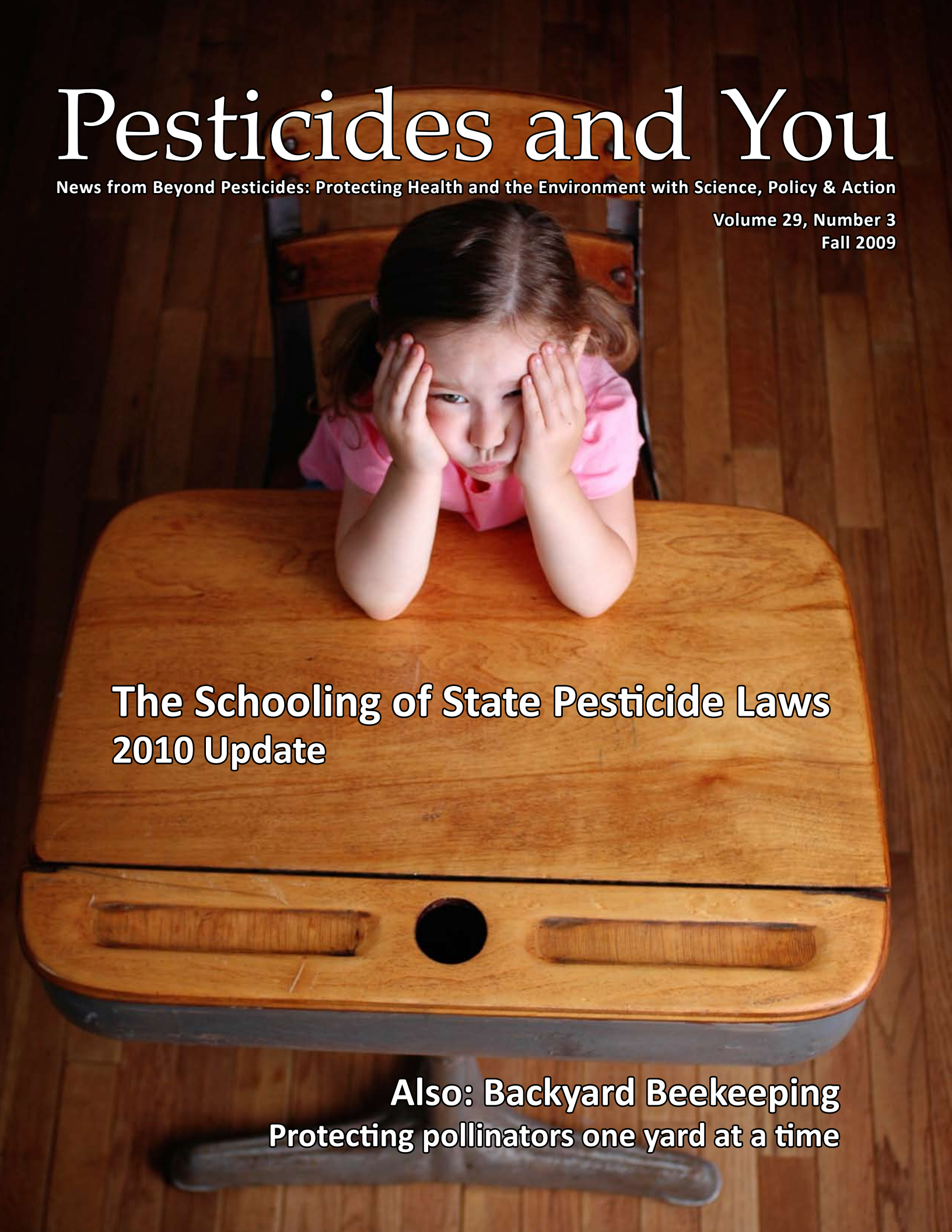

The Schooling of State Pesticide Laws
2010 Update

Also: Backyard Beekeeping
Protecting pollinators one yard at a time

A Seat at the Obama Organic Table

We have a seat on the National Organic Standards Board (NOSB)! I was notified at the end of September that I received an appointment to a five-year term by Secretary of Agriculture Tom Vilsack! This is an important opportunity, one that is shared with the Beyond Pesticides family.

You know what organic means to our future. Organic practices are the solution to the problem of pesticide poisoning and contamination. It is clear that organic approaches to land and structural management can no longer be a niche market. Its exponential growth is central to long-term sustainability efforts, a green economy, health and environmental protection, and key to attacking global climate change in a serious way. Our goal now must be to expedite the growth of organic and replace chemical-intensive practices.

Organic integrity and growth

When an environmentalist position became open on the NOSB this summer I kept asking myself, "If not now, when?" With a sense of urgency to ensure the integrity and growth of organic practices, and with the help of many in the environmental and organic community, my name was placed in nomination.

Yes, to ensure integrity and growth, it is incredibly important that organic practices are clearly defined and evaluated on an ongoing basis, that they meet the standards we expect and need to protect our land, air, water, and food, ensure stewardship of the environment, and create a safe workplace (from farm to factory).

I believe that seasoned environmentalists, with their organizational backing, must be at the NOSB table to advance the vision and core values of organic management practices, which replace unnecessary and polluting chemical-intensive methods that are bad for all the documented reasons. That's why when I was a part of the group that advocated for a strong national organic standard in the late 1980's, I urged that environmentalists be represented in the decision making process. Having seen that we were creating markets for organic food production with our daily work to educate the public on pesticide hazards and the organic solution, I believed in 1989, and believe more strongly today, that organic farmers, environmentalists and consumers together are an incredibly positive and powerful force in the "greening" of agriculture and other parts of our economy.

The NOSB, created by an Act of Congress in the Organic Foods Production Act of 1990, is composed of 15 members from different segments of the organic community and industry -- consumer/public Interest, environmentalists, farmers/growers, handlers/ processors, retailer, scientist, and certifier. An environmental view on the board is a critically important perspective that will be well-served by an individual who has strong ties to the environmental community, works with the cross section of people and organizations that comprise it, is connected to grassroots activities nationwide, and is sensitive to local, state, and national efforts that connect people as environmentalists. With this position, we –together—can strive to turn organic into the predominant approach to food production and land management.

To be sure, there is push back from the chemical industry and there have been appointments to the Obama Administration who have taken positions in the past with which we disagree. However, I believe we can and must align the entire Administration behind a growth strategy for organic.

The schooling of state pesticide laws

In this issue of PAY, we update our landmark report The Schooling of State Pesticide Laws, originally published in 1998. The report documents the progress that we are making in taking hazardous pesticides out of the schools all across the country. But a state strategy does not ensure protection for all children, resulting in a learning environment in which toxic chemicals do not impede children's ability to breathe easily and think clearly. We have established that schools, in managing their buildings, typically use hazardous pesticides linked to respiratory problems, learning disabilities, cancer, neurological and immune system problems, and developmental effects. We know that the chemicals used outdoors have similar effects in addition to the environmental poisoning that they cause to waterways, birds and bees. Practitioners have shown us increasingly over the last decade that toxic chemicals are not needed to manage unwanted insects in buildings or create green and lush playing fields. Fifteen states now require integrated pest management (IPM), although we believe the definition of this practice needs strengthening. Connecticut bans the use of pesticides on their school grounds.

The School Environment Protection Act (SEPA) has been introduced in the past several sessions of Congress to set a minimum standard for pest management in schools that is not reliant on toxic pesticides. A form of the legislation has passed the U.S. Senate twice, but failed to move through a joint House-Senate conference committee. The time is now to successfully address this issue –to give every child the right to a pesticide-free learning environment. As Rep. Rush Holt (D-NJ), the prime sponsor of the legislation in the House, has said, "SEPA would provide basic levels of protection for children and teachers from the use of toxic pesticides at schools. The School Environment Protection Act offers our nation an opportunity to protect children's health and create a safer learning environment." Let your members of Congress know how you feel about this. For more information on SEPA, please visit our webpage at http://www.beyondpesticides.org/schools/sepa/ or call us 202-543-5450.

Happy Holidays!

Jay Feldman is executive director of Beyond Pesticides.

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Start Talking to Neighbors

I was wondering if you had a fact sheet on pesticides that would be beneficial for handing out to my neighbors. I live in a middle class neighborhood with my two year old and everyone uses pesticides on their lawns. I don't know how to bring up my concerns. I only finally stopped my husband from using them on our yard. What can I do?
- Renee, IL

We're glad to hear that you are ready to become active in your community! Unfortunately, too many people decide to ignore news that the unnecessary use of pesticides is threatening their health and like to believe that the current protections in place are adequate. People don't want to believe that their current lifestyle may be harming them and their families.

The secret is to understand how the person you are talking to thinks, and deliver a message that they will respond to. When talking about pesticides, we suggest that you emphasize human health, stress saving money with alternatives, use reasonable rhetoric, and keep your argument simple.

For more information, please read our fact sheet,"Getting The Message Across: How to talk to others about pesticides and get them to act." This can be found under our "Info Services" tab on our homepage, where you can also find up-to-date guides on alternatives, pesticides, organizing in your community, and more. We also have some merchandise, such as our "Pesticide Free Zone" yard sign that you can display on your lawn or our door knob hangers to distribute through your neighborhood. Additionally, any of these materials are available by calling our office at 202-543-5450. Good luck!

Pesticide-Free Housing Options

Do you have any information on finding "safe" housing for people with Multiple Chemical Sensitivities (MCS)? My husband and I are unable to find something affordable for people with MCS who can't work. We are actually living out of the car now because we have no where safe to go and no money to buy the options that are available!
- Lindsay, MN

Thank you for contacting Beyond Pesticides with your question about affordable chemical-free homes. Information on pesticide-free communities and MCS "safe" housing is unfortunately sparse, because so many people who suffer are unable to organize and be active due to health reasons. The good news is that we are doing a lot of work to help eliminate harmful pesticides, and we continue to fight for stricter regulations so that everyone may have access to a pesticide-free home.

For starters, "MCS and Environmental Illness" are both recognized as disabilities under subsection 802(h) of the Fair Housing Act, 42 USC §3602(h), according to a U.S. Department of Housing and Urban Development (HUD) Memo in 1992. While federal laws prohibit discrimination on the basis of disabilities, many landlords don't accommodate MCS tenants because of a lack of awareness of the law and information on alternatives to pesticides. If you believe there has been a violation of this Act, contact your local legal services organization and try to negotiate with your landlord.

Like you, many people who suffer from chemical poisonings are also unable to work and have few resources, making it even more difficult to find or keep housing. One thing that might be helpful for you is to look into getting a Section 8 housing voucher that would give you some money to help with a more affordable housing option. From here, you can take some steps to 'detox' your home by becoming active in your community and educating yourself and others on IPM methods and alternatives. Talk to your landlord, find out what chemicals are used and suggest alternatives. It is not necessarily going to be easy, but if anything is ever going to change, dialogue is crucial, and Beyond Pesticides is here to help.

If you'd like to stop the poisoning, please complete and submit our Pesticide Incident Report form. From our home page, go to the "Emergencies" tab and click on "Fill out an incident report." We need your help to advocate for better federal, state and local laws to protect you and others from similar poisonings by educating policy makers and the media (if you choose) with stories such as yours. You can send it back via email (info@beyondpesticides.org), fax (202-543-4791), or mail (701 E St SE #200, Washington, DC 20003).

Beyond Pesticides Daily News Blog

Read and comment on stories at www.beyondpesticides.org/dailynewsblog.

Excerpt from Beyond Pesticides original blog post:

State Urges Parents to Ask Schools about Integrated Pest Management Plans

(Beyond Pesticides, September 3, 2009) In the new school year, the Massachusetts Department of Agricultural Resources is urging parents to ask whether their child's school or daycare facility has a current School Integrated Pest Management (IPM) plan...

Rose Marie Says:

(via Facebook) There are many "phases" and interpretations of an IPM Program. It is important to learn the specifics. One cannot take full comfort in being told that an IPM program is being implemented. Details - call for the details!

An excerpt from a breaking news link posted to our Facebook page (www.facebook.com/beyondpesticides, now 800 fans strong - help us reach 1000!)

Kids exposed to pesticides at school/daycare, better enforcement/education needed

(Fox 5 News, Atlanta, August 27, 2009) The Fox 5 Atlanta News Team reported on a two-year investigation into how pesticide companies are treating daycare centers and schools. A surveillance video at a local day care center shows infants exposed to pesticides just minutes after they were applied.

Brandy Says:

I can't believe these pesticide companies! The day I went to take my son to meet his teacher, they had just sprayed the grass with pesticides and you could still smell it. After watching this video, it makes me wonder where else in my son's school they sprayed pesticides. They talk about how restaurants are being sprayed with pesticides, and just yesterday, there was a pesticide truck next door to my husband's work and they were spraying the inside of the kitchen with pesticides. Who knows where else they sprayed in there. There has to be a way to stop this, because if we don't stop it now, it's only going to get worse!

Kristen Says:

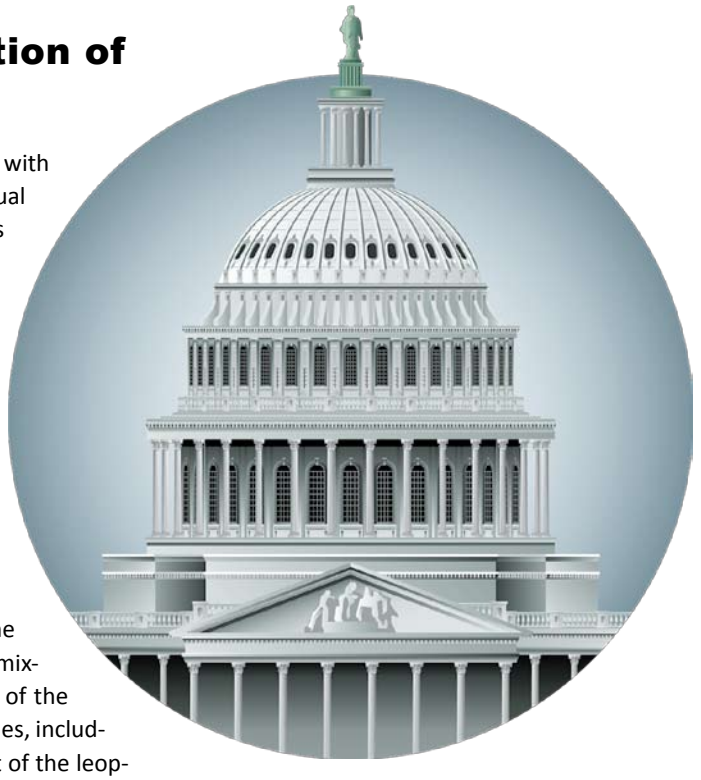
I was interested in the anchors response after the anchor woman said the state was looking into pesticides use in our restaurants. He responded that we certainly don't want pesticides in our food... Should we tell him?

Get Printed!

Beyond Pesticides always welcomes your questions, comments or concerns! Have something you'd like to share or ask us? We'd like to hear about it! If we think something might be particularly useful for others, we will print your comments in this section. Mail will be edited for length and clarity, and unless you specify otherwise, your information will remain anonymous.

There are many ways you can contact us. Join other members and activists in discussions on our facebook page http://www.facebook.com/beyondpesticides or follow us on twitter http://twitter.com/bpncamp! And as always, you can send questions and comments to: Beyond Pesticides, 701 E Street SE #200, Washington, DC 20003, or info@beyondpesticides.org.

Report Finds Inadequate EPA Regulation of Pesticides in Water



The commonly used herbicide atrazine can spike at extremely high levels that go undetected by regular monitoring, according to *Poisoning the Well*, a new report by the Natural Resources Defense Council (NRDC). Currently, the Environmental Protection Agency (EPA) considers an annual average atrazine level of below three parts per billion to be acceptable for human consumption, although studies have shown adverse health impacts below EPA's "safe" levels. The analysis by NRDC discovered that in the 139 municipal water systems from which EPA collected data on a biweekly basis in 2003 and 2004, atrazine is found 90% of the time. Furthermore, 54 of these water systems have at least one spike above three parts per billion.

Even at levels considered "safe" by EPA drinking water standards, atrazine is linked to endocrine-disrupting effects. Research by University of California, Berkeley professor, Tyrone Hayes, PhD, demonstrates that exposure to doses of atrazine as small as 0.1 parts per billion, turns tadpoles into hermaphrodites - creatures with both male and female sexual characteristics. Atrazine has also been implicated in a study as a possible cause for male infertility, blocking the action of the male sex-hormone testosterone and could impact the development of male reproductive organs in humans. In yet another study last year by Rick Relyea, PhD, an associate professor of biological sciences in the University of Pittsburgh, a mixture of small amounts of ten of the most commonly used pesticides, including atrazine, killed 99 percent of the leopard frog tadpoles that he was testing.

Take Action: *Contact EPA Assistant Administrator Stephen Owens (owens.steve@epa.gov) and tell him that any level of atrazine in our drinking water is unacceptable. If a pesticide cannot be used in a way that prevents the contamination of drinking water by that chemical, its use must be banned. For more information on turf pesticide hazards and alternatives, visit our Lawns and Landscapes program page, www.beyondpesticides.org/lawn.*

Beyond Pesticides Director Jay Feldman Named to NOSB

On September 24, 2009, U.S. Department of Agriculture (USDA) Secretary Tom Vilsack announced the appointment of five new members to the National Organic Standards Board (NOSB), including Beyond Pesticides executive director Jay Feldman. Beyond Pesticides thanks Secretary Vilsack, as well as the individuals, organizations and members of Congress that supported his nomination. "I believe that the environmental community must be at the NOSB table to advance the vision and core values of organic management practices, which replace unnecessary and polluting chemical-intensive farming methods that are linked to adverse health and environmental effects, including global climate change," said Mr. Feldman. "I am honored to be named to the NOSB and will use my seat to represent the grassroots environmental community while advocating for the integrity and growth of organic practices."

USDA's Agricultural Marketing Service oversees the National Organic Program (NOP) and the NOSB. The NOSB includes four producers, two handlers, one retailer, three environmentalists, three consumers, one scientist and one certifying agent. The Board is authorized by the *Organic Foods Production Act* and establishes for USDA the National List of Allowed and Prohibited Substances for organic operations. The NOSB also advises the Secretary of Agriculture on other aspects of the organic program. The NOSB appointees will serve terms beginning Jan. 24, 2010, and ending Jan. 24, 2015. *Learn more at Beyond Pesticides' Organic program page, www.beyondpesticides.org/organicfood.*

Under Pressure, EPA Announces Plan to Protect Salmon

On September 11, 2009, the Environmental Protection Agency (EPA) announced plans to place limitations on the use of three organophosphate pesticides — chlorpyrifos, diazinon and malathion — to protect endangered and threatened salmon and steelhead in California, Idaho, Oregon and Washington. The announcement comes in response to a series of lawsuits brought by the Northwest Coalition for Alternatives to Pesticides, Pacific Coast Federation of Fishermen's Associations (PCFFA) and other salmon advocates, with legal representation from Earthjustice, aimed at removing toxic pesticides from salmon spawning streams. In response to the litigation, the National Marine Fisheries Service (NMFS) released its Biological Opinion (BiOp) that set forth a plan for protecting Pacific salmon and steelhead in November 2008. Although NMFS BiOp recommends prohibiting aerial applications within 1,000 feet of salmon waters and ground applications within 500 feet of salmon waters, EPA's plan takes a different course. EPA claims it can achieve the same protections for salmon with buffers ranging from 100 to 1,000 feet, depending on pesticide application rate and stream size. The EPA plan requires industry to fund and carry out monitoring of salmon streams.

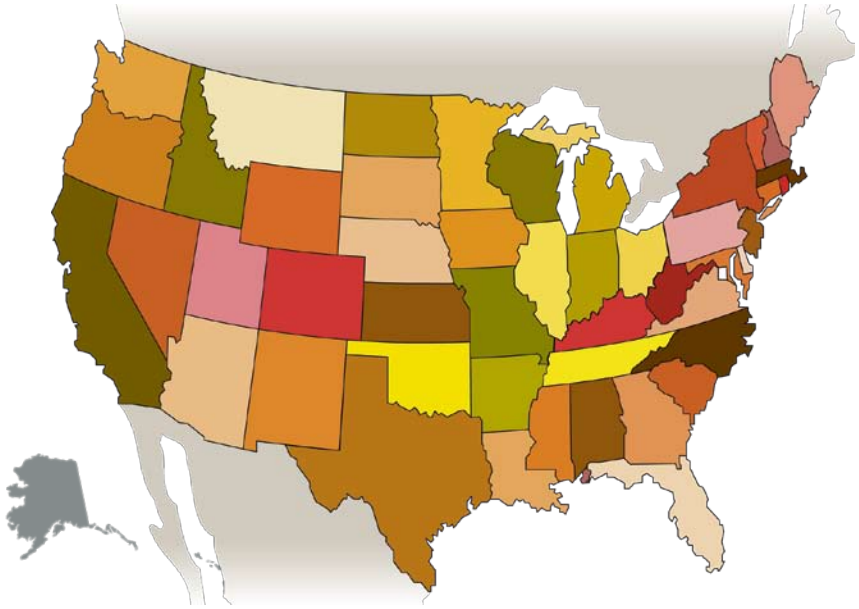
Environmentalists are skeptical that the EPA plan will work effectively. "EPA's decision is a major step toward protecting our salmon stocks and revitalizing the fishing industry," said Joshua Osborne-Klein, an attorney for Earthjustice, the environmental law firm that represents the salmon advocates. "But we're concerned that EPA's alternative won't be enough to keep these poisons out of salmon waters, and we urge the wildlife experts at NMFS to closely review EPA's plan." In addition to jeopardizing salmon, these pesticides pose serious risks to public health – especially the health of young children. A number of recent studies have linked prenatal exposure to organophosphate insecticides with behavioral problems including attention deficit/hyperactivity disorder.

After False Starts, EPA Issues Chesapeake Clean-Up Commitment

On September 9, 2009, the seven draft reports (http://executiveorder.chesapeakebay.net) stipulated in President Obama's May 12, 2009 Executive Order (13508) on the Chesapeake Bay were released by federal agencies. The seven drafts include: reducing pollution and meeting water quality goals, targeting conservation practices, strengthening storm water management at federal facilities, adapting to impacts of a changing climate, conserving landscapes, strengthening science for decision making, and conducting habitat and research activities. The Federal Leadership Committee will use these draft reports to create a strategy defining the actions needed to restore the Chesapeake Bay. The strategy release date of November 9, 2009 provides a 60-day public comment period. Although the final strategy will not be released until May 2010, agencies will be taking action in several areas before the strategy is finalized.

To meet water quality goals for the Bay, nitrogen and phosphorus pollution must be reduced by 44 percent and 27 percent, respectively. EPA intends to hold the states in the watershed more accountable for controlling pollution from urban/suburban and agricultural sources. Many fertilizer products on the market contain a mixture of pesticides, nitrogen and phosphorus, such as "weed and feed" products. While pesticides are not specifically addressed in this executive order, they are a major issue for the health and safety of the Bay. The 2009 white paper, *Pesticides and the Maryland Chesapeake Bay Watershed* (www.mdpestnet.org/publications/MPN-2009WhitePaper.pdf), by the Maryland Pesticide Network, reveals that researchers detected the endocrine disrupting herbicide atrazine in 100% of water samples taken at 60 different stations spread across five different Bay tributaries.

Take Action: *In the absence of state action, it should be noted that 40 states preempt the authority of their towns, cities and counties to restrict pesticides, such as those polluting the Chesapeake Bay. However, the city of Madison and Dane County, WI have banned "weed and feed" as a fertilizer, circumventing state preemption law on pesticides. Contact Beyond Pesticides for information on passing a similar ban in your community. For more information on pesticides and water contamination, visit Beyond Pesticides' Threatened Waters program page, www.beyondpesticides.org/water.*



Massachusetts Urges Parents to Help Enforce School IPM Law

At the start of the school year, the Massachusetts Department of Agricultural Resources (DAR) is urging parents to check whether their child's school or daycare facility has implemented an integrated pest management (IPM) plan. "At home and in the classroom, parents are the first line of defense in protecting their children against pesticide exposure," said DAR Commissioner Scott Soares. "Maintaining a school or day care IPM plan is not only required by law, but it is also crucial to insure children's safety." According to DAR, the vast majority of schools and day care facilities have filed IPM plans with DAR, but roughly 200 schools and 400 day care facilities are not in compliance with the state IPM law. In 2000, Massachusetts passed legislation to prevent unnecessary exposure of children to chemical pesticides, promote safer alternatives, ensure that notification concerning the use of pesticides in schools and day care centers is available to parents, and to promote the use of IPM to reduce schools' reliance on pesticides. The state law requires that schools and day care centers adopt and implement IPM plans that cover both indoor and outdoor areas. IPM is a program of monitoring, exclusion techniques, elimination of habitat, sanitation and other prevention strategies that eliminate toxic pesticides in schools, and only uses least toxic products as a last resort.

Take Action: *Beyond Pesticides urges all parents to ask their school whether they have adopted and implemented an IPM policy. If your school does not have an IPM program, we can provide you with the resources necessary for developing, adopting, and implementing a school IPM program. For more information, visit our Children and Schools program page, www.beyondpesticides.org/schools, and read the Schooling of State pesticide Laws – 2010 Update in this issue of Pesticides and You.*

Killing Germs with Cinnamon Oil

Researchers are suggesting that sanitizers made with essential oils may be a safer option than soaps containing harmful antibacterial ingredients, like triclosan, which has been linked to a range of adverse health and environmental effects that include endocrine disruption and antibacterial resistance. A recent study, published in the October 2009 issue of the Journal of Cranio-Maxillofacial Surgery, found that a cinnamon oil solution was just as effective at killing several common bacteria as many other antiseptics commonly used in hospitals. The team of surgeons conducting the research tested several common essential oils, and found that each has demonstrated promising efficacy against several bacteria, including multi-resistant strains. Another study, published in the August 2008 issue of *Letters in Applied Microbiology*, tested bactericidal activity of 13 different essential oils and had similar results, with cinnamon being the most effective. At concentrations as low as 10 percent or less, cinnamon oil was also effective against several antibiotic-resistant strains of bacteria, such as *Staphylococcus* and *E. coli*.

While essential oils are generally safer than synthetic pesticides, Beyond Pesticides cautions that just because a product is derived from a plant does not mean that it is safe for humans or that it cannot kill non-target species. Additionally, some essential oil-based products may also contain hazardous compounds as well. Make sure that you know all of the ingredients before using any pesticide product.

For more information on antibacterial chemicals and alternatives, see our Antimicrobial program page, www.beyondpesticides.org/antibacterial, and check out the Pesticide Gateway for detailed pesticide information, www.beyondpesticides.org/gateway.

Canadian Medical Association Calls for Triclosan Ban

At its annual convention in August 2009, the Canadian Medical Association called on its federal government to ban the sale of household antibacterial products such as those containing triclosan (Resolution DM 5-20). The motion was proposed by Ottawa family physician Kapil Khatter, M.D., who is also president of the Canadian Association of Physicians for the Environment. He says he can understand the appeal of antibacterial products, but in reality they do more harm than good. Studies have increasingly linked triclosan to antibacterial resistance, endocrine disruption, asthma, cancer, and subtle effects on learning ability. Because the chemical goes down the drain, it wreaks havoc with the environment, converting to highly toxic dioxins and contaminating waterways and wildlife.

In response to the strong scientific evidence showing that the pervasive use of triclosan poses imminent threats to human health and the environment, Beyond Pesticides and Food and Water Watch submitted an amended petition to the U.S. Food and Drug Administration (FDA) in August 2009 seeking to ban the use of the controversial pesticide triclosan for non-medical applications. The petition establishes that FDA's allowance of triclosan in the retail market violates the *Federal Food, Drug and Cosmetic Act*. Regulated by both the FDA and the U.S. Environmental Protection Agency (EPA), triclosan is an antibacterial used in hundreds of common consumer products such as soaps, cosmetics, deodorants, toys, and even clothing.

For more information on antibacterial chemicals and alternatives, see our Antimicrobial program page, www.beyondpesticides.org/antibacterial.

Bee Colony Collapse Linked to Genes, Viruses and Pesticides

Researchers at the University of Nebraska-Lincoln believe they may have determined the first causal relationship linking colony collapse disorder (CCD) to pathogens and other environmental stresses, including pesticides. CCD is marked by a disappearance of honey bees that has beset beekeepers, killing off more than a third of commercial honey bees in the U.S. in 2006-2007. Their study, "Changes in transcript abundance relating to colony collapse disorder in honey bees," was published September 1, 2009 in the *Proceedings of the National Academy of Sciences*. The researchers determined, by comparing the differences in gene expression in healthy and CCD colonies, that the infected colonies had considerably more damage in their ribosomes. (Ribosomes function in the expression of the genetic code from nucleic acid into protein in all animal, plant and fungal cells.) The infected hives also had higher rates of picorna-like viruses, which damage ribosomes. The researchers believe the loss of ribosomal function leaves the bees susceptible to pesticides and infections. "The loss of ribosomal function would explain many of the phenomena associated with CCD," said May Berenbaum, head of the Department of Entomology. "If your ribosome is compromised, then you can't respond to pesticides, you can't respond to fungal infections or bacteria or inadequate nutrition because the ribosome is central to the survival of any organism. You need proteins to survive."

Take Action: *Beyond Pesticides believes that pesticides are likely to be a part of the CCD equation and a precautionary approach must be taken. We know how to live in harmony with the environment through the adoption of sustainable practices that simply do not allow toxic pesticide use. Because our survival depends on healthy pollinators, we must do everything in our power to solve this problem. Email EPA Administrator Lisa Jackson (jackson.lisap@epa.gov) and tell EPA to take a precautionary approach regarding pesticides that kill or have sublethal impacts on bees and other pollinators.*

After Deadly Explosion, Bayer Reduces Chemical Stockpile to Still Hazardous Levels

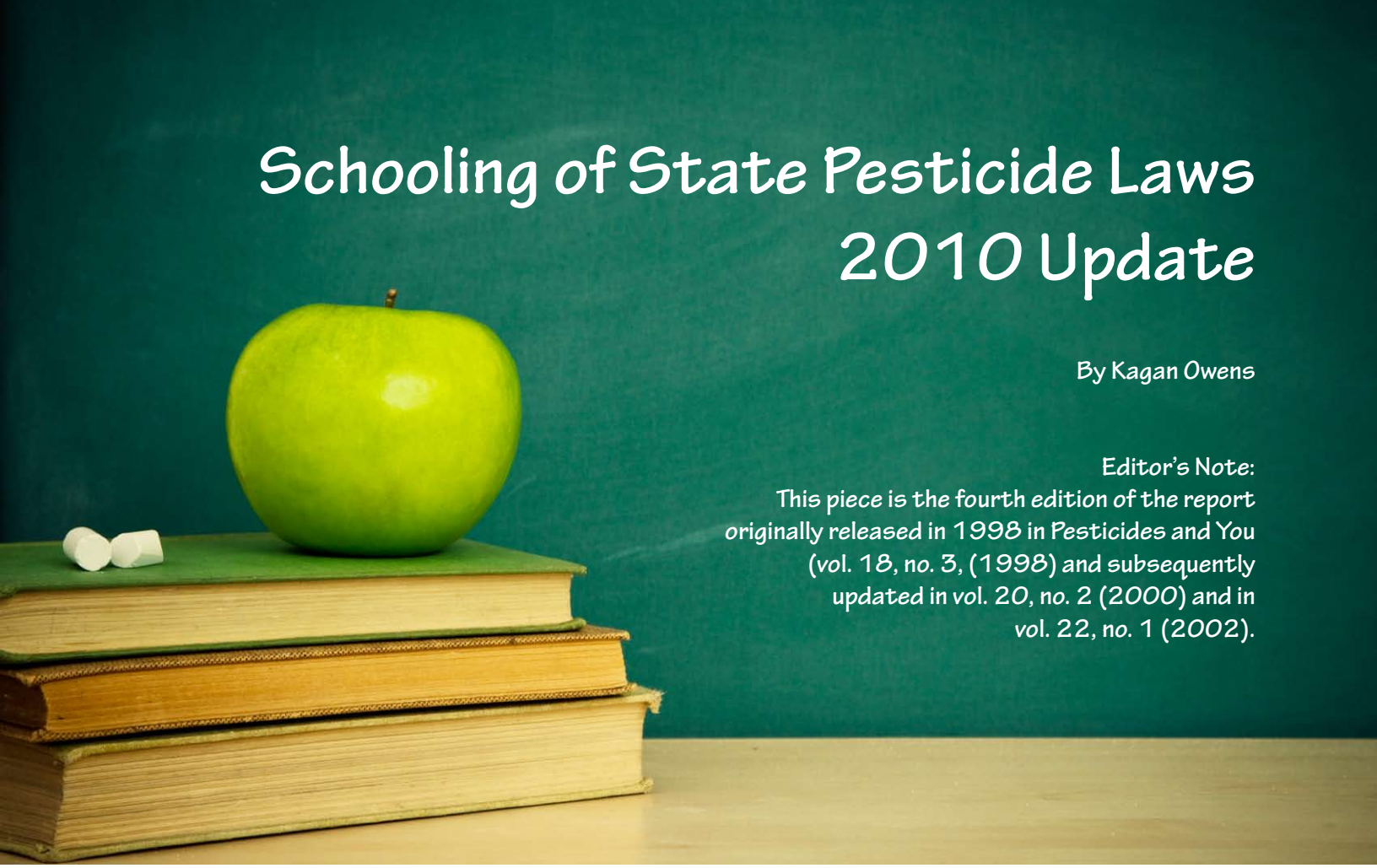
On August 26, 2009, Bayer CropScience announced plans to reduce by 80% the storage of methyl isocyanate (MIC), the chemical used in pesticide production that caused the explosion in Bhopal, India and in Institute, WV. Two workers were killed in August 2008 when the chemical, an intermediate chemical used in the production of aldicarb, carbaryl, carbofuran, methomyl and other carbamate pesticides, exploded at a Bayer facility in Institute. Advocates point out that even if Bayer follows through with its 80% reduction, it would still allow up to 50,000 pounds of MIC to be stored on site. This would be similar to the amount of the chemical present in the 1984 Union Carbide (now owned by Dow Chemical) explosion in Bhopal. Last summer, when a pesticide tank exploded in West Virginia, comparisons were drawn between the site's potential risk and the Bhopal disaster, in which an explosion and leak killed thousands. Currently, the U.S. plant has the capacity to store up to 40,000 pounds of MIC above ground and 200,000 pounds below ground. Bayer says it will eliminate all above ground storage. "An 80% reduction is a decent good first step in addressing the dangers that exist in the facility and we look forward to seeing more progress," Maya Nye, a spokeswoman for People Concerned About MIC, told the *Charleston Gazette*. "The 20 percent that remains will still be capable of causing the amount of damage that happened in Bhopal, so we need to remain vigilant about these dangers that still exist."

Bayer has previously rejected calls to eliminate or reduce MIC production and says the decision is not an admission that the plant's MIC stockpile is unsafe, but is an effort to address concerns from public and government officials. Bayer does not plan to rebuild its methomyl unit, where the explosion occurred, however it will buy outside sources of methomyl to make its Larvin brand pesticide products. Bayer says it will stop producing MIC by July 2010 for the FMC Corp. to use in making the pesticide carbofuran. It should be noted that EPA canceled all carbofuran tolerances by the end of 2009. Environmentalists believe that production beyond the cancellation date is a sign that the manufacturer is fighting the cancellation or manufacturing for export. Bayer will continue to manufacture MIC for the production of aldicarb and carbaryl (Sevin) indefinitely.

Healthier Back-to-School Lunches

This year back to school doesn't just mean new teachers, new school supplies and new clothes. For some, it means a new school lunch program – one that focuses on nutrition and organic and locally grown foods – as is the case for the Boulder Valley School District (BVSD) in Colorado, where they have begun reforming the quality and nutrition of the food served in its schools. Nationally renowned "Renegade Lunch Lady" Chef Ann Cooper is BVSD's Interim Director of Nutrition Services as part of a one-year contract with the district. Although changing a school's lunch program cannot happen overnight (Chef Cooper predicts that it will take several years for the full vision to be realized), cafeteria offerings can be quite healthier from the get-go. A key component to the BVSD change is professional development for nutrition services personnel with five days of training. In addition, as a first step, every school cafeteria in the district will provide regionally produced organic milk, locally produced foods from fruits and vegetables to whole grain baked products and burritos, and fresh salad bars. BVSD has also eliminated trans fats, high fructose corn syrup and highly processed foods.

Some school districts, including Seattle public schools, and California school districts in Berkeley, Santa Monica, and Palo Alto, already have policies banning junk food and encouraging organic food in school cafeterias. An organic salad bar started at Lincoln Elementary School in Olympia, Washington has proven so popular and economically feasible that all grade schools in Olympia now have one. *For more information on organic school lunches, see Beyond Pesticides' fact sheets at www.beyondpesticides.org/schools.*



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

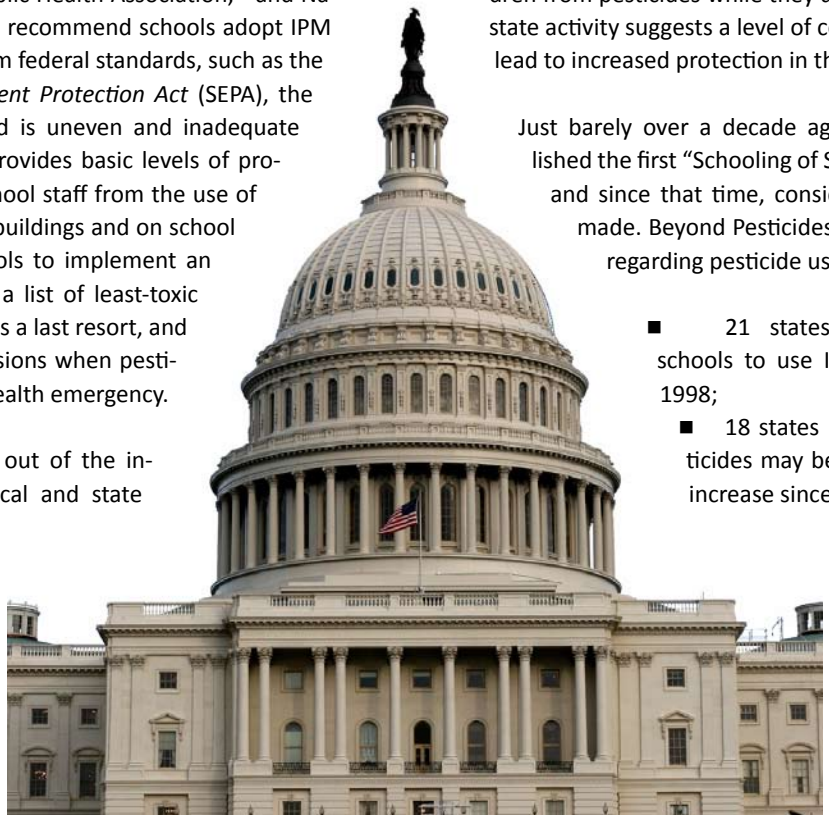
The vast majority of pesticide products registered for use by EPA and state governments have never been fully tested for the full range of potential human health effects. Pesticides can be registered even when they have been shown to cause adverse health problems. The regulatory system justifies allowable 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:

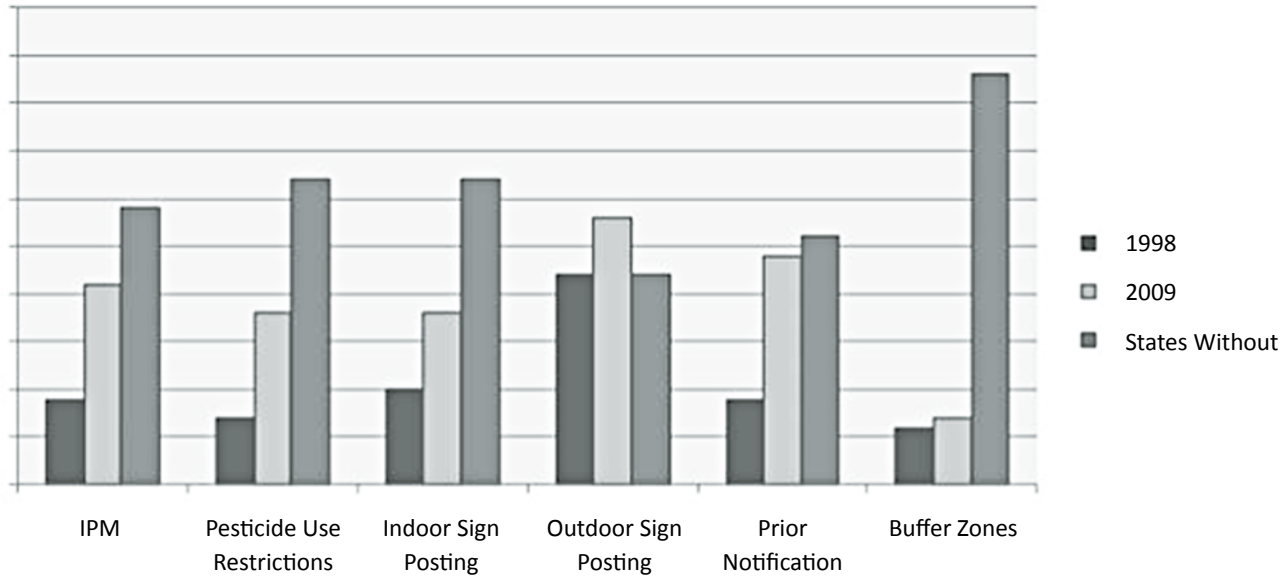
- 21 states recommend or require schools to use IPM, a 24% increase since 1998;
- 18 states restrict when or what pesticides may be applied in schools, a 22% increase since 1998;
- 18 states require the posting of signs for indoor school pesticide applications, a 22% increase since 1998;
- 28 states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

Providing pollinator habitat one yard at a time

In light of growing concern over the recent loss and disappearance of bees and bee colonies across the country, many backyard enthusiasts are rediscovering a relatively simple and fun way to assist these essential pollinators. Attracting and keeping bees in your backyard can be easy, especially if you already enjoy gardening. By providing bee habitat in your yard, you can increase the quality and quantity of your garden fruits and vegetables.

The United States is home to a variety of bees species. Bumblebees, carpenter bees, sweat bees, leafcutter bees, digger bees are just some of thousands of bees in the U.S. Most of them are solitary, friendly bees that nest in holes in the ground or burrows in twigs and dead tree limbs.

While many may prefer butterflies and birds to pay a visit to their gardens and backyards, bees should also be welcomed since they are such important pollinators of many crops in our food supply. Most bees are not aggressive and rarely sting, and once this fear is overcome, many find bees a welcome addition to their backyards. If you are interested in encouraging bees to visit your yard, the following tips will ensure that you and your bees live happily together.

Create a Bee Garden

- **Bee Colorful!**

Bees are attracted to most flowering plants, and are especially fond of blue and yellow flowers. Other colors such as purple, white and pink also serve to attract bees. Make sure there are plants that will flower during different parts of the season to keep your garden flourishing throughout the summer and well into fall. This serves to provide a steady supply of nectar and pollen for bees. A diversity of flowers planted is close proximity to each other strongly attract bees. Gardens with 10 or more species of flowering plants attract the greatest number of bees. The best plants are those native annual and perennial wildflowers which naturally grow in your region.

■ **Provide Housing and Water**

Bees also need sources of water. Water can be provided in very shallow birdbaths or by adding a quarter inch of sand to a large saucer, such as those designed to fit beneath clay flower pots. Fill the saucer so that the water rises about a quarter inch above the sand. Add a few flat stones, some should rise above the water and some should just touch the surface. These stones will allow bees and other insects to drink without drowning. To avoid creating a mosquito breeding site, be sure to change the water at least twice a week.

Many bees do not live in hives or colonies. By creating an ideal nesting site, you can attract species to nest and hibernate in your garden. Bumblebees, for example, hibernate and nest in abandoned rodent nests, birdhouses, snags and logs. They also are attracted to piles of cut vegetation, compost heaps, and mounds of earth and rubble. Leaving some areas in your garden bare, preferably in a sunny location, provides other ground-nesting bee species areas to dig tunnels into the soil to create nests. Brush piles, dead trees, and some dead branches or dried pithy stems attract stem-nesting bees such as leafcutter bees, while others such as the blue orchard bee prefer to use mud to build their nests.

Honeybee Keeping

For bees that live in hives, such as the honeybee, you can set up artificial beehives to shelter bees, as well as harvest their tasty honey! Aspiring beekeepers must decide which subspecies of honeybee to acquire and purchase protective equipment. If you are interested in keeping honeybees, the American Beekeeping Federation recommends that you find a local bee club in your area. Most clubs either offer courses in basic beekeeping or can direct you to such courses. These are often given at the beginning of the year, in order to prepare people to start their hives in the spring. Look for those offering organic beekeeping.

With recent loses of bee hives across the nation and the pesticide

Bee Houses

Bee Houses are a convenient way to attract and provide shelter for certain bee species. Find out which bees are native to your area.

Materials:
Block of untreated wood

Construction:

1. Drill holes in the block, spaced 3/4” apart. For leafcutter bees, the holes should be 1/4” wide and 2 1/2 -4” deep. For mason bees, drill 6” deep, 5/16” wide holes. Do not drill completely through the block.

2. Place block on the side of a house or shed, beneath the eave, or mount it securely on a fence post or pole at the edge of the yard. Attach an overhanging roof piece to the block if placed away from an overhang or building eave.

3. Block should be erected in early spring and placed at least three feet above the ground. Position block to face southeast, allowing it to get morning sun. Hang your bee house under the eaves of your house or garden shed, protected from direct sun and rain.

For more information, visit the Maryland Department of Natural Resources, www.dnr.state.md.us/wildlife/wabees.asp.

Beeware!

While most bees will sting if their nests are threatened, the Africanized honeybee (aka African Bee, Killer bee) is more aggressive and will attack with little provocation. Regardless of myths to the contrary, Africanized honeybees do not fly out in angry swarms to randomly attack unlucky victims. The Africanized honeybee is considered an invasive species and has been detected in the West, South and Southwest regions of the U.S.

It is important to note that hives kept by beekeepers help to dilute Africanized honeybee populations and prevent the spread of less desirable subspecies. The Africanized honeybees are also less attracted to areas were other foragers already exist. However, care must always be taken, since the Africanized honeybee and other honeybees are nearly identical in appearance.

Africanized honeybee (top), European honeybee (bottom). Photo: Scott Bauer, USDA Agricultural Research Service.

association with the declining health of bees, many beekeepers are rethinking the management of their hives and turning to natural and organic methods.

Organic Beekeeping

Colony Collapse Disorder, or CCD, has devastated many beehives across North America and Europe. However, beehives treated to organic cultivation methods have been mostly spared a similar fate. While exposures to pesticides will adversely impact the health of bees, other aspects of beekeeping can also contribute to the decline of honeybees.

These include:

- The location of bee colonies and high rates of hive mobility (intensive agriculture, industry, traffic areas);
- Breeding methods (including instrumental insemination that minimizes the strength and health of honeybees, and wing clipping);
- The use of plastic hives, and materials used for painting hives;
- Sugar feeding (eg high fructose corn syrup), pollen substitutes which contain antibiotics;
- Allopathic disease control (medicines against American foulbrood, Varroa);
- Honey harvest methods (harvesting unripe honey, combs containing brood, the use of chemical repellents);
- The effects of synthetic fertilizers on the quality of nectar and pollen of plants;
- The constantly dwindling variety and quantity of wild flowers; and,
- The effect of genetically modified (GM) pollen (rapeseed, maize, soya and others).

Beekeepers looking to organic beekeeping, without the reliance on the above-mentioned practices, manage their hives sustainably and successfully. By practicing organic beekeeping, and thus minimizing stress on the bees, organic beekeepers have been able to maintain their hives.

Before Beekeeping

Here are some important points to think about:

1. *Zoning.* Do your zoning regulations permit bees where you live? Check before you start beekeeping because you may be violating a local ordinance.
2. *Neighbors*. Many people may not be comfortable living with bees in close proximity. Having a high fence or hedge will help to contain bees in your yard.
3. *Which type of bee is right for you?* There are several varieties of bees of European origin that you can choose from: Italian, Carniolans, Russians, Caucasian.

Resources

- American Beekeeping Federation: www.abfnet.org
- American Apitherapy Society: www.apitherapy.org
- National Honey Board: www.honey.com
- Bush Farms: www.bushfarms.com/bees.htm
- The Melissa Garden: www.themelissagarden.com
- *The Backyard Beekeeper: An Absolute Beginner's Guide to Keeping Bees in Your Yard and Garden*. A book by Kim Flottum.

Vanishing of the Bees

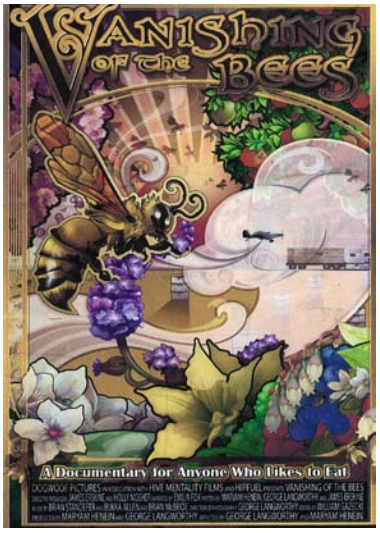
A film directed by George Langworthy and Maryam Henein, 95 minutes. *Vanishing of the Bees* explores the mysterious collapse of the bee population across the planet and its greater meaning about mankind's relationship with the natural world. In addition to studying our reliance on the honeybee as the cornerstone of modern agriculture, the documentary celebrates the ancient relationship between humans and bees.

Shot over two years, the film traces the story across the globe from the West Coast of America to the Australian outback, from Paris to the South Coast of England. As scientists and beekeepers struggle to understand what is happening to their bees, the film explores the various hypotheses – is it a virus at the heart of this ecological disaster? Is it parasites? Is it pesticides? Or equally worryingly, is it down to a symptom of changes in agricultural practice? Following several beekeepers, we learn about beekeeping as a way of life, and the role of bees in our environment.

Bees provide one-third of everything we eat. Without them farming would be thrown into chaos. 80% of insect pollinated plants rely on the honey bee to bring them to life. Without the honey bee, crops of over 90 fruits and vegetables would be seriously diminished, if not completely lost – that's apples, pears, blueberries, almonds, cranberries, even cotton would be affected.

The focus of the film is unraveling the mystery of Colony Collapse Disorder, the specific affliction that emerged in 2004-2005 in the U.S. and has spread across the globe since being discovered by Pennsylvanian beekeeper David Hackenberg.

Conflicting opinions and heated controversy abounds surrounding the cause behind the phenomenon known as Colony Collapse Disorder. The film examines this issue with the help of scientists, beekeepers and policymakers, providing the audience with a comprehensive look at a complex and vital story that merits more than a sound bite.



The film opens in the Australian outback; a scene is unfolding beneath the eucalyptus trees, as several men dressed in bee suits blast bees out of their hives and into small boxes. The bees are measured out like oats, and packed on to a truck before being taken to the airport. Tens of thousands of live bees are placed on the hold of a 747 and flown to San Francisco where they are taken to work in the fields pollinating almonds for the rest of their short lives. They will never return home.

For thousands of years bees have served as symbols of unity, industriousness and what it means to work for the greater good. In keeping with this historic connection, the aim of the film is to provide tangible solutions and inspire audiences to make the changes we want to see in the world for the good of humankind, honeybees and all life on Earth.

Filmmakers George Langworthy and Maryam Henein say, "We were drawn to make this documentary because it encapsulates grand issues about our ecology, agriculture, economy and politics in a mystery about the amazing little honey bee. Having started production right as the story broke, we've been allowed an in-depth and chronicled look at the lives and hearts of our characters. Beekeepers and scientists are fascinating people and we really have been blessed with such generous access to their homes, their travels, their laboratories and their innermost thoughts and feelings."

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