

Pesticides and You

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

Volume 29, Number 4

Winter 2009-10



Growing an Organic Food System

One farm family's experience
converting from a chemical-
intensive to organic dairy

**Also: Schooling Without Pesticides
The School Environment Protection Act: Myths and Facts**

Applying Organic Law to the Protection of Children and Toxics Policy Reform

One of the highlights of the 2009 National Pesticide Forum, *Bridge to an Organic Future*, was a talk by organic dairy farmer Neill Lindley of Chatham County, North Carolina, who in 2007 received organic certification after transitioning to organic practices. His love of farming and the benefits of organic practices form a framework for thinking about approaches to regulating toxics more broadly, an approach that rejects toxic chemicals and embraces practices that create a default against their use. (Mr. Lindley's talk to the conference is featured in this issue of PAY.)

The Organic Experience. . .

Mr. Lindley's experience sets a context for challenging our society's dependence on toxic chemicals in all settings. It makes sense that we would juxtapose a discussion of organic with the introduction of the *School Environment Protection Act* (SEPA), which was introduced in the U.S. Congress in December 2009. SEPA takes the principles of organic, a systems approach not dependent on toxic chemicals, and applies it to the school environment with the goal of protecting children's health.

As a new member of the National Organic Standards Board (NOSB), I am reminded almost daily about approaches to land and building management that start with the premise that toxic materials are not necessary. The *Organic Foods Production Act* (OFPA) builds on the notion that toxic chemicals are not needed to grow our food. SEPA attempts to do the same thing, building on the experience of OFPA and the success of the organic sector and people like Mr. Lindley.

The legislation requires school integrated pest management (IPM) plans, similar to the organic systems plan. It stresses prevention strategies that keep unwanted insects out through the sealing of entryways, sanitation, and elimination of attractive habitat and other conditions that are conducive to pest problems. It employs an essentiality principle by allowing "least-toxic" pesticides, with a clear definition, only as a last resort. Under OFPA, we ask, "Is there another practice that would make the substance unnecessary?" This is key because even under the best of circumstances, we do not have all the information we would like to fully evaluate substances.

To take advantage of the knowledge of those in the pest management, scientific, and parent community, SEPA creates the National School IPM Advisory Board to oversee implementation of the act and determine the acceptable "least-toxic" materials in accordance with the legislation's definition. This board is similar to the NOSB, with a high degree of transparency in decision making.

. . .Applied More Broadly

We are hearing from some practitioners of IPM that successful pest management is impossible with the level of chemical restriction that SEPA imposes. However, we hear every day that parents do not want their children exposed to chemicals that cause cancer,

asthma, neurotoxic and immune system effects, endocrine disruption, developmental disabilities, and more, especially when they are not necessary. And it is not just Beyond Pesticides that is hearing this. Towns and cities across the country, schools, hospitals and homeowners want the same thing. The good news is that it is possible today to manage buildings and grounds without pesticides that cause these effects.

SEPA utilizes modern approaches and green chemistry on the cutting edge of technology that has made the toxic chemicals obsolete. Companies that are selling services to parents and other customers looking for "green" services tell us that they have all kinds of modern tools in their toolbox, from mechanical, biological, to chemical products derived from natural substances, which meet the standards of SEPA and work just fine when they are needed. When an IPM program is operating effectively with all the systems in place, practitioners say they do not need to use much if any pesticide product at all.

IPM is an evolving methodology. Years ago IPM practitioners did not differentiate among all the pesticides available in the marketplace. They were (and many are still today) highly dependent on very hazardous materials, except they only used them when their monitoring identified pests. So, in most cases, even the best IPM system was still dependent on highly toxic chemical products. Today's IPM systems that are a part of the "green" movement and not stuck on pesticide-dependency put much more emphasis on practices and management and only use selected products as a last resort, meeting the health and environmental screen in SEPA.

We were told three decades ago by many that organic was impossible to commercialize, that it was unrealistic, that it "takes away the best pest management tools." Now organic is over a nearly \$20 billion industry with increasing growth among practitioners worldwide.

SEPA is cutting edge legislation that embraces the experiences across the country where schools and communities have rejected the old arguments and are meeting the challenges with new and creative approaches that manage pests and protect health and environment at the same time. In addition to generating support for SEPA nationwide, we must elevate the principles in the legislation and the OFPA experience to change our approach to chemicals policy reform, learning from those approaches that advance sustainable practices and replace toxics with alternatives, rather than seeking to mitigate hazards through risk assessments which allow unnecessary poisoning and contamination.



Jay Feldman is executive director of *Beyond Pesticides*.

Contents



page 9

2 Mail

Carpet Beetles!; from DailyNews Blog: EPA Opens Public Comment Period on Uncertainty Factor in Pesticide Risk Analyses; Groups Call for Ban of Dangerous Herbicide 2,4-D

4 Washington, DC

EPA May Expand Use of FQPA 'Safety Factor' to Include Workers; CDC Issues Fourth Report on Body Burden of Toxic Chemicals; Chemical Security Legislation Passed by House; FAO Calls for Focus on Organic Agriculture at Climate Talks

6 Around the Country

Use of Insect Repellent Associated With Birth Defect; Disinfectants May Be Hazardous to Your Health; Report Finds GM Crops Increase Pesticide Use and Resistant Weeds; Low-Level In Utero Pesticide Exposure Linked to Behavioral Impacts; Bee Die-Offs Linked to Pesticide Mixtures, Window of Exposure; No Justice in Bhopal 25 Years after Plant Explosion

9 Schooling Without Pesticides

Federal bill suspends hazardous pesticide use, defines safe management practices

12 The School Environment Protection Act of 2009: Myths and Facts

19 Growing an Organic Food System

One farmer's experience converting from a chemical-intensive to organic dairy operation

24 Greening the Community: Speaker Highlights

28th National Pesticide Forum selected speaker bios

Pesticides and You © 2010 (ISSN 0896-7253) is published 4 times a year by Beyond Pesticides. Beyond Pesticides, founded in 1981 as the National Coalition Against the Misuse of Pesticides (NCAMP), is a voice for health and the environment, promoting protection from pesticides and safe alternatives; donations are tax-deductible.

National Headquarters:

701 E Street, SE,
Washington DC 20003
ph: 202-543-5450 fx: 202-543-4791
email: info@beyondpesticides.org
website: www.beyondpesticides.org

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BEYOND PESTICIDES STAFF

Jay Feldman, *Executive Director*
John Kepner, *Project Director*
Kagan Owens, *Senior Project Associate*
Nichelle Harriott, *Research Associate*
Stephanie Davio, *Public Education Associate*
Sharon Fried, *IPM and Health Care Facility Project Director*
Terry Shistar, *Ph.D., Science Consultant*
Adelia Bles, *Intern*

PESTICIDES AND YOU

Jay Feldman, *Publisher, Editor*
Jay Feldman, John Kepner, Stephanie Davio, Nichelle Harriott, Kagan Owens
Contributors
John Kepner, *Layout*

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Carpet Beetles!

Howdy! We seem to have an invasion of carpet beetles and despite a heavy and persistent dose of vacuuming; they are still alive and kicking. We need a kitten-friendly and environmentally-safe way to rid ourselves of these things. Any advice would be enormously helpful!

*Thanks!
Erich*

Dear Erich,

Thank you for contacting Beyond Pesticides. The first step you should take when faced with an invasion should be to identify the insect and find the primary source of infestation.

It is not always possible to tell from the damage whether it was caused by clothes moths or carpet beetles, but in general, the beetles are more likely to damage a



larger area on one portion of a garment or carpet while moth damage more often appears as scattered holes with webbing. Damage is caused primarily by the larval stage of carpet beetles.

Adult carpet beetles lay eggs on the larval food source, such as furs and woolen fabric or carpets, or other natural, not synthetic fibers. The larvae hatch in about two weeks and then feed for varying periods, depending upon species and environmental conditions. They prefer dark, secluded places, occasionally feeding on stored products such as certain spices and grains. The carpet beetle larvae leave brown, shell-like, bristly looking cast skins when they molt, and fecal pellets that are about the size of a grain of salt.

Check all areas where lint, particularly dog or cat hair, tends to accumulate, such as: areas under carpets and along carpet edges; under furniture; in floor cracks; ducts; and in folds of upholstered furniture. Check stored woolen clothing, flannel and woolen yarn in attics, basements and closets. Look through food products stored for long periods without use. Other possible breeding sites are old animal or bird nests that may be in the house, and collections of dead insects around windows. Adult carpet beetles can be brought into the house on cut flowers.

Once you have assessed the situation, you should eliminate the source of infestation if possible and, unfortunately, remove and dispose of articles that are badly infested. Objects which cannot be discarded should be treated to kill eggs and larvae: put small items in a freezer for 48 hours or heat-treat them at temperatures above 120 degrees F for several hours. Dry-clean infested clothing, or steam clean items that cannot be washed. Put infested non-food materials in a plastic bag.

The next step is to vacuum! It is important to note that a water vacuum is most effective, as it does not emit dust particles in the exhaust, and the insects will drown in

the dust collecting receptacle. Dirty water from the vacuum can easily be disposed by dumping on a compost pile or flushed down the toilet.

If you only have access to a dry vacuum, make sure that it has a disposable bag or that you clean the non-disposable container out thoroughly after each use. Put a little bit of corn starch in your bag first to suffocate the pests. If you do not properly dispose of your bag, the carpet beetles may escape and re-infest your home, rendering all your hard work vacuuming useless!

Additionally, it is recommended that since carpet beetle larvae prefer dark secluded spots, you should rearrange furniture periodically to expose all carpeting surfaces to the light at some point.

Once these steps have been taken, you should clean and caulk or repair cracks and crevices where dust accumulates in floors, walls, closets, etc. and make sure to store all food items--particularly dried foods and pet foods--in tightly sealed containers.

If you are still having problems after all these steps have been taken, you can use boric acid products, which we identify as a least toxic pesticide (read our fact sheet here: www.beyondpesticides.org/gateway). It can be put into cracks and crevices where carpet beetle infestation is high--around the posts of your bed/couch, in corners, etc. However, be careful to make sure it is an area that your pets will not come into direct contact! If possible, you might want to exclude them from the room you are treating until the problem is solved and you can clean up any residues.

For more information on pets and pesticides, please read our factsheet on "Pesticides and Pets" from our Fall 2007 issue of *Pesticides and You*, available on our web page, to make sure that this makes sense for your home and in the presence of your pets.

Beyond Pesticides Daily News Blog

Beyond Pesticides' Daily News Blog features a post each day on the health and environmental hazards of pesticides, pesticide regulation and policy, pesticide alternatives and cutting-edge science, www.beyondpesticides.org/dailynewsblog.

Excerpt from Beyond Pesticides original blog post (12/10/09):

EPA Opens Public Comment Period on Uncertainty Factor in Pesticide Risk Analyses

Following news that the Environmental Protection Agency (EPA) is considering a higher uncertainty factor in all pesticide risk determinations, EPA is making available for comment a policy paper that describes how it will assess pesticide risks not governed by *Food Quality Protection Act* (FQPA) amendments to the *Federal Food, Drug and Cosmetic Act* (FFDCA). The agency is asking the public to comment on the new approach and how best to implement the improvements.

Sonya says (via Facebook):

This is to let the EPA know that I support its efforts for a more thorough assessment of risks to workers, including farmworkers and farm children, but that more needs to be done to restrict the availability of toxic pesticides on the market. Green Science has brought us non-toxic solutions that can be used in place of the untested toxins that are now being used everyday in our neighborhoods, homes, parks, schools and venues. All pesticides suspected of endocrine disruption and cancer causation should be banned immediately. Also banned should be all pesticides containing "inert ingredients" that have not been disclosed or tested. All pesticides should now be considered guilty until proven innocent and not visa versa. We cannot reverse the current epidemics of autism and diabetes etc, but we can reverse policy and give hope to future generations that their children will not be born pre-polluted with toxic chemicals.

Groups Call for Ban of Dangerous Herbicide 2,4-D

Recent responses from a Beyond Pesticides original blog posted last winter (2/18/2009) on a petition filed by Natural Resources Defense Council calling for the U.S. Environmental Protection Agency to cancel all registrations for the herbicide 2,4-D and to revoke all of its tolerances.

Benjamin Says:

2,4-D is dangerous. There is no justification for keeping it on the market. The studies on its toxic effects and the numerous poisoning cases speak for themselves. My own grandmother and younger brother died of cancer after being showered with 2,4-D from a helicopter; there was no notification and no warning. 2,4-D by itself is bad enough, but the blatant disregard for humans and the environment shown by the people who use this stuff make it even more dangerous.



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 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 <https://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

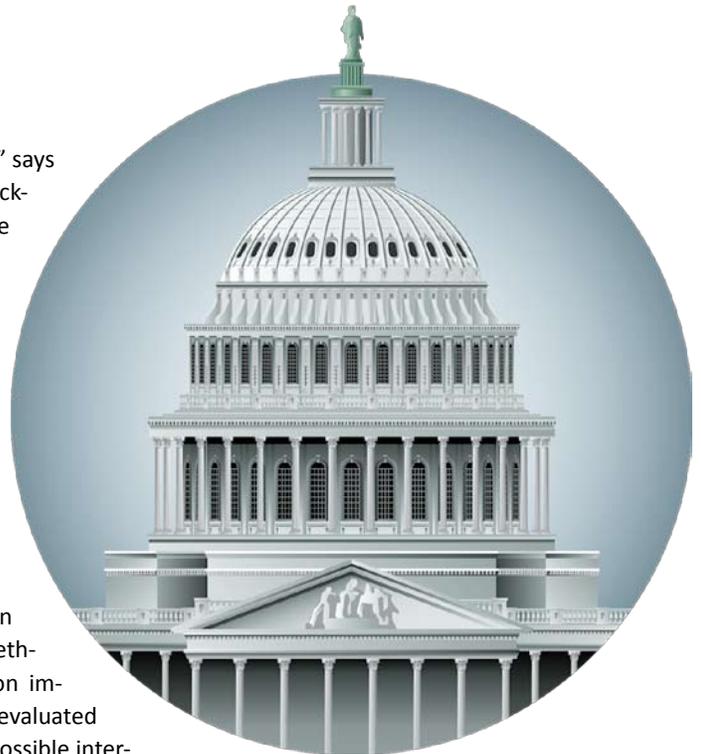
EPA May Expand Pesticide Exposure 'Safety Factor' to Include Workers

The Environmental Protection Agency (EPA) is considering expanding to all pesticides the use of what is typically referred to as the *Food Quality Protection Act* (FQPA) additional 10x safety factor (the allowable margin of error or the uncertainty factor in risk determinations), which is currently only applied to the agency's pesticide evaluations for infants and children. The agency has made available for comment a policy paper entitled "Revised Risk Assessment Methods for Workers, Children of Workers in Agricultural Fields, and Pesticides with No Food Uses." The paper describes how EPA will assess pesticide risks not governed by FQPA amendments to the *Federal Food, Drug and Cosmetic Act* (FFDCA). EPA describes its proposal as including a more thorough assessment of risks to workers, including farmworkers and farm children, as well as risks posed by pesticides that are not used on food. The agency is asking the public to comment on the new approach and how best to implement the improvements.

"Better information and applying these tools will strengthen EPA's protections for farmworkers exposed to these chemicals, and children living in and around the areas

of highest possible exposure," says EPA Administrator Lisa P. Jackson. "It's essential we have the tools to keep everyone, especially vulnerable populations like children, safe from the serious health consequences of pesticide exposure."

While the EPA proposal will improve protections in some circumstances, critics of the risk assessment approach to toxics regulation have maintained that the methodology ignores data gaps on important health outcomes not evaluated (e.g. endocrine disruption), possible interactions, synergistic effects of mixtures, effects of all contaminants associated with a pesticide, and the availability of less or non-toxic approaches and products to the pesticide under evaluation. Health advocates have said that applying a 10x safety factor to an unknown outcome (equivalent to zero) does not necessarily improve the protection of children or others exposed. In simple math terms, ten times zero (knowledge) equals zero (knowledge).



Take Action: Tell EPA that you support its efforts for a more thorough assessment of risks to workers, including farmworkers and farm children, but that more needs to be done to restrict the availability of toxic pesticides on the market. Comments can be submitted to www.regulations.gov, docket number EPA-HQ-OPP-2009-0889 on or before April 12, 2010. Contact *Beyond Pesticides* for more information.

CDC Issues Fourth Report on Body Burden of Toxic Chemicals

On December 10, 2009, the U.S. Centers for Disease Control and Prevention (CDC) released the *Fourth National Report on Human Exposure to Environment Chemicals*, which summarizes blood and urine levels for 212 chemicals, including levels for 75 chemicals which have never before been measured in a representative sample of the U.S. population. Triclosan, the antibacterial agent found in hundreds of consumer products ranging from antibacterial soaps, deodorants, toothpastes, cosmetics, fabrics, toys, and other household and personal care products, is included for the first time. The data analyzed in the report are based on blood and urine samples that were collected from approximately 2,400 people who participated in CDC's National Health and Nutrition Examination Survey (NHANES) from 2003 through 2004.

Triclosan is found in the urine of 75% of the U.S. population, with higher levels in people in their third decade of life and among people with the highest household income. Triclosan is shown to alter thyroid function, is linked to bacterial and compounded antibiotic resistance, dioxin contamination, and contamination of surface waters and sewage sludge. Synthetic pyrethroid pesticides were included for the second time. The report finds that exposure continues to be widespread, specifically for permethrin, cypermethrin, deltamethrin, and/or their metabolites, which were all found in greater than 50% of the subjects tested. Exposure to synthetic pyrethroids has been reported to trigger asthma, lead to headaches, dizziness and nausea. Many have been linked to cancer and endocrine disruption.

Chemical Security Legislation Passed by House

Eight years after the September 11th attacks, the U.S. House of Representatives approved on November 6, 2009 the *Chemical Facility Anti-Terrorism Act* (H.R. 2868) by a vote of 230-193. The legislation was led by U.S. Representatives Thompson (D-MS), Jackson-Lee (D-TX), Waxman (D-CA), Markey (D-MA), Oberstar (D-MN) and Johnson (D-TX). This is the first time either house of Congress has approved permanent and comprehensive chemical security legislation. "Although it's a compromise, this bill represents a historic first step toward protecting the 100 million Americans living in the shadow of high-risk chemical plants," said Rick Hind, legislative director of Greenpeace. Attempts by House Republicans to weaken the legislation were voted down. "The day after a terrorist attack at a chemical plant kills thousands of Americans, any suggestion that we should not require the use of safer chemicals at these plants will be considered totally crazy. Republicans should have been offering amendments to strengthen this modest legislation instead of trying to cripple it," said Mr. Hind.

The bill would require thousands of facilities where a toxic release endangers the surrounding community to assess their ability to "reduce the consequences of a terrorist attack" by switching to safer alternative chemicals or processes, and authorizes the Department of Homeland Security and Environmental Protection Agency (EPA) to require use of those alternatives at the nation's most dangerous facilities where feasible and cost-effective. According to the EPA, 100 facilities endanger more than a million people in the event of an accident or attack; more than 7,000 facilities endanger thousands. One hundred and ten million Americans live in the shadow of catastrophic poison gas release from one of 300 chemical facilities. Senator Frank Lautenberg (D-NJ) has announced that he intends to introduce a Senate version of H.R. 2868 in the coming months. **Take Action:** *Encourage your Senators to support Senator Lautenberg's chemical security legislation and ask Senator Lautenberg to keep the legislation strong.*

FAO Calls for Focus on Organic Agriculture at Climate Talks

The United Nations climate talks in Copenhagen neglected the pending food crisis, and organic methods that can both curb climate change and boost food production, Jacques Diouf, director-general of the United Nations Food and Agriculture Organization (FAO), told *Reuters* news service during the December 7-18, 2009 negotiations. FAO believes that certain farming practices, including organic agriculture, can help sequester carbon and heal degraded lands, thereby boosting food yields. "We would like to see greater conscience of the importance (of agriculture)," Mr. Diouf said. "Historically the discussion centered on the industrial aspects of climate change, be it in terms of factories, transport, but less on the primary sector of agriculture."

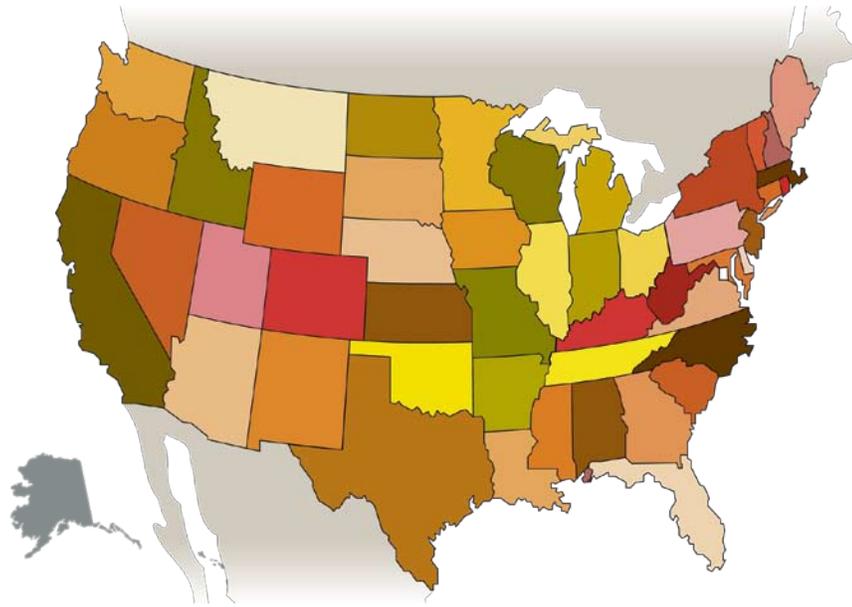
FAO believes carbon sequestration, lower-input of fossil fuel dependent resources, and use of renewable energy all present opportunities for organic agriculture to lead the way in reducing energy consumption and mitigating the negative effects of climate change. Organic agriculture

incorporates management practices that can help farmers adapt to climate change through strengthening agro-ecosystems, diversifying crop and livestock production, and building farmers' knowledge base to prevent and confront changes in climate. Lower greenhouse gas emissions for crop production and enhanced carbon sequestration, coupled with additional benefits of biodiversity and other environmental services, makes organic agriculture a farming method with many advantages and considerable potential for mitigating and adapting to climate change, says FAO.

Beyond Pesticides points to conventional agricultural practices that have contributed to climate change through heavy use of fossil fuels—both directly on the farm and in the manufacturing of pesticides and fertilizers—and through degradation of the soil, which releases carbon. The adoption of organic methods, particularly organic no-till, is an opportunity

for farming both to mitigate agriculture's contributions to climate change and cope with the effects of climate change on agriculture. *The Rodale Institute's Farming Systems Trial has proven the benefits of organic agriculture on climate change. Meet Jeff Moyer, Rodale's farm manager, at Greening the Community, the 28th National Pesticide Forum, April 9-10, in Cleveland, OH. See details on back cover. For information on organics and climate, visit www.beyondpesticides.org/organic-food/environment.*





Use of Insect Repellent Associated With Birth Defect

Researchers have found that male babies of mothers who used insect repellents in the earliest phase of pregnancy had an increased rate of hypospadias, a birth defect where the opening of the penis is in the wrong place - usually on the underside. The study, "Use of biocides and insect repellents and risk of hypospadias," was published November 30, 2009 in the online edition of *Occupational and Environmental Medicine*. Mothers of 471 babies with hypospadias were asked a series of questions, including whether they had been exposed to pesticides, such as fly sprays, repellents, rodent poisons, pet flea treatments and nit shampoos. A high total pesticide exposure was associated with an increased risk (73%) for hypospadias. Insect repellent use in the first three months of pregnancy was linked with an 81% increased risk. "We found a significant association for risk of hypospadias with the use of insect repellents and total biocide score," said Mark J. Nieuwenhuijsen, MD of the Center for Research in Environmental Epidemiology in Barcelona.

The researchers in this study note that insect repellents can contain compounds such as DEET, which can cross the placental barrier and can be toxic at high doses. Laboratory studies have found that DEET can cause neurological damage, including brain damage in children. DEET, when used in combination with permethrin - a synthetic pyrethroid insecticide, likely facilitates enhanced dermal absorption of permethrin and induces symptoms such as headache, loss of memory, fatigue, muscle and joint pain, and ataxia, which causes an inability to coordinate muscular movements. There are many least-toxic options for repelling insects that include the use of essential oils, like oil of lemon eucalyptus, which has been recommended as an efficacious alternative by the Centers for Disease Control and Prevention (CDC). *For more information on safer alternatives, please visit Beyond Pesticides' factsheet on repellents at www.beyondpesticides.org/mosquito.*

Disinfectants May Be Hazardous to Your Health

A new report links disinfectant chemicals with chronic illnesses and conditions such as asthma, hormone imbalance, and immune system problems. The report, *Disinfectant Overkill: How Too Clean May Be Hazardous to Our Health*, was released by the national environmental health group Women's Voices for the Earth (WVE), and cites more than 40 peer-reviewed reports and scientific studies that document the health impacts of chemicals found in household disinfectants. Chemicals reviewed in the report include chlorine bleach, ammonia, triclosan and triclocarban, ammonium quarternary compounds, and nano-silver. "Companies are working hard to convince consumers, and especially moms, that they need to regularly disinfect every surface in their homes to protect their families from illness. But that's simply not true and it may not be healthy," says WVE staff scientist and report author Alexandra Scranton. "We're encouraging consumers to go back to basics for cleaning, with less of a focus on disinfection and more on non-toxic cleaners and a little elbow grease."

According to the Centers for Disease Control and Prevention (CDC), frequent hand washing with hot water and regular soap is the best way to prevent infection and illness. Disinfectants tend to kill a wide variety of bacteria, reducing both "bad" bacteria associated with illness, as well as the "good" bacteria that perform useful functions in our environment and in our bodies. The overuse of antimicrobial chemicals has also been linked to the creation of drug-resistant bacteria, or "superbugs," which are bacteria and viruses that have become resistant to the antimicrobial compounds and antibiotic drugs developed to control them. *For more information or to download factsheets on triclosan and other antibacterials, visit www.beyondpesticides.org/antibacterial.*

Report Finds GM Crops Increase Pesticide Use and Resistant Weeds

According to a report released November 17, 2009 by The Organic Center (TOC), the rapid adoption of genetically modified (GM) corn, soybeans and cotton by U.S. farmers has promoted increased use of pesticides, an epidemic of herbicide-resistant weeds, and more chemical residues in



foods. The report, *Impacts of Genetically Engineered Crops on Pesticide Use in the United States: The First Thirteen Years*, explores the impact of the adoption of GM corn, soybean, and cotton on pesticide use, drawing principally on data from the U.S. Department of Agriculture (USDA). The most striking finding is that GM crops have been responsible for an increase of 383 million pounds of herbicide use in the U.S. over the first 13 years of commercial use of GE crops (1996-2008).

The rise in herbicide use comes as U.S. farmers increasingly adopt corn, soy and cotton that have been engineered with traits that allow them to tolerate high levels of weed killer. The most popular of these, known as "Roundup Ready," is able to sustain treatments with Roundup her-

bicide (glyphosate). However, the report states that a key problem resulting from the increase in herbicide use is the emergence of "super weeds," which have become resistant to the herbicides. In 2008, GM crop acres required over 26% more pounds of pesticides per acre than acres planted to conventional varieties. The report projects that this trend will continue as a result of the rapid spread of resistant weeds. "With glyphosate-resistant weeds now infesting millions of acres, farmers face rising costs coupled with sometimes major yield losses, and the environmental impact of weed management systems will surely rise," said Charles Benbrook, PhD, the report's author. For more information on GM crops, visit *Beyond Pesticides'* Genetic Engineering program page at www.beyondpesticides.org/gmos.

Low-Level In Utero Pesticide Exposure Linked to Behavioral Impacts

According to a new study by researchers at the University of Wisconsin-Madison, exposure to low levels of the organophosphate insecticide chlorpyrifos during pregnancy can impair learning, change brain function and alter thyroid levels of offspring into adulthood for tested mice, especially females. The study, "Long-term sex selective hormonal and behavior alterations in mice exposed to low doses of chlorpyrifos in utero," was led by professor of zoology and environmental toxicology and Beyond Pesticides board member, Warren Porter, PhD. The study exposed mice to various levels of chlorpyrifos then evaluated their ability to find food in a foraging maze over a period of 90 days.

According to the Rodale Institute, which provided part of the funding for the study, "Results demonstrate a long-term, dose dependent, sex selective impairment of foraging behavior as well as learning latency in female mice exposed to CPF in utero. The traces of pesticide, even at the lower 1 mg/kg of body weight, did not impact the learning ability of male mice, but had significant impacts on the females. Further, the chlorpyrifos dosing of their mothers did not change the serum thyroid hormone level of the male mice, but correlated directly to the mother's dose in female offspring. The detrimental changes persisted into adulthood for the female mice." Dr. Porter points out that most pesticide testing is done on male rats, which are probably the most resistant to showing a response to toxicants, while female mice may be the most sensitive.

While the Environmental Protection Agency (EPA) and Dow AgroSciences reached an agreement to stop the sale of most home, lawn and garden uses for chlorpyrifos because of its health risks to children in 2000, agricultural uses continue to poison farmworkers, their families and rural communities. Meet Dr. Porter, lead author of the study, at *Greening the Community*, the 28th National Pesticide Forum, April 9-10, 2010 at Case Western Reserve University in Cleveland, OH. See details on back cover. For more information on chlorpyrifos, visit the Pesticide Gateway at www.beyondpesticides.org/gateway.



Bee Die-Offs Linked to Pesticide Mixtures, Window of Exposure

Research by scientists at the University of Florida (UF) links Colony Collapse Disorder (CCD), the widespread disappearance of honey bees that has killed off more than a third of commercial honey bees in the U.S., to larval exposure to a cocktail of frequently used pesticides. Led by UF Institute of Food and Agricultural Sciences bee specialist Jamie Ellis, PhD, the researchers have finished a first round of testing on bee larvae exposed to the pesticides most commonly found in bee hives. The results

were presented on October 22, 2009 at a meeting of the North American Pollinator Protection Campaign (NAPPC), which funded the study. The work gives insight into how the larvae react to pesticides that are usually only tested on adult bees. "Beeswax, honey and pollen can contain low mixtures of fungicides, insecticides, and herbicides. The larvae develop in the presence of and consume these mixtures," Dr. Ellis said. "Any one of these pesticides may not be that harmful to the developing larvae. However, it is possible that combinations of the pesticides can interact."

complex and unpredictable interaction of chemicals and genetics at play," said Mike Scharf, PhD, a UF entomologist and investigator on the project. This is exacerbated, he added, when the bees are exposed at the larval stage. Pesticide exposure at this developmental stage could have significant effects on the adult bees. Research is ongoing as to the cause of the CCD phenomenon, but pesticides, especially neonicotinoids, such as imidacloprid, have been implicated. CCD can be especially devastating since honey bees are essential pollinators of crops that constitute over one-third of the U.S. food supply.



The study examines the individual effects of herbicides, fungicides and insecticides commonly found in bee hives (chlorothalonil, myclobutanil, simazine, glyphosate, chlorpyrifos, coumaphos, fluvanilate, imidacloprid and amitraz). "There's a really

Meet David Hackenberg, the beekeeper who first discovered CCD, at Greening the Community, the 28th National Pesticide Forum, April 9-10, 2010 at Case Western Reserve University in Cleveland, OH. See details on back cover. For general information, read "Pollinators and Pesticides: Escalating crisis demands action" in the Fall 2008 issue of Pesticides and You.

No Justice in Bhopal 25 Years after Plant Explosion

Twenty-five years ago, a toxic cloud of gas from the Union Carbide plant in Bhopal, India, enveloped the surrounding city, leaving thousands dead. Between 50,000 to 90,000 lbs of methyl isocyanate (MIC), an ingredient in several carbamate pesticides, was estimated to have leaked into the air, killing approximately 8,000-10,000 people within the first three days, according to data by the Indian Council of Medical Research (ICMR). Advocacy groups working with victims say that more than 25,000 have died to date, and more than 120,000 people still suffer from severe health problems as a result of their exposure. A Delhi-based think-tank, the Center for Science and Environment (CSE), reports that samples taken around the factory site in Bhopal contain chlorinated benzene compounds and organochlorine pesticides 561 times the national standard. Samples taken as far as 1.9 miles away have toxic chemicals 38.6 times more than the standard. Drinking water sampled by the British Broadcasting Corporation (BBC) show nearly 1,000 times the World Health Organization's limit of carbon tetrachloride, a pollutant known to cause cancer and liver damage.

Dow Chemical, which now owns Union Carbide, denies any responsibility saying it bought the company a decade after Union Carbide had settled its liabilities with the Indian government in 1989 by paying \$470 million for the victims. Although critics point to two court cases that remain pending - one civil, heard in the Southern District federal court in New York, and the other criminal, heard before the Chief Judicial Magistrate's court in Bhopal. Groups are calling for Dow Chemical to clean up the site, provide safe drinking water and compensate the victims. While many plants around the world eliminated large-scale MIC storage, a Bayer CropScience facility in West Virginia is the only one in the U.S. that continues to store more 10,000 pounds of MIC on site. In 2008, a pesticide waste tank containing MIC exploded at the plant killing two workers. Bayer announced plans to reduce the storage of MIC at Institute by 80 percent, one year after the explosion. *For information, on the West Virginia explosion, see the Fall 2009 issue of Pesticides and You (Vol. 29, No. 3). For more information on the ongoing work for the victims in Bhopal, visit the International Campaign for Justice in Bhopal's website at www.bhopal.net.*

Schooling Without Pesticides

Federal bill suspends hazardous pesticide use, defines safe management practices

When children attend school, it is assumed that they are going to a safe environment, free of toxic chemicals that could harm them. New legislation seeks to make this assumption a reality. With the introduction of the *School Environment Protection Act of 2009* (SEPA), H.R. 4159, in November 2009, members of Congress and public health, school employee, children's health and environmental groups are saying that it is time to stop the unnecessary use of dangerous chemicals and assist schools in the adoption of safer strategies to prevent and manage pest problems. U.S. Representative Rush Holt (D-NJ) and 15 of his colleagues put the legislation forward with the foundation of more than a decade of state and local school pest management and pesticide use policies and on-the-ground experience from across the country.

Why federal legislation is needed

School is a place where children need a healthy body and a clear head in order to learn. Numerous scientific studies find that pesticides typically used in schools are linked to chronic health effects such as cancer, asthma, neurological and immune system diseases, reproductive problems, and developmental and learning disabilities. Published in the *Journal of the American Medical Association*, a study, "Acute Illnesses Associated with Pesticide Exposure at Schools," (Vol. 294, No. 4, pp455-465), documents ongoing pesticide poisoning in schools across the country. Authored by Walter A. Alarcon, M.D. (National Institute for Occupational Safety and Health) and numerous state health departments, the study analyzes 2,593 poisonings from 1998 to 2002 from three surveillance systems. While the analysis finds overall incident rates of 7.4 cases per million children and 27.3 cases per million employees, the authors conclude, "These results should be considered low estimates of the magnitude of the problem because many cases of pesticide poisoning are likely not reported to surveillance systems or poisoning control centers." The authors recommend the adoption of strategies to reduce school pesticide use.

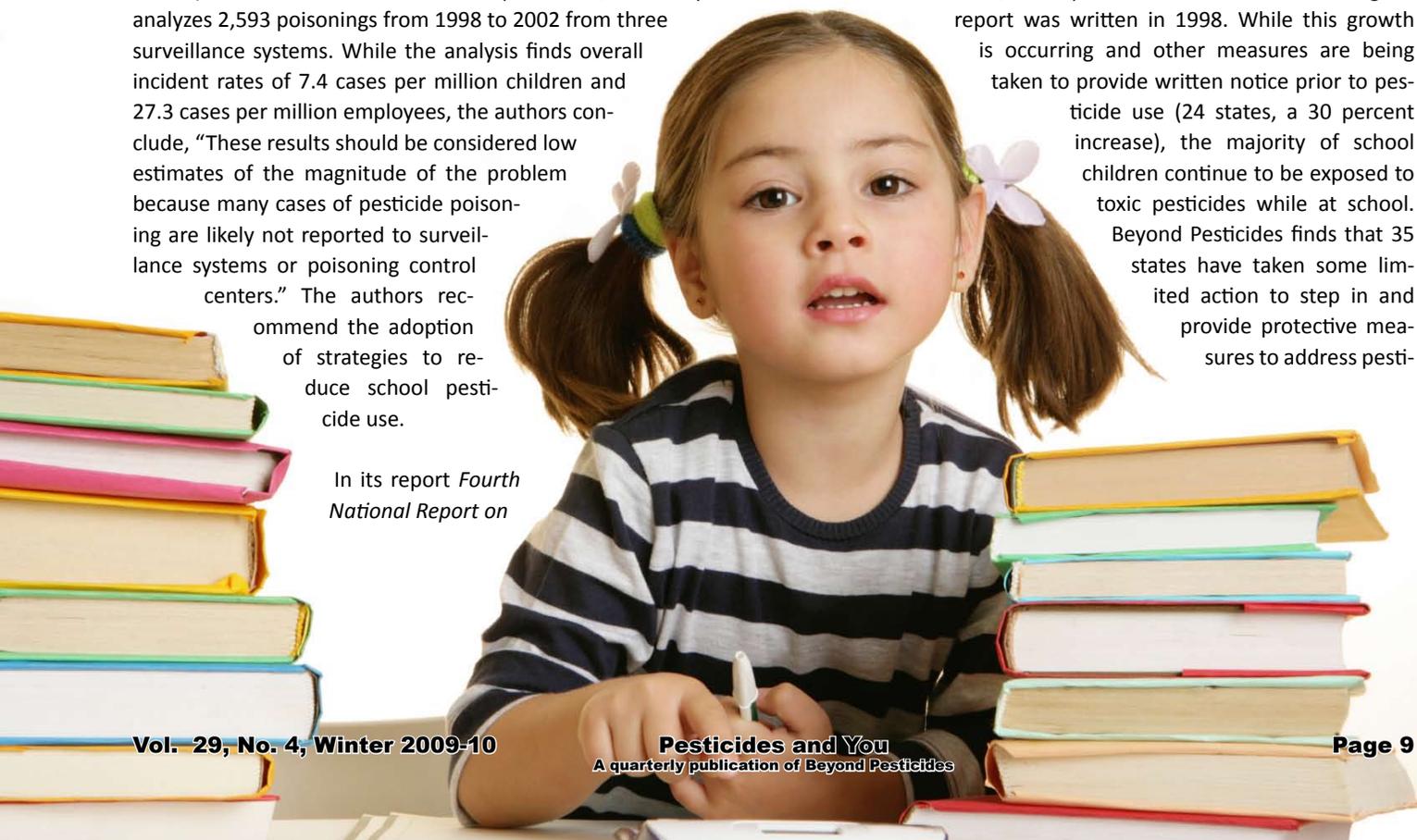
In its report *Fourth National Report on*

Human Exposure to Environmental Chemicals (2009), the Centers for Disease Control and Prevention (CDC) reports striking data on widespread exposure to commonly used neurotoxic pyrethroid pesticides, documenting residues of these chemicals in the bodies of over 50 percent of the U.S. population. Synthetic pyrethroids are linked to endocrine disrupting effects, respiratory illness and asthma. According to the National Institutes of Health, asthma affects an estimated 14.9 million people and has been increasing over the past 20 years, especially among children.

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

IPM in schools has proven to be an effective and economical method of pest management that can prevent pest problems and eliminate the use of hazardous pesticides in school buildings and on school grounds.

In a newly released report, *The Schooling of State Pesticide Laws—2010 Update (Pesticides and You 2009, vol. 29, no. 3)*, Beyond Pesticides finds that 21 states recommend or require schools to use IPM, a 24 percent increase since the original report was written in 1998. While this growth is occurring and other measures are being taken to provide written notice prior to pesticide use (24 states, a 30 percent increase), the majority of school children continue to be exposed to toxic pesticides while at school. Beyond Pesticides finds that 35 states have taken some limited action to step in and provide protective measures to address pesti-



SEPA Definition of IPM

INTEGRATED PEST MANAGEMENT- The term 'integrated pest management' means a managed pest control program that:

(A) eliminates or mitigates economic and health damage caused by pests;

(B) uses (i) integrated methods; (ii) site or pest inspections; (iii) pest population monitoring and prevention strategies; (iv) an evaluation of the need for pest control; and (v) one or more pest prevention and management methods that incorporate exclusion techniques, such as habitat modifications, sanitation practices, entryway closures, structural repair, mechanical and biological controls, other non-chemical methods, and (if non-toxic options have been exhausted) least-toxic pesticides; and (C) minimizes (i) the use of pesticides and (ii) the hazards to human health and the environment associated with pesticide applications.

cide use in, around or near their schools. These include a mixture of pesticide restrictions and parental notification and posting of signs before certain pesticides are used. Protection under state laws is uneven across the country and children in 15 states are provided no protection at all.

Previous efforts to pass SEPA

SEPA was first introduced in November 1999 in both the U.S. Senate and House, and a form of the legislation has past the U.S. Senate twice since then. The bill language is based on state school pest management laws. It also mirrors the structure of the *Organic Foods Production Act of 1990*, which established a national committee to oversee the program as well as a list of allowed practices and materials. Public health, labor and environmental groups have rallied with broad support for a national



mandate to stop hazardous pesticide use in schools.

SEPA sponsors in the U.S. House of Representatives include: Reps. Rush Holt [NJ], Keith Ellison [MN], Chris Van Hollen [MD], Raul Grijalva [AZ], Joe Baca [CA], Charles Rangel [NY], Sheila Jackson Lee [TX], Steve Israel [NY], Donald Payne [NJ], David Price [NC], Betty McCollum [MN], Alan Grayson [FL], Donna Christensen [USVI], Jan Schakowsky [IL], Diana DeGette [CO], and John Conyers, Jr. [MI].

For more information

For a copy of the bill summary, bill text, sample letter to Congress, list of supporters, and section-by-section bill analysis, contact Beyond Pesticides or see www.beyondpesticides.org/schools/sepa. See "SEPA: Myths and Facts" on page 12 of this issue of *Pesticides and You*.

Take action

■ **Contact your U.S Representative and U.S. Senators** to request that he/she co-sponsor SEPA. (See <http://www.senate.gov> and <http://www.house.gov/writerrep/> for contact information. Email info@beyondpesticides.org, at Beyond Pesticides for follow-up information.)

■ **Sign your organization up as a supporter** of SEPA by emailing info@beyondpesticides.org with your name and organization's contact information.

■ **Pass this information** on to your mayor, city council, local PTA and civic associations to see if they will endorse SEPA.

School Environment Protection Act: Bill Summary

The *School Environment Protection Act* (SEPA), H.R. 4159, ensures a healthy learning environment for children through the management of school buildings and school grounds without toxic pesticides.

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

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

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

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

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

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

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

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

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

For more information. Contact Beyond Pesticides at 202-543-5450 or info@beyondpesticides.org.

The School Environment Protection Act of 2009

Myths and Facts

By Jay Feldman and Kagan Owens

Parents do not want their children exposed to chemicals that cause cancer, asthma, neurotoxic and immune system effects, endocrine disruption, developmental disabilities and more ... especially when their use is not necessary. Towns and cities across the country, schools, hospitals and homeowners want the same thing. The good news is that it is possible today to manage buildings and grounds without pesticides that cause these effects.

The *School Environment Protection Act of 2009* (SEPA) is cutting edge federal legislation that embraces the experiences of schools and communities across the country that have rejected the old arguments and are meeting the challenges of land and building management with new and creative approaches that manage pests and protect health and the environment at the same time. Those who say that unwanted insects, rodents and plants cannot be managed without hazardous pesticides are out of step with up-to-date management practices.

Many states have already adopted statewide pest management requirements for their schools that limit toxic chemical use and advance safer practices. SEPA takes the best of the state laws and ensures that all children can go to school in a healthful learning environment, protected from pests and pesticides.

The following myths and facts reflect some of the major misconceptions, inaccuracies and truths about effective pest management and SEPA.

Myth: *SEPA gives little consideration to the states with existing laws for schools or even general pest control laws. It would require states that have had plans and programs in place for 15 years to move back to square one, which could create chaos and confusion not only among pest management professionals, but in school districts across the country.*

Fact: SEPA is based on the 35 existing state laws regarding school pesticide use (See Beyond Pesticides' report, *The Schooling of State Pesticide Laws – 2010 Update*). Although these laws constitute a patchwork of provisions and are quite varied in their definition and approach to allowable pest management, pesticide use and public disclosure practices, together they are the very foundation and impetus for this critical piece of federal legislation. Without these existing laws, we would not have the knowledge and experience to know that SEPA's requirements are feasible.

SEPA does not undermine existing state laws, rather it builds on them. This bill takes states forward with the tools to manage schools without toxic pesticides, and in the process protects the health of children and school staff. This bill will require states and their school districts to move beyond antiquated pest control methods dependent on chemicals with safer pest management strategies that focus on using non-chemical preventive management tools and the least-toxic pesticide as a last resort. SEPA is crafted to create a streamlined approach so that there will be



plenty of time to get the necessary information to the states and school districts, and creates a process for sharing existing information and strategies.

Myth: *SEPA will preempt even the most comprehensive school IPM programs in the country –laws that have been painstakingly developed over years in coordination with regulators, schools, IPM experts and the public.*

Fact: The legislation does not preempt states or localities. Rather, states or localities that already have policies that meet or exceed this act can continue with their implementation. In this way, SEPA brings all states to the same level of protection. Since many of the implementation and outreach materials are already developed, school districts and states can share their resources with others to facilitate SEPA implementation. Section 34(l) states that the Act “not preempt requirements imposed on local educational agencies and schools related to the use of integrated pest management by State or local law (including regulations) that are more stringent.”

Myth: *SEPA will compound health issues in schools.*

Fact: SEPA is public health legislation. Given that children spend a significant part of their young lives in school buildings and on school grounds, pesticide residues in and on school property should not continue to be overlooked. SEPA is an excellent solution to the problem because it carefully balances the need to manage pests at schools, while ensuring that children are learning in a safe, healthy and pest-free environment. Toxic pesticide use at schools is a serious health issue that needs attention. Student and staff poisoning at schools is not uncommon. Adverse health effects, including nausea, dizziness, respiratory problems, headaches, rashes, and mental disorientation, may appear even when a pesticide is applied according to label directions. Low levels of pesticide exposure can adversely affect a child’s neurological, respiratory, immune and endocrine system. Of the 40 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. The Government Accountability Office (GAO) in 2000 documented over 2,300 reported pesticide poisonings in schools between 1993 and 1996. Because most of the symptoms of pesticide exposure, from respiratory distress to behavioral and concentration problems, are common in school children and may be assumed to have other causes, it is suspected that pesticide-related illness is much more prevalent than typically assumed.

SEPA does not just address pesticide use, but also seeks to prevent insect, rodent and plant (weed) problems. The pesticide lob-



by pushes the notion that without toxic pesticides school buildings and lawns would be overwhelmed by disease-carrying pests and unsightly and dangerous weeds. This is not true. Experience shows that school pest problems can be effectively managed without toxic pesticides. The vast majority of insect and weed pests may be a nuisance, or raise aesthetic issues, but they do not pose a threat to children’s health. Where they do present a threat, they can be prevented or managed effectively without toxic chemicals.

Myth: *SEPA will unnecessarily restrict rational use of certain pesticides on and near school grounds to reduce risk posed by arthropods that burden health (directly or as vectors), and the bill would ultimately compromise the public health of the population it seeks to protect.*

Fact: There is no rational use of a toxic pesticide linked to asthma, cancer, learning disabilities or other adverse health effects in a school environment to manage pest problems when safer alternative non-chemical and least-toxic pest management strategies exist. In the rare circumstances when a pest presents a public health problem and cannot be managed using the integrated pest management (IPM) system defined in the Act, the school IPM coordinator may approve the use of any necessary pesticide. The use of a pesticide for a public health emergency requires advance notification (24-hour prior-notification and posting of notification signs) and reentry restrictions (area unoccupied for 24 hours following application) to go into effect in order to protect students and school staff.

Myth: *The requirement of posting signs is a bit much. There is already sufficient language in the bill for notification of parents and staff and since areas treated will be under a 24-*



hour reentry interval anyway, there is not much value in the posting of signs. Who is left to notify? Visitors? Why should visitors be notified? What special circumstance does a school present to adult visitors that other public institutions do not? Sign postings create more “sky is falling” craziness from over-reactive people than benefits.

Truth: The public has a basic right-to-know when pesticides are being used at a school. Posting notification signs informs not only those students, parents and school staff that somehow missed the prior written notification, but also informs others using school facilities for sporting events, boy and girls scouts, enrichment classes, and other community events. If signs were not posted, parties that may use the school grounds would otherwise unknowingly be exposed to the chemicals. Thus, those at higher risk or concerned can take the necessary precautions to avoid the exposure.

Myth: *The clarity between “least-toxic pesticide” and “pesticide” is very vague. A “least toxic pesticide” is a “pesticide,” and the definition is misleading and confusing in the bill.*

Fact: SEPA specifically spells out what can and cannot be considered a “least-toxic pesticide” in the definitions section of the bill. Pesticides that may be listed as a “least-toxic pesticide” are the only non-hazardous pesticides that may be used as part of a school IPM program. However, if a school has a pest management problem, deemed a “public health emergency,” that is not effectively being managed through the IPM program and the use of a least-toxic pesticide, a school may choose to use *any* pesticide to control that pest problem. If a pesticide, other than a “least-toxic pesticide” is chosen, then certain provisions kick-in, including school IPM coordinator approval, 24-hour prior written notification, posting of notification signs, and no-entry during the applica-

tion and 24 hours following.

Myth: *SEPA notification requirements will slow down pest management professionals’ ability to treat in a timely fashion.*

Fact: The IPM plan and the availability, through the IPM coordinator, of health and environmental effects information on any pesticide that may be used at the school, is published at the beginning of the school year. However, at the time of a least-toxic pesticide application there are no notification requirements. It is only in the rare circumstances when a pesticide, other than a least-toxic pesticide, is used for a public health emergency that the schools are required to provide 24-hour prior notification. Every parent and every staff member in the school has a right to know what chemicals are being used in schools. This is sound public health policy, especially when chemicals that are potentially dangerous or not fully evaluated for health effects are being used. Without notification, parents are unable to make important decisions regarding their children’s attendance in light of specific sensitivities or concerns. Schools regularly communicate with parents through newsletters and other notices and are equipped to send information home with students with little burden or cost.

Myth: *A problem will be encountered with this program where: “the application area must be unoccupied for 24 hours following the application.” We are not able to prevent community members from unauthorized use of our playground fields, nor are we able to prevent school site staff from entering the buildings on their days off. Postings are ignored. Hundreds of people attending a soccer match aren’t going to listen to one guy telling them that it’s only been 21 hours since a Roundup application, so they’ll have to leave.*

Fact: Pesticide applications made on the basis of a public health emergency require the area to be unoccupied for 24 hours following the application. Signs are required to be posted to inform the school occupants and users of the application and requirements. The school will have to schedule the pesticide application when it is unlikely that the area will be used by others. In the scenario provided, the school should send a notice to the organizers of the soccer match informing them of the pesticide application and subsequent requirements. If all parties properly communicate and make the necessary adjustments, everyone will be better off.

According to Beyond Pesticides’ research, 13 states have restrictions on the timing of pesticide applications and establish reentry intervals. Alaska and Maine have the longest re-entry restrictions, requiring that the area treated remain unoccupied for 24 hours after the application.

Myth: *SEPA eliminates nearly all pesticides, except the most primitive products with limited usefulness, for any purpose except public health emergencies. This would leave schools with few alternatives for termite control, nuisance pest control and turfgrass management. Telling schools that they must do IPM, while at the same time taking away all the best pest management tools in their toolbox, will make IPM unsuccessful.*

Fact: The definition of IPM includes techniques and products that can be used to effectively manage pests while not exposing children to toxic hazards. It is not necessary to expose kids to carcinogens, neurotoxins and endocrine disruptors when there are proven, effective management methods that do not rely on these chemicals. SEPA advances pest management strategies that are not dependent on pesticides that have identified risks. The Act embodies the precautionary principle for schools. Despite the proven effectiveness of techniques, including exclusion, sanitation, habitat elimination, and a new generation of products, many in management are stuck in the past. Essential to the management of a pest problem are solutions based on preventing pest outbreaks from occurring in the first place. Improving a school's sanitation can eliminate cockroaches and ants. Caulking cracks and screening openings will keep insects and rodents from entering school buildings. Effective monitoring ensures that pests are detected and the source of the problem identified before unacceptable outbreaks occur. Successful pest management requires identifying the source of the problem, determining the cause of the pest problems, and modifying the conditions that attract or support the pest. Weed management is directly related to soil health. Since weeds tend to like compacted soil, the solution is not the temporary control achieved by killing them, but the adoption of practical strategies to build soil conditions. Most insect and plant pests may be a nuisance, or raise aesthetic issues, but do not pose a threat to children's health. Therefore, children should never be exposed to potentially harmful pesticides for this reason. Increasingly, the public is calling into question the use of pesticides for aesthetic results alone. Examples from around the country prove that IPM without toxic chemicals is effective and successful. In fact, Massachusetts and Oregon prohibit high hazard pesticides from being used in an IPM program.

Three decades ago, many in industry and the extension service said that organic was impossible to commercialize, that it was unrealistic, that it "takes away the best pest management tools." Today it is a nearly \$20 billion industry with increasing support from extension and practitioners worldwide.

Myth: *The definition of toxic pesticides is flawed because it does not take into account the basic formula that we all learn in pesticide applicator training: Hazard = toxicity x likelihood of exposure (where even toxicity is a function of dose).*

Fact: Risk assessment calculations under the *Federal Insecticide, Fungicide and Rodenticide Act (FIFRA)* and the *Food Quality Protection Act (FQPA)* – the federal pesticide registration and residue tolerance laws, respectively – are fraught with limitations in fully evaluating health effects and false assumptions about daily toxic exposure and individual sensitivities. Risk management decisions under these laws assume the benefits of toxic pesticide products to society or to various sectors of users, then make a determination that the risks are "reasonable." Even under FQPA, which has been touted for its health-based standard, there is an inherent assumption that if a pesticide meets a highly questionable "acceptable" risk threshold, it has value or benefit. This is the practice even though there are typically less or non-toxic methods or products available. Absent altogether is any analysis of whether the so-called "pest" (insect or plant) has been accurately defined. EPA does not regularly consider non-chemical alternatives (such as organic agricultural methods), nor does it evaluate the need for or the benefit provided to society (do we need to use toxic chemicals to kill clover in our yards?). The agency assumes 100 percent compliance with pesticide product labels, ignoring real world violations or accidents, which cause widespread exposure.

In addition, we now know that in all circumstances it is not the dose that makes the poison, that even low dose exposure can cause significant adverse health effects. For example, there is significant scientific evidence of the endocrine disrupting mechanism –which defies classical "dose-makes-the poison" toxicological theory with exquisitely low doses causing effects based on timing of exposure. Risk assessments justify use patterns for widely used pesticides based on assumptions about toxicity and exposure, which are limited by the lack of data on endocrine disruption. The analyses are skewed in favor of the continued use of hazardous chemicals. Beyond Pesticides has urged EPA and local decision makers, because of this and other regulatory inadequacies, to embrace the precautionary principle, and promote the avoidance of toxic pesticide use in favor of non-chemical practices.



Myth: *The listing of pesticides that are prohibited is way too complicated for schools to figure out.*

Fact: SEPA clearly defines chemical characteristics considered least-toxic. The definition is based on established governmental databases and chemical characteristics. It is the responsibility of the National School IPM Advisory Board to screen pesticides and develop a list of products that can be used in the school environment in accordance with the Act's definition of least-toxic. In this way, schools are not required to research the allowable ingredients and products.

Myth: *The approach that SEPA takes runs counter to the IPM concept which emphasizes use of multiple control tactics. Pesticides play a valuable role in effective IPM.*

Fact: IPM is an evolving methodology. Years ago IPM practitioners did not differentiate among all the pesticides available in the marketplace. They were highly dependent on very hazardous materials, except they only used them when their monitoring told them it was necessary. So, in most cases, even the least chemical-dependent IPM system was still dependent on highly toxic chemical products. Today's IPM system that is a part of the "green" movement and not stuck on pesticide-dependency puts much more emphasis on practices and management and only use selected products as a last resort. As a result, many are finding that pesticide products become the exception rather than the rule and when they use them, as a last resort, they rely on "green" products that meet the health and environmental screen in SEPA.

IPM is pest management that is sensitive to the health of students, school staff and the environment. Pesticide use is unnecessary because safer alternatives can successfully manage insects, rodents and unwanted plants. The goal of an IPM program is to minimize

and, to the extent possible, eliminate the use of pesticides and the associated risk to human health and the environment while controlling a pest problem. IPM does this by utilizing a variety of methods and techniques, including cultural, biological and structural strategies. Pesticides that are linked to adverse health effects should not be a tool when effective non-chemical pest prevention and management strategies are available. State IPM laws in California, Illinois, Maryland, Massachusetts, Minnesota, and Oregon have comprehensive IPM definitions that allow only the least-toxic pesticide to be used as a last resort.

Myth: *SEPA is an additional and unnecessary burden, completely eliminating any IPM-ready companies from even considering working in schools, throwing our efforts at IPM implementation further back.*

Fact: The development of the legislation is based on the real world experience working with school facility managers and commercial sector/pest management operators in implementing this level of IPM. While many companies have not modernized their approach to pest management, others have. When the customer asks, many national and regional companies say that they can deliver this level of IPM and, in fact, are implementing it in health care facilities and schools. SEPA-style IPM is being done and can be done on a national level.

Myth: *SEPA seems to throw EPA "under the bus" by implying that its registration process does not protect the public, hence a separate list of "least-toxic products" is needed.*

Fact: We know from National Academy of Sciences' report *Pesticides in the Diets of Infants and Children* (1993) that EPA standards for pesticides are not adequately protective of children. EPA is in the process of reviewing pesticides on the market, but that process takes a very long time. Even under the best of circumstances, the current laws will allow continued use of these pesticides in and around schools. Since there are documented weaknesses in the protections provided by federal and state laws, it is prudent to avoid systems that rely on toxic pesticides. A study in the July 2005 issue of *Journal of the American Medical Association* confirms the importance of this legislation, finding that students and school employees are being poisoned by pesticide use at schools. The study, "Acute Illnesses Associated with Pesticide Exposure at Schools," (Vol. 294, No. 4, pp 455-465), by Walter A. Alarcon, M.D. (National Institute for Occupational Safety and Health) et al., analyzes 2,593 poisonings from 1998 to 2002 from three surveillance systems. While the analysis finds overall incident rates of 7.4 cases per million children and 27.3 cases per million employees, the authors conclude, "[T]hese results should be considered low estimates of the magnitude of the problem because many cases



of pesticide poisoning are likely not reported to surveillance systems or poisoning control centers.” The authors recommend that strategies be adopted to reduce the use of pesticides at school and reduce drift. The study finds that the incidence rates among children increased significantly from 1998 to 2002. Children need to be better protected. This legislation identifies a place where young children spend most of their time, the school, and tries to make the school the safest place possible.

Myth: *Instead of resubmitting the same impractical, unpopular and expensive bill year after year, Rep. Holt and others should consult with states and figure out a way to provide a simple bill that requires licensing of all school pesticide users (a very basic requirement still needed in many states).*

Fact: The requirements of this legislation can be met with little administrative or financial burden. The legislation is modeled on a variety of tested, efficacious, and cost-effective state and local programs. On the ground experience proves there is enough information now to know that what is being proposed in SEPA works. This legislation allows us to put these experiences to work at the national level and ensure adequate protection of all children. SEPA is based on more than a decade of state and local school pest management and pesticide use policies and on-the-ground experience from across the country. The 35 state laws that have a patchwork of many provisions included in SEPA is the foundation for this legislation. In addition, SEPA does require that applications of pesticides, other than least-toxic pesticides, are made by state certified applicators.

Myth: *SEPA is a one-size fits all legislation that would require schools in Alabama to manage pests the same as schools in Alaska. A better bill would be to mandate states to develop their own incentives-based IPM programs—which they can design.*

Fact: SEPA allows states the necessary flexibility to craft school pest management plans that address the various pest pressures in each state. Each state is required to develop an IPM plan that is then provided to school districts. School districts can then take that plan and tailor it to their own needs. The only restriction is that schools cannot use toxic pesticides through its IPM program. The strategy a school uses to prevent and manage different pest problems is up to the state and school district plan, leaving them plenty of flexibility.

Myth: *There is not a school district in the U.S. that would be able to comply with this bill. It is totally unworkable as written.*



Fact: SEPA is based on practitioners’ experience managing buildings and grounds without the hazardous pesticides that the pro-pesticide lobby says are necessary. These managers are focused on the systems in place that exclude unwanted organisms from their site by managing sanitation, harborage, entryways and conducive conditions that enable pest problems. Yes, sometimes a pesticide product will be necessary. The question is which ones. Here is where SEPA utilizes modern approaches, green chemistry on the cutting edge of technology that has made obsolete the chemicals that the pro-pesticide lobby doesn’t want to lose. Some may refer to this new modern technology as “the most primitive products with limited usefulness.” Beyond Pesticides knows that if you ask many companies in the marketplace selling services to parents and other customers that are looking for “green” services, they will tell you that they have all kinds of modern tools in the toolbox, from mechanical, biological, to chemical products derived from natural substances that meet the standards of SEPA and work just fine when they are needed. But, the great thing is that these same folks will tell you that if an IPM program is operating effectively with all the systems in place, they simply do not need to use much pesticide product at all.

Myth: *The enforcement piece is what is lacking and should be addressed. SEPA is another unfunded mandate.*

Fact: Each state is required to develop its IPM plan as part of its existing state cooperative agreement with and financially supported by EPA. In this context, the Congressional Budget Office found that EPA already funds the states through its primary enforcement grant program (in fiscal year 2009, EPA granted \$18 million to the states through this program) and the SEPA requirement for an IPM plan becomes a part of an existing allocation. Similarly, the federal government and states fund local school districts, with this bill simply amending the requirements attached to the funding. Many states have already placed such requirements on their local school



districts. The bill appropriates \$7 million a year to cover costs for implementing the legislative requirements for EPA.

Myth: *SEPA would force schools to use more costly fertilizers. There is just as much or more risk from the application of manures as there is from synthetic fertilizers and if you require schools to use products that don't work very well, they will make more applications which may lead to more exposure and possibly greater risks. The risk of bacterial contamination in organic fertilizers is a real risk and the amount of soluble nitrogen in an organic fertilizer can be just as bad as the nitrogen in a urea or ammonium based synthetic fertilizer. Just because something is natural does not mean it is safer.*

Fact: It should be clearly noted that the problems associated with the use of synthetic fertilizers are more significant than natural organic fertilizers. Yes, over-application of everything is a problem, but that does not justify using synthetic chemicals over compost. In order to develop and maintain a healthy soil, schools must eliminate synthetic fertilizers, which damage soil life that is essential for a non-toxic system to work. To have healthy turfgrass, fertilization techniques focus on feeding the soil, not the plant, which builds soil microorganisms, earthworms, fungi, and soil life. Composted materials contain the essential nutrients for plant life, while not presenting health and environmental hazards. Also, the cost for fertilizers will decrease when using those that are natural, organic-based because they are long lasting. Chemical fertilizers release their nutrients quickly, with significant amounts of product being washed away and contaminating streams and rivers.

Myth: *Schools see indoor IPM as well-established and straightforward with lots of different tools, and for the most part is strongly supported by industry; while outdoor IPM is less straightforward, not so well-established, and not supported by industry.*

Fact: Yes, school IPM for structural, indoor pest management is well-established across the country, but so too is outdoor IPM and organic turf and landscape management as required by SEPA. There is a rapidly growing movement spreading throughout the U.S. of communities adopting pesticide-free zones and IPM program for managing town and city-owned property, such as playing fields, parks and public lawns, including: (i) 31 communities in New Jersey; (ii) the New York State Office of Parks, Recreation and Historic Preservation; (iii) Chicago City Parks; (iv) more than 50 parks in the Northwest U.S.; and (v) communities throughout Massachusetts, Maine, New York and Connecticut. This is just the tip of the iceberg, as new policies and programs are continually being implemented by local and state government entities as well as schools and homeowner associations.

In a Cornell University study of turf, chemically maintained turf is more susceptible to disease. The reason was found to be very low organic matter content and depleted soil microorganisms. A key component of organic management is topdressing with compost, adding a steadily available source of nutrients, adding thousands of beneficial microorganisms that help fight disease. Research at Cornell demonstrates that topdressing with compost suppresses some soil-borne fungal diseases just as well as conventional fungicides. In fact, chemical turf is generally hard and compacted because there is not much soil biology (life in the soil). Organic management focuses on cultural practices, such as aeration, that alleviates compaction and provides a softer, better playing surface. The organic turf manager recognizes the value of clover and other unwanted plants, sets a reasonable tolerance level, and uses sound horticultural practices such as pH management, fertilization, aeration, overseeding with proper grass seed, and proper watering to control them. While initial costs to transition a chemical-dependent turf to organic care can be higher, in the long-run costs will be lower as inputs, like fertilizer and water, decrease. Annual chemical treatments are eliminated.

The typical playing field is deluged with a mixture of poisons designed to kill fungus, weeds, and insects. A conventional maintenance plan includes the use of a fungicide on a regular basis to prevent fungal pathogens, a post-emergent herbicide (such as 2, 4, D) to kill crabgrass and dandelion seed, a selective herbicide (such as Trimec or Mecoprop) to kill clover and other broadleaf weeds, and an insecticide (such as Merit or Dylox) to kill insects such as grubs. Their use on playing fields is particularly troubling because children come into direct contact with the grass, and have repeated, and prolonged exposures. In addition, a 1996 study found that the herbicide 2,4-D can be tracked from lawns to indoor spaces, leaving residues of the herbicide in carpets, rugs and dust. While much is known about the effects of individual pesticides, the health effects of the mixtures are not evaluated by EPA. Many people think that the pesticides "wear off," and children are not being exposed. However, the Centers for Disease Control (CDC) found multiple pesticide residues, including 2,4-D, in the bodies of children ages 6-11 at significantly higher levels than all other age categories.

Growing an Organic Food System

One farm family's experience converting from a chemical-intensive to organic dairy operation

By Neill Lindley



photo by Allen Spalt

(Editor's note) This piece is a transcript of a talk given by farmer Neill Lindley at the 27th National Pesticide Forum, Bridge to an Organic Future, held in Carrboro, NC, April 2009. Mr. Lindley is the fourth generation in his family to farm on the home farm in Chatham County, North Carolina, now called Lindale Organic Dairy. His father is still very involved with farming – he likes to drive the tractor, which is fine with Neill, who likes to concentrate on developing their rich, nutrient-dense soils, maintaining their pastures and caring for their herd of 175 Holstein and Holstein-cross cows. In the 90s, Neill farmed with his father conventionally, but he was bothered by the health of his cows. Neill began converting the operation and was certified organic in 2007. The farm is now part of the Organic Valley cooperative. The session was introduced by University of Minnesota organic outreach coordinator and Beyond Pesticides' board member Jim Riddle. The talk in its entirety can be seen at <http://www.beyondpesticides.org/forum/video/2009foodpanel.htm>.

Introduction

First off, I want to say that I really appreciate the work that everyone at Beyond Pesticides does. It is my pleasure and honor to

moderate our opening panel this morning. Welcome everyone. I have been working for the University of Minnesota as the organic outreach coordinator for three years, so I get to do workshops and promote organic agriculture on behalf of the University and it is truly a privilege to be in that position.

The session this morning is titled "Growing a Fair Local Organic Food System." Before we start, I just want to share a story that was told to me by Fred Kershman, Ph.D., who many of you might know. He's a long time sustainable agriculture leader at the Leopold Center for Sustainable Agriculture at Iowa State University. Fred spoke at our Minnesota organic conference in January of this year, and he told me a story of a friend of his, who had dinner with Barack and Michelle Obama sometime after the election but before Secretary of Agriculture Tom Vilsack had been appointed. They wanted to talk food and agriculture for the entire three hours, and it was evident that the President understands the systemic changes that are needed in agriculture and food production and the linkage to human health and environmental impacts. But with so much on his plate, so to speak, he can't personally take it on. However, I think that we can look to the First Lady to take the lead. Look for incremental changes.

One thing that is most interesting is the first family's transition to eating organic food. Before Mr. Obama announced his candidacy, they realized that Mrs. Obama would not be able to cook for the family. So, they brought in a chef who looked at their pantry and just gutted it, getting rid of all the processed food and replacing it all with organic whole foods. They say that they saw the behavior, performance and attention span of their daughters significantly improve. The two of them were on the road, living in hotels, shaking hands with everybody for 15 months and did not get sick a day. This really changed their lives and their minds. It's so significant to me when you can effect change at a very personal level, especially for the children. That is the kind of change we are seeking.

Already we have an organic garden at the White House, At USDA, Secretary Vilsack has torn up the pavement and started a peoples organic garden in front of the Department's headquarters. These are symbolic actions, but they're big symbols. It is significant to have Kathleen Merrigan appointed as USDA's

number two person, the Deputy Secretary. She worked for Senator Patrick Leahy, who was the original author of the Organic Foods Production Act. I'm finding a very open door, at least at USDA for organic and sustainable agriculture, which hasn't always been the case. So it's very exciting times.

It's also exciting to be here in Carrboro and the Carolinas. The thing I see that I think is so innovative are the farm tours that the Carolina Farm Stewardship Association (CFSA) organizes. Several times a year in different locations around the state, you have 40 farms opening their doors in this region. And the consumers love it! They learn the connections and want to know where their food comes from. This is the kind of thing we need around the country. It has been a great model, and has been an inspiration for me, trying to get that going in Minnesota.

Our first speaker this morning, Neill Lindley, is the 4th generation in his family to farm on the home farm, about 26 miles from here, called Lindale Organic Dairy. In the 90's, Neill farmed with his father using convention chemical-intensive practices, but was bothered by the health of the cows, so he began converting the operation and became certified organic in 2007. He is now a part of the Organic Valley Cooperative.

Making the Conversion to Organic Practices

Good morning. It's an honor to be here! I did have to milk this morning, so if I'm a little foggy help me out. I did start my day at 4:00 am. I appreciate the opportunity to share some nature with you this morning. My bottom line here really is an understatement: Each day we see a new blessing in working with nature instead of against it. We count our blessings. We have about 400 acres on our farm, give or take a little bit, and this month we have totally transitioned every acre to certified organic. I'm happy about that.

I got into this in part because my cousin was telling me about all of the good things he saw while traveling and touring around with Organic Valley (OV). He told me stories about the really healthy cows he had seen, and it got me interested. I really can't say enough about OV. I want to take a few minutes to speak on what OV has done and is doing for me, and then devote the rest of the time talking about my farm.



Organic Valley and CROPP

I am part of the Cooperative Regions of Organic Producer Pools (CROPP) which makes up Organic Valley, headquartered in LaFarge, Wisconsin. There are five of us here in North Carolina. We all sort of transitioned around the same time. Things have gone well so far. We've relied on each other quite a bit, and while we had a couple of droughts that came through around the time we transitioned, we've been working together and things have been going extremely well.

We do tours through CFSA. And I'm in an investor program that works with Organic Valley where we have buyers come in and do a tour of the farm. We have our barn with the gambrel roof, the grain bin where the grains are stored, and the tractors in the shed, which I want you to keep in mind, because I want to come back to that later.

Birds as insect control

And we have numerous Purple Martin gourds. We call that our organic insecticide. These birds fly around and eat their body weight in insects in half a day. So we enjoy watching them late in the afternoon. They do a really good job and are fascinating birds.

Building a market for organic

Okay, so here's Organic Valley's mission: "The purpose of the Co-operative Regions of Organic Producer Pools (CROPP) is to create and operate a marketing cooperative which promotes regional farm diversity and economic stability by the means of organic agricultural methods and the sale of certified organic products." The purpose is solely for marketing organic products, and they provide economic stability for us. I just can't say enough about them. I don't think that it would be possible to be here had it not been for Organic Valley and their insight into the future.

Dairy is the main pool for CROPP, and the other pools include eggs, meat, juice, produce and soy. CROPP is broken into three different categories, the different brand names: Organic Valley, Organic Prairie, and organic logistics as well. The CROPP Co-op Structure is based on a few things:

- They exclusively market organic product, as you know.
- Marketing co-op is modeled with supply management and brand strategy.
- Farmers set the pay price based on the cost of production.
- Active, educated farmer-controlled Board of Directors, and monthly pool meetings.

The farmers are actually the owners, so we have a conference call each month. The pay price is set on the first of each year, and it's a fair and stable price for farmers. That's music to our ears. It's been a little challenging with the economy, of course. But for the year it's been good for us even though growth has been kind of slow. It's still sustainable and we feel good about that.

Carlo Petrini, founder of Slow Food, said, "If the farmer is not paid fairly, it is not a valid product."

When the original seven started Organic Valley in 1992, they set out on a mission to create a fair and sustainable price for the farmers in Wisconsin. These seven guys started out selling cheese basically out of the back of their trucks and it grew into over a thousand strong in dairy. I think I was something like the 894th dairy farmer with CROPP. The "Y" in the road is just a business model that pays farmers a fair price first, and then the business side of things follows suit. A lot of co-ops operate in a different manner, but this has really been very beneficial to me and my family and others involved in CROPP.

Equity Program

We buy equity into the co-op whenever we sign on. This is how it works:

- As a cooperative, the majority of the operating capital comes from the farmers/owners.
- To join, farmers must purchase stock equal to 5.5% of one year's gross income.
- This investment also establishes the production level (base), so the co-op can manage supply and protect pay prices.
- All farmer stock (Class B) earns 8% interest.

We all know about all of the challenges:

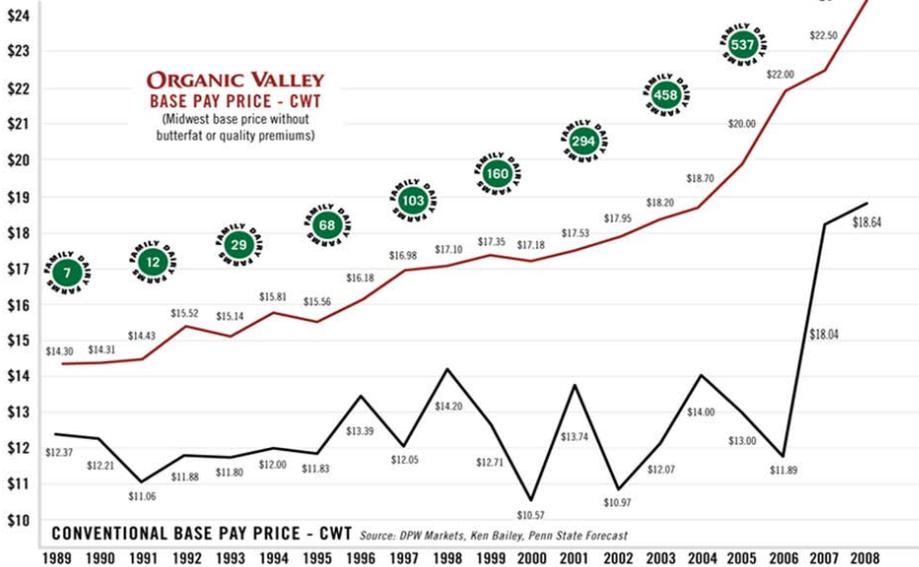
- Supply and Demand—intense growth period.
- National Co-op with regional program/brand.
- Competition with large public companies.
- Negative backlash on Industry Issues (media).

These bird houses made from gourds attract the purple martins, which serve as insect control.





Dairy Pay Price Comparison 20 years of Organic Partnership



Dairy Pay Price Comparison. This graph shows prices that we get. The top line is us, and bottom line is conventional. As you can see, there's a great variation in their prices. To us, the top line reflects the true cost of food. So this is the graph we like to look at. We like that line to stay as confident as it can. We also measure our success by the number of farms. Currently there are 1,332.

Facing the challenges

I would like to introduce you to the challenges that I faced in making the transition to organic. When I first got into organic, I was told that it couldn't happen. I spent many a sleepless night stressed. So, this is the way we did it. At one point, we were at a total of 300 cows. I had to sell the top half of the herd in order to afford to get into this, because biological preparations had to be made to the soil. I had a soil where the organic matter was at less than 1%, and I couldn't understand why, because I thought I had good soil.

So what we had to do was go back and sow green manures. We had to restock the soil. I had to feed the live stuff in the soil that had been so neglected through all the chemical fertilizers and pesticides over the years. I did not realize that I was killing, as well as the initial weed that I thought I needed to get rid of, snails, fungi, and all the live stuff in the soil that we are supposed to manage.

So, I began to stay up through the night and read books. I read a lot, including some of my heroes, Phillip Callahan, Ph.D., for instance, and *Biological Theory With Ionization* by Carey Reams, Ph.D. What that is, is balancing, or mineralizing the soil so it becomes electromagnetic. If there's a good balance, these plants are actually electric. If they're rooted and grounded in mineralized soil, they capture a lot of their nitrogen and nutrients from the at-

mosphere. I did not realize that the air we breathe is 78% nitrogen.

My goal became to mineralize the soil and to get nature's free gift, rather than me bringing in truckloads of minerals and truckloads of feeds on to the farm and so forth. It seemed like my input costs were continually growing in the conventional setting. It's kind of an addiction that I was into, that I just did not seem to be satisfied for the first 20 years of my career, actually.

And so, as I began to read these books and get this soil kind of a dark green color, and get some humus and organic matter back into the soil. I was telling some this morning that we are really seeing the benefits of it now. It's a holistic system, meaning that the whole is greater than the sum of the parts. Each day I see a new blessing.

Chemical treatments unnecessary

[See photo of calf on opposite page]

A beautiful healthy calf standing in my garden. He provides our fertilizer for the flower garden. We're going to till that wheat in while it's young and lush and feed the microbes in the soil. In turn, they're going to feed my tomato plants, my corn, or whatever my wife wants to plant out there. But anyway, that's a picture of health right there. I can honestly say that for this calf the inputs to the mother cow were just grass and herbs off of mineralized soil. She never had a wormer, she never had an insecticide. She was never doused with chemicals that were going to harm the environment. Anyway, that's a little buster right there. If you can catch him, you're pretty fast.

Now, I really want you to get an accurate picture of the farm. The milk truck comes in to pick up our milk. It's processed as close as possible. It's one of Organic Valley's policies to process as local as possible. There are the Purple Martins again. I've actually caught some of them on film. They're coming in right now—they send their scouts each year and migrate back to the same place --so that's pretty cool. Santos Cortez is my herdsman and my partner, and he put the whole process together. He is much happier now that we came through the certification and we can just milk and go home. We don't have to work till the wee hours of the night anymore. The cows are healthy. I can unequivocally say that a dairyman's biggest problem is a sick cow. You can't sleep well if that's going on. These cows are healthy, and that's just another

blessing that we see.

The big barn is where we used to have the cows. My goal at one point was to have 300 cows, and milk three times a day and get all this milk and just grow as fast as I could. But I'm happy to say that the cows are out of the barn and off of the concrete. They're out in the sun getting the vitamin D that they need to be enriched with each and every day. And they're much happier. So, I like to look at that empty barn, cause there's much less trouble now with these cows.

We haul our waste to an animal waste pond, a holding that catches any runoff from the farm, and store waste before we can get it out to the field. This is a good thing, but I'll show you a much more efficient system.

Natural fertilizer

The cow patty is a much more efficient system of handling waste. This cow patty is out there in the field. Here is what happens on my farm. There are little holes in the cow patty that are dung beetle holes. These guys fly in here, and if you read through Dr. Calhahan's books, you'll figure out how they find this type of manure, the ones that they can digest and put into the soil so it can be used by the plants later on.

Nearly 80% of the nitrogen that we apply ourselves escapes into the air. These guys catch that and they put it into the soil. These roots on these plants exude acid and it works with the phosphorous and the nitrogen that these guys store in the soil foods—much more efficient than that big green tractor or that tanker that I have, as you see.

I go out there every day and kick a patty over and I can see they're working for me out there. They're making green grass. This is important to me because the cow pat was two inches larger in diameter four days previous. The pat will completely disappear within seven days. Because we rotate cows, we'll have 24 paddocks, and we'll get them on and off this part of the field and the pat will rest for 30-40 days again before that cow will see it and, well, that gives the dung beetle a chance to do its work, as well as the grass to come back.

A holistic approach for the nation

It's holistic. It works together and it's totally feeding those cows right now without me doing anything but turning them out. This is the kind of thing I'd like to see happening in our country. This is a holistic system. The whole needs to be greater than the sum of all the parts. I'm adamant about this, and it can be.

Our wheat field was pretty much biologically dead three years ago. It was row cropped for 47 years. We turned in one green manure crop, and put some calcium and humates out—pretty cheap



really. I was out in the field monitoring the Brix reading, which is essentially the sugar content to read the health of the plant. The sugar reading is out the roof. It's not that dark green color that you see on some fields where heavy amounts of nitrogen are put out there and the plant explodes. That's not the kind of feeding these plants need. We need to feed both the soil and the plant, not just the plant itself. Now, if you read some of Art Anderson—he's one of the guys that I do some workshops with—and look at some of his findings, not only will you find that we produce 30 tons of dry weight biomass per acre, but we can also go way above and beyond what we've ever done before with a biodynamic system. I'm really proud of that wheat field. So, we can feed America like this.

I really just want to pass along the excitement and the joy that we have found in organic farming.

This is the ugliest lot, the ugliest paddock I have. The staff veterinarian for Organic Valley came down to inspect and said, "Now, I want to

see the worst paddock you have." I took him here, and he walked around, and identified dandelion and certain herbs and said, "These are natural dewormers for your cattle." All I could think was, wow. So I took him to the worst looking paddock in our eyes, and it turns out that this is now where we turn them in the spring to give their immune system a boost. Look at her, she's happy, the only thing that's bothering her is me.

We have fresh well water available on each paddock. Milking time on Tuesday allows us to milk about 16 cows at a time. So we milk a hundred cows in about an hour. We like to get them in and out as quickly as possible. They don't like concrete and we don't either.

Now, before I finish, I wish to get the message across today that this is such an honor to be here, because I do believe that we can be holistic here in America. I'd like for us to be the first country to prove that. I really just want to pass along the excitement and the joy that we have found in organic farming. Thank you very much.

Greening the Community, the 28th National Pesticide Forum

Cleveland, Ohio ■ Case Western Reserve University ■ Schmitt Lecture Hall ■ April 9-10, 2010

Below is a list of featured speakers for this exciting national environmental conference, which will focus on topics such as organic gardening and community spaces, lawn pesticide bans, health impacts of pesticides, organic food and much more. Register or for more information on sessions, location and lodging, or for the full speaker list, visit www.beyondpesticides.org/forum. For information on conference scholarships, call 202-543-5450.

David Hackenberg, the beekeeper who first discovered a mysterious disappearance of honeybees now known as Colony Collapse Disorder (CCD). Mr. Hackenberg believes that pesticides contribute to CCD and that honeybees are a barometer of the environment. He is featured in the films *Vanishing of the Bees* and *Nicotine Bees*, as well as a *60 Minutes* segment.



Mr. Hackenberg founded Hackenberg Apiaries in 1962 as a high school vo-ag project. Today, he and his son operate approximately 3,000 hives of bees in 5 states for pollination and honey. David has served as president of the American Beekeeping Federation and sits on the National Honey Board.

Jeff Moyer, farm manager at the Rodale Institute and USDA National Organic Standards Board member, is an expert in organic farming and gardening. With 30 years at Rodale, he has helped countless farmers make the transition from chemical-based farming to organic methods. The Rodale Institute's Farming Systems Trial (FST - comparing organic and conventional) shows organic techniques will combat climate change and restore soil fertility. The Rodale Institute has a long history working in creation of the organic gardening movement and methods. Watch video: *Organic vs. Conventional and the Organic Solution to Climate Change* on the Forum webpage.



Harvey Wasserman is a journalist, author, democracy activist and environmental advocate. He is author of a dozen books, including *SOLARTOPIA! Our Green Powered Earth*. Harvey helped found the communal/organic Montague Farm, now home to the Zen Peacemaker Community. He also co-founded the Great Blue Heron Alliance and numerous other grassroots groups which, among other things, shut down a trash-burning power plant, stopped a regional radioactive waste dump in Ohio, shut a McDonald's, and saved the city of Bexley's Jeffrey Park. Read recent entries at the Huffington Post: www.huffingtonpost.com/harvey-wasserman.



William Mitsch, PhD is an ecosystem ecologist and ecological engineer who was co-laureate of the 2004 Stockholm Water Prize as a result of a career in wetland ecology and restoration, ecological engineering, and ecological modelling. He is currently Distinguished Professor of Environment and Natural Resources at Ohio State University and director of the University's Olentangy River Wetland Research Park. Dr. Mitsch played a key role in the development of the field of ecological engineering as an author of the first book on this subject and the founder and editor-in-chief of the scientific journal *Ecological Engineering*.



Melinda Hemmelgarn is a registered dietitian, "investigative" nutritionist, and award-winning journalist, with 30 years' experience in clinical, academic and public health nutrition. Motivated by escalating childhood obesity rates, she was awarded a W.K. Kellogg Food and Society Policy Fellowship which allowed her to connect the dots between food, health and agriculture. Her work today focuses on teaching critical thinking skills and "food system literacy" to find "food truth." Her provocative, practical and personal "Food Sleuth" newspaper columns, magazine articles and radio programs help people "think beyond their plates."



Paul Winchester, M.D. is a professor of clinical pediatrics Indiana University School of Medicine and a neonatologist at St. Francis Hospital in Indianapolis, Indiana. Recent research by Dr. Winchester published in the April 2009 issue of the medical journal *Acta Paediatrica* is the first to report that birth defect rates in the United States are highest for women conceiving in the spring and summer. The researchers also found that this period of increased risk correlates with increased levels of pesticides in surface water across the country. Past research linked pesticides, time of conception, pre-term birth, and academic achievement.



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Greening the Community

Green economy, organic environments
and healthy people

Cleveland, Ohio ■ April 9-10, 2010



The 28th National Pesticide Forum
Case Western Reserve University

Agnar Pytte Science Center
Schmitt Lecture Hall

Sustainable Communities

Journalist, author, environmental activist **Harvey Wasserman**

Organic Gardening and Farming

Rodale Institute's organic farm & garden expert **Jeff Moyer**
Garden tour Friday, 1pm, RSVP required

Thinking Beyond Your Plate

Dietitian & "Food Sleuth" journalist **Melinda Hemmelgarn**

Cutting Edge Health Science

Endocrine disruption, birth defects, cancer, learning disabilities, more

Lawn Pesticide Bans

Organizers who successfully banned lawn pesticides in Canada
National experts in organic, pesticide-free lawn care

Protecting Pollinators

Beekeeper who discovered CCD, **David Hackenberg**

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