# Pesticides and You

News from Beyond Pesticides, formerly the National Coalition Against the Misuse of Pesticides

Volume 26, Number 1 Spring 2006

## The Minnesota Honey Bee Battle

### MN Supreme Court protects pollinators from pesticides

School Lunches Go Organic • Local Mom Organizes for Organic School Lunches • Beyond Pesticides 25TH Anniversary Gala Honors Leaders • Planting Deep Organic Roots • Piperonyl Butoxide (PBO) ChemWatch Factsheet

## Letter from Washington

# Twenty-Five Years: Reflecting on Reform

Beyond Pesticides was founded 25 years ago in 1981 as the National Coalition Against the Misuse of Pesticides on the principle that people from all walks of life joining together can effect changes to protect health and the environment from the daily assault of toxic pesticides. We embrace a vision that engages science, policy and activism to advance a world with new appreciation of biological relationships and sustainability that is free of toxic pesticides. With our supporters and collaborators, Beyond Pesticides moves ahead with increasing momentum.

### The signs of change

The signs of change are all around us. The availability of organic food is growing exponentially –a direct consumer response to concerns about pesticide-intensive agricultural practices, resulting food residues, environmental contamination, and worker hazards. Local communities are taking pesticides out of their schools, libraries, parks and public buildings. People are increasingly managing their homes and urban landscapes without toxic chemicals. Business opportunities abound as the market adjusts to changing demands for sustainable solutions. The paradigm is shifting to redefine our relationship with the ecosystem and develop approaches to living on the planet in ways that nurture life and prevent harm.

These trends empower the building of the grassroots movement for change in the face of still high pesticide usage and unrelenting pesticide-induced diseases, aggressive chemical industry advertising, and government reviews that are inadequate in assessing real risk and the viability of non-toxic alternative practices and products. Scientific studies, including those linking pesticides to childhood asthma, Lou Gehrig's and Parkinsons disease and neurological illness, all types of cancer, and reproductive dysfunction reinforce the notion that pesticide use, with its identified hazards and unknown effects, violates a basic human right – the right to pursue life without being involuntarily threatened by toxic pesticides.

### Recognizing 25 Years of Grassroots Action

In order to recognize 25 years of tracking and publicizing scientific studies, advocating sound public policy to protect health and the environment, and empowering grassroots activism to effect change, we are holding the 25th Anniversary Gala Dinner. It will take place on the evening of May 18, 2006 in Washington DC.

### Honoring the tireless scientist, policy maker and activist

As a part of the Gala, we will honor three people who tirelessly give us knowledge and act to protect health and the environment: Theo Colborn, scientist and author; Norma Grier, activist and leader; and, U.S. Rep. Rush Holt, legislator and children's advocate. These three people represent the broader community of scientists, policy makers and activists that have gotten us to where we are and will move us to where we need to be –when we truly get beyond pesticides to practices and products that are respectful of human life and a sustainable world. And helping us to honor these individuals will be the noted scientist and author Sandra Steingraber, who has been an inspiration to us all. To top it off, Ed Begley, Jr., the actor and committed environmentalist, will serve as the Master of Ceremonies.

In honoring these three honorees and our movement, we will celebrate our future with old and new friends, organic food and drink, and dance. Please join us. More detailed information is available by contacting Beyond Pesticides or on our website www.beyondpesticides.org.

Following the Gala, on May 19 and 20, we will hold the 24th National Pesticide Forum. Here, we will continue the serious work of educating ourselves on the latest science, share information on new policies and practices, and discuss strategies for future action. This meeting will bring together a cross section of people who share a common concern about the need to recognize the impact of pesticides on human health, pets, wildlife, and the environment and design opportunities to educate and act.

We thank and cherish our supporters for providing Beyond Pesticides with the nourishment to serve as a beacon for change and empower local action to improve the protection of health and the environment. We look forward to seeing you at the Gala and Form as our work continues.

—*Jay Feldman* is executive director of Beyond Pesticides.

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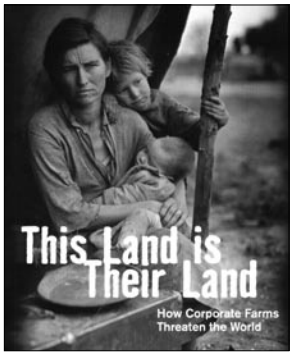


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## Ethics v. Law

*Eds. note. In response to the* Letter from Washington: Ethics v. Law *in the Fall 2005 issue of* Pesticides and You*, we received two contrasting opinions, one in support and the other in opposition. The piece, by Beyond Pesticides' executive director, reflected on the daily headlines that raise issues about society's ethical standards from the White House, corporate boardrooms, to federal EPA regulators. The criticism came from a member and reader who said it was straying from our mission to raise issues regarding race discrimination, labor rights or species extinction. The reader urged us to stick to our mission of educating on and reducing the use of pesticides. What follow is the response of Beyond Pesticides' executive director.*

As an organization, Beyond Pesticides is first and foremost concerned about the adverse impacts of toxic pesticides on human health and the environment. Our programs educate and advocate on science-based solutions that are protective of people and the environment.

We certainly do not want to offend people in the process of doing our work and want to be able to cast a broad net in developing collaborative relationships with a diverse cross section of individuals and organizations. We are not a political organization, but focus on the facts and impediments to change. That often puts us at odds with government officials and some companies or industry trade groups.

## A voice for pesticide reform

If you review how Beyond Pesticides spends its funds, you will find that we are very focused on producing materials and supporting local efforts that are aimed at real and meaningful changes in approaches to pest prevention and management, whether we are talking about homes, office buildings, schools, hospitals, rights-of-way, golf courses, parks, pasture and farmland, rangeland, and more. We are one of the few organizations that puts significant resources into assisting people in local communities across the country to address pesticide and pest problems with useful information. We have successfully reached out to the extension service, science, medical and research community and have developed healthy collaborations in most of our program work. Our National Pesticide Forum (the 24th annual forum is coming up in May in Washington DC) brings together this cross section to share information and discuss strategies for change. As a part of our commitment to giving people and local organizations tools for change, we publish the *Daily News* service on our website **http://www.beyondpesticides.org**. We testify before Congress, as we did this summer on proposed amendments that would weaken protection from pesticide use under the *Clean Water Act*. We weigh in regularly on proposed EPA policies. We maintain a Pesticide Incident Report program to document pesticide poisoning and bring the experiences of people and organizations to those who make policy. We have a long history of helping to stop the use of hazardous pesticides, while successfully putting in place policies at the local, state, and national level that promote safe practices and products. Our board of directors is a rich mix of people that bring tremendous experience and expertise to our program.

## Pesticides are linked to larger social ills

I understand the concern that my column (*Letter from Washington*), particularly in the Fall 2005 issue of *Pesticide and You,* can appear to stray from our organization's mission to educate the public on pesticides and safer pest management. In fact, the issues that I raise in that commentary are intended to spark conversation about some of the underlying social issues of the day that give rise to problems like pesticides. The column is my opportunity to step back once in a while from the day-to-day program work and look at the big picture, make connections, and consider how the problems we experience with pesticides are linked to larger social ills. I do not believe that pesticide problems exist in a social vacuum.

Rather, the problems we experience in the pesticide arena with government and the chemical industry (flawed health and safety studies, corporate lobbying of EPA, politicized science as documented by the EPA's Inspector General last year, etc.) happen in the context of larger problems. In this regard we are non-partisan critics, as witnessed by our 25-year history of critiquing administrations in Washington.

**Consider how the problems we experience with pesticides are linked to larger social ills.**

## Pesticides and farmworker poisoning

When I walked into agricultural areas in Florida,Texas and California in the late 1970s and talked with farmworkers about their sicknesses, miscarriage rates, and the lack of training, protective equipment, clean drinking water and sanitation in the fields, I personally became aware of the profound failure of the marketplace and the regulatory system to protect farmworkers' lives, including the lives of young children who on a normal day sat on the edge of the treated fields with poisoned air, water and food. My next lesson was experiencing the political process that ignored or even facilitated this tragedy, when I brought this information with others to Congress, seeking change. I quickly learned that facts by themselves do not change practices and policies that harm people; that change will only occur if we the people join together with a strong voice. To be effective in this regard, I believe that we need to understand the social context in which the pesticide problem exists. Similarly, to be sustainable, the changes that we promote with regard to pesticides and pest management must be crafted in the context of social realities.

If government corruption, undue corporate influence, discrimination, racism or prejudice are contributing factors to the ongoing pesticide threat, I think it is worth talking about, or at least pointing out, in hopes that it will help engage more people in addressing the pesticide threat to people and the planet. While there may be media attention and public outrage over deceptive or untruthful behavior by government officials in the White House, this is a daily occurrence that remains essentially hidden at EPA.

## Involuntary poisoning

It is certainly clear today that the pesticide problem is not unique to farmworkers, although they shoulder a disproportionate amount of the risk. People in communities across the U.S. are subject to indiscriminate pesticide use resulting in involuntary poisoning of land, air, and water. We recently completed a booklet on asthma and pesticides, which reviews the scientific literature that links pesticide exposure to asthma. This is a huge problem. Asthma is the number one cause of school absenteeism. How is it that we allow communities and schools to use pesticides that are known to cause and trigger asthma? While people (including me) may bring different experiences and analyses to answer that question, I can assure you that Beyond Pesticides focuses its attention on educational efforts to alert people and decision makers to pesticide dangers and seek the necessary changes. This is what we do on asthma, cancer, neurological and immunological diseases, endocrine disruption, reproductive effects, birth defects and other adverse effects.

We truly appreciate everyone's continued support of Beyond Pesticides' educational and advocacy programs. We would be happy to continue to discuss these issues and begin a dialogue to better answer any questions that people have.

Best wishes,

Jay Feldman

## Write Us!

Whether you love us, disagree with us or just want to speak your mind, we want to hear from you. All mail must have a day time phone and verifiable address. Space is limited so some mail may not be printed. Mail that is printed will be edited for length and clarity. Please address your mail to:

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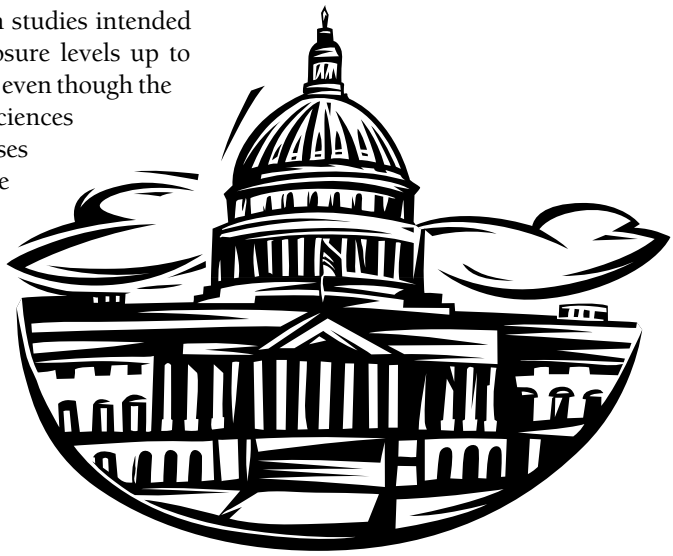
## EPA Finalizes Rule for Human Studies Research

The Environmental Protection Agency (EPA) finalized its rule that allows for human pesticide testing and the use of resulting data for pesticide registration after receiving over 50,000 comments during a 90-day public comment period. The final rule, which amends 40 CFR Part 26, *Protections for Subjects in Human Research*, continues a major controversy over human testing that erupted when the Bush Administration reversed a federal government prohibition on this type of testing. EPA claims that the rule bans all third-party intentional dosing research on pesticides involving children and pregnant women intended for submission to the agency. Although EPA is adopting some safeguards, according to environmental and public health advocates, pesticide "benefits" do not justify the intentional dosing of human subjects even on a voluntary basis. EPA does not evaluate pesticides for their societal benefits in light of less and non-toxic alternative approaches, practices and products. Advocates say EPA does not generally evaluate the actual need for a pesticide to determine whether the pest is adequately defined and, if so, whether there is a less toxic approach to pest prevention or management. Therefore, they continue EPA is not equipped to meet the rule's requirement that human studies are approved "only if risks to subjects . . . are reasonable in relation to anticipated benefits."

U.S. Senator Barbara Boxer (D-CA), Rep. Henry A. Waxman (D-CA), and Rep. Hilda L. Solis (D-CA) criticized EPA's rule, which they say is full of loopholes and promotes pesticide experimentation on humans. According to an analysis by the Representative Waxman, the rule is inconsistent with federal law, because it allows manufacturers to conduct testing of pesticides on both pregnant women and children so long as there is no "intent" at the outset of the study to submit the results to EPA. Additionally, the plan allows pesticides to be tested on pregnant women and children in studies intended for submission at exposure levels up to the current legal limits - even though the National Academy of Sciences found that in some cases this level of exposure could present acute risks to children. The rule also allows observational studies, such as the controversial *Children's Environmental Exposure Research Study* (CHEERS) to be used to register pesticides.



## EPA Begins Registration Process for New Carcinogenic Pesticide

Methyl iodide is a carcinogenic chemical that is headed for Environmental Protection Agency (EPA) registration as a replacement for the ozone-depleting fumigant methyl bromide, which is to be phased out under the Montreal Protocol. EPA is facilitating chemical industry and agribusiness efforts to introduce methyl iodide, a fumigant that may be even more hazardous to human health than methyl bromide. Methyl iodide and methyl bromide are both highly volatile fumigant pesticides that are injected into the soil to kill soil-borne pests. Because of the high application rates and gaseous nature of these chemicals, they drift away from the application site to poison neighbors and farmworkers. Fumigant-intensive crops include tomatoes, strawberries, peppers, tobacco, melons, potatoes and other root crops. EPA found that methyl iodide causes thyroid tumors. The agency introduced a previously unheard of cancer ranking of "Not likely to be carcinogenic to humans at doses that do not alter rat thyroid hormone homeostasis." EPA's Cancer Assessment Review Committee used only a single study to come to this conclusion, in which 62-66% of the rats in both the control and the high dose group died during the experiment. Other animal studies evaluated by EPA link methyl iodide to hormonal disruption, respiratory tract lesions, neurological effects, and miscarriages. "We know so much more now than we did when fumigants were first introduced in the 1920s," remarked Pesticide Action Network North America (PANNA) senior scientist Susan Kegley, Ph.D. " EPA should be helping farmers move into the future by expanding the use of new integrated pest management techniques, not by replacing one hazardous chemical with another."

## Groups Petition EPA To Keep Fluoride Out of Food

Fluoride Action Network (FAN), Beyond Pesticides and Environmental Working Group continue to push back on registration of sulfuryl fluoride (Profume), Dow Chemical's toxic alternative food fumigant to the ozone-depleting methyl bromide. On December 16, 2005, the groups refined their petition to the Environmental Protection Agency (EPA) that seeks to revoke sulfuryl fluoride tolerance, paving the way for an evidentiary hearing and possible cancellation of uses. The groups are primarily concerned that U.S. consumers, especially children, are receiving too much fluoride. Fluoride is persistent and bioaccumulates in the human body; EPA took the unprecedented step of setting an allowable dosage of fluoride for infants that is five times higher than for adults; and, EPA rushed the approval before receiving and reviewing all applicable data. Dow campaigned long and hard to get EPA's go-ahead to use the pesticide, but in doing so the agency is allowing the highest levels of fluoride residue on food in U.S. history. The petition sets the basis for EPA to revoke the use of sulfuryl fluoride. Jim Jones, director of EPA's Office of Pesticide Programs, told environmentalists at a January 11, 2006 meeting that the evidentiary hearing will be scheduled in four to five months. This will be the first time a pesticide tolerance has its day before EPA's administrative court. *The groups' petition is available online at* **www.fluorideaction.org/pesticides/sf.submission.12-16-05.pdf.**

## Federal Food Label Bill Would Weaken States' Public Health Protection

Advocates say that the *National Uniformity for Food Act* (H.R. 4167), recently passed by the U.S. House of Representatives Energy and Commerce Committee, will undermine states' ability to pass policies protective of public health. This includes California's *Proposition 65*, which protects citizens from chemicals known to cause cancer, birth defects or other reproductive harm. According to the U.S. Public Interest Research Group (PIRG), H.R. 4167 could preempt approximately 80 state laws that are already on the books in 37 states. The bill will impact the strict laws in states such as California, Florida, Louisiana and Rhode Island that require warning labels on shellfish, which often carry lethal pathogens; laws in Illinois and Pennsylvania that regulate the safety of eggs; a law in Alaska requiring labeling of genetically modified fish or fish products; and, state mercury warnings, such as California's point-of-purchase mercury warnings for fish. In addition to preempting the already established food safety laws, H.R. 4167 will forever tie the hands of states and municipalities on a range of emerging food safety issues, whether or not the federal government has addressed public health concerns. Among other things, states and localities would not be able to regulate and label food products that contain irradiated ingredients, pesticides, antibiotics, or genetically modified organisms. California Attorney General Bill Lockyer warns that the legislation would dismantle the state's own standards and advised lawmakers that, "Federal preemption of this law and similar state requirements is bad federalism, bad science and bad public policy."

## Consumers Union Makes Organic Recommendations

An investigation, published in the February 2006 issue of *Consumer Reports*, makes recommendations for shoppers considering organic foods, from the perspective of consumer health. Aside from reducing pesticide residues, organic agriculture benefits the health of farmworkers and those who live near farms, as well as contributing to a cleaner environment. For these reasons, Beyond Pesticides recommends buying organic whenever possible and especially for foods commonly consumed. According to Consumers Union (CU), the most important foods to buy organic include meats, poultry, eggs, and dairy products, as well as fruits and vegetables, such as apples, bell peppers, celery, cherries, spinach, and strawberries. Even after washing, these conventional fruits and vegetables consistently carry among the highest levels of pesticide residues. Organic products worth buying only if price is no object, according to CU, include: processed foods and certain produce items, such as cauliflower, sweet corn, broccoli, mangos, and sweet peas. Multiple pesticide residues are not likely to be found on conventionally grown versions of these fruits and vegetables, according to the Environmental Working Group (EWG). Unfortunately, the residue issue is made complex because residue tests may miss so-called inert ingredients, metabolites and contaminants. Beyond Pesticides also warns that even small amounts of pesticide residues can add up when a particular item is common in the diet of a particular person. CU recommends against buying organically labeled seafood and cosmetics, which have less meaningful labels.

**Take Action:** *Buy organic food for you and your family without breaking the bank. The experts at Consumer Reports offer the following advice: comparison shop - the price for the same jar of organic baby food ranged from 69 cents to $1.29 among several grocery stores in the suburban New York City area; go local—find organic growers at most farmers' markets. A USDA study in 2002 found that about 40 percent of those farmers don't charge a premium; buy a share in a community-supported organic farm -consumers may get a weekly supply of produce in season for less than non-organic supermarket prices; set up a buying club with neighbors; and, order by mail - national providers will ship items at reduced cost. For more information, visit www.beyondpesticides.org/organicfood.*

## Study Indicates Pesticides May Cause Onset of Puberty

The age at which females exhibit breast development has been declining in some human populations over the past fifty years. The reasons have confounded scientists. A recent study led by University of Florida researcher Elizabeth Guillette, Ph.D., published November 10, 2005 in the online version of *Environmental Health Perspectives*, indicates that pesticides, such as those that affect the endocrine system, may be having more of an effect on breast development in young girls, younger than age ten, than previously thought. The study, "Altered Breast Development in Young Girls from an Agricultural Environment," evaluates signs of precocious puberty (early development of initial breast and pubic hair development) in 50 healthy young girls ages eight to ten, with no birth defects or tumors, living in two agricultural regions in the Yaqui Valley of Sonora, Mexico – one with little to no pesticide exposure and one with pesticide exposure. Research shows a weak relationship between the breast size and mammary gland development of the population of young girls exposed to agricultural pesticides and a robust positive relationship between breast size and mammary size among the unexposed population. The authors hypothesize "that an altered relationship between breast size, fat deposition, and mammary tissue development could result from in utero and/or childhood exposures to estrogenic or anti-androgenic chemicals…."

**Take Action:** *This study reinforces the need and provides even more urgency for EPA to develop a protocol for assessing the endocrine disrupting effects of pesticides. Write EPA Administrator Stephen Johnson, johnson.stephen@epa.gov, or call 202-564-4700 and insist that EPA establish criteria for assessing pesticides' impact on the endocrine system. Point out that, under federal pesticide law, the agency must consider the potential endocrine disrupting effects of pesticides. Read the article at http://ehp.niehs.nih.gov/members/2005/8280/8280.pdf.*

## Apple Grower Adopts Biological Controls, Wins IPM Award

George Lamont's best new idea in apple growing is one he can't sell other chemical-intensive growers on. But it's cut his herbicide bill "drastically," he says. He hit on the idea about 10 years ago, after he pushed a probe into his soil to test for nutrient content. "The soil came up looking like beach sand," Mr. Lamont says. "There wasn't any organic matter." Organic matter is the soul of soil, so Mr. Lamont quit applying soil sterilant herbicides, changed how he applied his fertilizer and took an "if you can't fight 'em, join 'em" approach to managing weeds. His comrade-in-arms, chickweed, a common weed everywhere crops (and lawns) are grown. The chickweed helps suppress other weeds, and now a thick carpet of organic matter covers the soil beneath his trees. Mr. Lamont's 500 acres of orchards produce about 400,000 bushels of apples each year and are located near Albion, NY. This and other innovations—and his proactive work promoting best management practices to other growers—have earned Mr. Lamont an "Excellence in IPM Award" from the New York State Integrated Pest Management (IPM) Program at Cornell University. To manage red mites, which plague NY orchards and weaken trees, Mr. Lamont turned to a pest management consultant who helped him find a different mite, *Typhlodromus pyri*, which feeds on the red mite. They located the efficient little predator on a nearby grower's trees. Within a month or two he had a self-sustaining control measure in place at little cost.

## Toxic Effects of Pesticides Amplified When Combined

A new report finds that pesticide mixtures, at levels 10 to 100 times below

EPA standards, harm frogs, even at levels that do not produce the same effects alone. This finding by University of California Berkley professor Tyrone Hayes, Ph.D., published January 24, 2006 in the online version of *Environmental Health Perspectives*, suggests that the current system of pesticide regulation, which does not adequately address pesticide synergy, is putting public health and the environment at risk. According to the research, frogs exposed to a mixture of pesticides commonly found in agricultural runoff were, on average, 10 to 12 percent smaller than the control group. Additionally, nearly 70% of the exposed frogs became infected by a common pathogen that the control group fought off. Exposed frogs also developed holes in their thymus and had high levels of corticosterone, a hormone associated with stress and known to decrease growth and slow development. Effects were seen in frogs at concentrations of 0.1 parts per billion, a level far below current standards. Research suggests that pesticides may be partially to blame for the alarming decline in the global amphibian population.

**Take Action:** *Pesticide exposures in the real world are not isolated incidents. Rather, they are a string of incidents marked by combinations of exposures. As a result, scientists have argued for years that toxic exposures to pesticides should be measured as they would normally occur, in combination with one another. Yet, current federal law does not require this type of testing for pesticides on the market, except in very limited instances. Write EPA Administrator Stephen Johnson, johnson.stephen@epa.gov, or call 202-564-4700 and insist that EPA begin a program to evaluate the synergistic effects of pesticides and other chemicals, including pharmaceuticals. For more information, see "Synergy: The big unknowns of pesticide exposure" in the Winter 2003-2004 issue of Pesticides and You (Vol. 23, No. 4).*

## Study Shows Household Pesticides May increase Risk of Leukemia

A study by French researchers finds a strong link between leukemia and pesticide use. Findings from the study, "Household Exposure to Pesticides and Risk of Childhood Acute Leukemia," were published in the February 2006 issue of *Occupational and Environmental Medicine* (Vol. 63: 131-4). The researchers found the strongest links to leukemia with lawn chemical and fungicide use during childhood, and maternal home pesticide use during pregnancy. The study also finds a significant link to insecticidal shampoo treatment of pediculosis (head lice infestation). The study included face-to-face interviews with the mothers of 280 children that have acute leukemia and a control group of 288, matched for sex and age. The interview consisted of questions regarding employment history of both parents, and the use of pesticides in the home and garden. The findings show that the use of pesticides at home during pregnancy and childhood double the risk of leukemia. Similar findings are also seen in those using insecticidal shampoos used to treat head lice. The use of lawn chemicals is linked to a 2.4-fold increase in risk, and fungicide use is linked to a 2.5 fold increase. According to the report's author, Florence Menegaux, Ph.D., "The findings of the study reinforce the hypothesis already suggested by the literature that household pesticide exposure may play a role in childhood acute leukemia. The consistency of our results and the results from previous studies suggests that it may be opportune to consider preventive action."

## Court Orders Environmental Assessment of Pesticides

On December 29, 2005, a California appeals court, in *Californians for Alternatives to Toxics v. CA Department of Food and Agriculture* (No. CPF03503249), rejected a state plan to use up to 30 pesticides, including the neurotoxic carbamate insecticide carbaryl (Sevin), to manage the glassy-winged sharpshooter, an insect scourge of wine-grape vines, according to Californians for Alternatives to Toxics (CATs), one of three environmental group plaintiffs in the case. The First District Court of Appeals held that the *California Environmental Quality Act* (CEQA) requires an environmental analysis that produces "specific data as needed to meaningfully assess whether the proposed activities would result in significant impacts" and ruled that the Department of Food and Agriculture (DFA) must complete a new Environmental Impact Report (EIR). DFA unsuccessfully argued that the CEQA is satisfied because the Environmental Protection Agency (EPA) and California's Department of Pesticide Regulation (DPR) register pesticides. This landmark decision overturns that thinking and finds that federal or state registration of a pesticide does not take the place of an actual environmental impact assessment of the pesticides proposed to be used. "Californians have the right to know what dangers come with pesticide spraying that's forced on them to protect a major industry," said Patty Clary of the Eureka-based CATs. "Our state agencies must alter their programs to prevent such harm. The court has affirmed that no industry or government agency is above these fundamental laws." *The decision can be read at http://www.courtinfo.ca.gov/opinions/nonpub/A107088.PDF.*

## Court of Appeals Upholds Phosphorus Ban in Wisconsin

The U.S. 6th Circuit Court of Appeals upheld an ordinance in December 2005 banning phosphorus use in lawn fertilizers in Dane County and Madison, Wisconsin. The ban was originally enacted in 2004 to reduce the amount of phosphorus runoff into Madison's lakes and diminish the algae blooms that plague the lakes each summer. Fertilizer manufacturers, with CropLife America as lead plaintiff, appealed the ban, claiming that they had to reconstitute its "weed and feed" formulations to eliminate phosphorus to meet the restrictions. Furthermore, the plaintiffs argued that local government could not regulate the fertilizers since state law controls the use of pesticides and local law cannot preempt state law. Judge Richard Poster, who wrote the decision for the Court of Appeals, rejected this argument. He said that since the "weed and feed" products are a fertilizer-pesticide mixture, and since local governments can regulate fertilizers, the combination could be regulated by local ordinances. The law prohibits the use of phosphorus-containing lawn fertilizers unless a soil test shows that it is necessary. It also prohibits retail display of phosphorus-containing lawn fertilizers. The ordinance makes explicit that golf courses, farmstead lawns, and commercial applications to lawns are subject to these rules as well.


**Take Action:** *Although the pesticide industry unsuccessfully argued that local restrictions on pesticide use are preempted by state law, 40 states do have "preemption laws" that prevent communities from protecting the health of their citizens and the environment from unnecessary pesticide use. For more information on this issue and what you can do about it, join the National Coalition for Pesticide-Free Lawns by visiting Beyond Pesticides' Lawns and Landscapes program page at www.beyondpesticides.org/lawn.*

## South Korean Court Orders Dow and Monsanto To Pay Fines

In January 2006, a South Korean court ruled that Dow Chemical and the Monsanto Company must compensate 6,800 Koreans poisoned by Agent Orange during the Vietnam War. The herbicide Agent Orange (50-50 mixture of the herbicides 2,4-D and 2,4,5-T) was widely used by troops to destroy jungle cover. Of the 19-million gallons of defoliants sprayed over southern Vietnam from 1962 to 1971, approximately 55 percent was Agent Orange. Since then, many veterans from South Korea, Vietnam, and the U.S. have blamed exposure to the toxic pesticide for a variety of illnesses that range from reproductive problems to cancer and nervous system disorders. The South Korean court that heard the case acknowledges that there is a "causal relationship" between the toxic herbicide and eleven diseases, citing a report from the National Academy of Sciences (NAS). In 1999, approximately 20,000 South Koreans filed two separate lawsuits against Dow and Monsanto, seeking over five-billion dollars in reparations. The ruling is a combined ruling for the two cases that awarded damages ranging from $6,200 to $47,500 each to approximately 6,800 veterans and relatives of deceased victims. While many regard this ruling as a victory, there is also disappointment since the court rejected a similar case against the companies involving children of Agent Orange victims who suffer from peripheral neuropathy, a nervous system disease that can cause temporary numbness and, in severe cases, muscle wasting and paralysis. The connection between these illnesses and the herbicide has been supported by the NAS.

## Biomonitoring Bill Returns to California Senate

After numerous failed attempts, a bill to create the nation's only statewide system for tracking human bodies' levels of environmental pollutants, such as pesticides, plastic and flame-retardants, is back in the California legislature. On February 7, 2006, state senators Don Perata (D-Oakland), and Deborah Ortiz (D-Sacramento), announced the introduction for the fourth time of a bill creating a California-specific biomonitoring program, calling it a top legislative priority. "I'm at the point in my life where it seems one out of two people I know has cancer," Senator Perata said. Today half of all men and one out of three women will develop some kind of cancer in their lifetime. Public health officials, alarmed by rising rates of cancer and other ailments, consider biomonitoring, the use of tests to detect trace amounts of specific chemicals in people's blood, hair or urine, a powerful tool in their quest to understand why. But industry and others have long fought such efforts. The last time the bill, SB 600, passed the legislature in 2005, Governor Schwarzenegger vetoed it. California, as well as the rest of the country, is experiencing epidemics of breast cancer, asthma, autism and other chronic conditions. Recent biomonitoring programs are proving that almost everyone is contaminated with these chemicals. A *Los Angeles Times* columnist who underwent biomonitoring wrote in April 2005 that he discovered he was a "walking cocktail of toxic chemicals," with "a jigger of lead in me, a splash of flame retardant and a dash of DDT."

# School Lunches Go Organic

## Science supports growing movement

**By Aviva Glaser and Michele Roberts**

In an effort to keep children's diets free of pesticides, antibiotics and genetically engineered ingredients, increasing numbers of parents throughout the country are purchasing organic food for their children and pushing their schools to do the same. Schools in Washington State and California are leading the nation in introducing organic food into school lunch programs. An organic salad bar started at Lincoln Elementary School in Olympia, Washington has proven so popular and economically feasible, all grade schools in Olympia now have one. California school districts in Berkeley, Santa Monica, and Palo Alto also have organic food programs. In 2004, the Seattle school district adopted H61.01, *Breakfast and Lunch Program Procedure*, a policy banning junk food and encouraging organic food in school cafeterias.


## Organic demand growing

Parents are increasingly driving the demand for organic food in their homes as well as in schools. AC Nielsen marketing ratings show that sales of organic baby food have jumped nearly 18 percent since 2004—double the overall growth of organic food sales. Additionally, dairy, produce, and snacks (food purchased often for children) are rapidly growing segments of the organic food market, according to the Organic Trade Association. Due to rising demand, organic food for children is now available in mainstream supermarkets such as Safeway in addition to natural food stores.

Organic companies responding to increasing parent concern have assisted in developing school organic food programs. For example, the organic yogurt company Stonyfield Farm has sponsored organic programs at schools in Rhode Island, California, Massachusetts, New York, New Hampshire and Connecticut. Stonyfield's school program was conceived by president and CEO, Gary Hirshberg. Mr. Hirshberg's wake-up call came after asking his teenage son what he had eaten at school one day. "Pizza, chocolate milk and Skittles," was the reply. Responding to an opportunity, Stonyfield's campaign to put organic foods in schools was born, and refrigerated vending machines selling healthy organic treats replaced junk food vending machines in participating schools around the country.

Stonyfield Farm is not the first company to sponsor school organic food programs. Several years ago, Horizon Organic implemented two school programs designed to educate teachers, children and their families about the environmental and health benefits of organics. As part of the program, Horizon helped bring organic lunches to 12 schools in Palo Alto.

Independent schools are also going organic without corporate sponsorship. The Ross School in New York, along with many Waldorf schools, are leading the way in integrating organic products into their food service. Many colleges have also started bringing organic food into the dining hall, including Princeton, Stanford, Colorado College, and the Monterey Institute of International Studies.

The increased availability of organic food in schools throughout the country indicates a growing movement towards healthier, more conscious school lunches. "This is the beginning of the sea change," predicts Ronnie Cummins, director of the Organic Consumers Association.

## Health benefits of organic food

Advocates say organic food is especially important for children because they face unique hazards from pesticide exposure. Pound for pound, children eat more food, drink more water and juices, and breathe more air than adults, and thus they take in more pesticides relative to their body weight. Their developing organ systems make children more sensitive than adults to exposure to toxic chemicals and less able to detoxify the chemicals.

The schools and parents turning to healthy organic food are doing so as a way to improve children's health. One of the main concerns for parents is the "body burden" of pesticide residues in children's bodies. A study published in *Environmental Health Perspectives* shows that children who eat a diet of organic food exhibit levels of pesticides in their bodies that are six times lower than children who eat a diet of food produced with chemical-intensive methods.[1]

Moreover, a new study by researchers at Emory University finds that switching children to an organic diet provides a "dramatic and immediate protective effect" against exposures to two organophosphate pesticides commonly used in U.S. agricultural production. The results were published in the February 2006 issue of *Environmental Health Perspectives*.[2] "Immediately after substituting organic food items for the children's normal

diets, the concentration of the organophosphorus pesticides found in their bodies decreased substantially to non-detectable levels until the conventional diets were re-introduced," says Chensheng Lu, Ph.D, one of the study's authors.

Research shows that organic food also has health benefits. A study published in the February 26, 2003 print edition of the *Journal of Agricultural and Food Chemistry* finds greater nutritional attributes in organically grown food compared with chemically produced food, resulting from the lack of pesticides used.[3] The organic and sustainably grown foods contain up to 58% more polyphenolics, which act as antioxidants, and may help prevent heart disease and cancer. According to the study, sustainably grown and organically grown produce also has more ascorbic acid, which the body converts to vitamin C.

## How To Get Schools To Go Organic

1. **Familiarize yourself with your child's school district policy** regarding meals and snack items sold in school stores and/or vending machines.
2. **Eat a typical lunch at the school if possible.** Consult the curriculum, teachers or school health staff to determine if students receive any instruction in nutrition and healthy eating. Talk with food service workers to get their opinions on what students do and do not eat.
3. **Meet with your school's decision makers,** the school food services director, principal, PTO/PTA, and school board members to discuss your concerns.
4. **Organize a committee.** Enlist other parents, teachers and staff to join.
5. **Recruit members from the community** who will be helpful, such as a pediatrician, nurse or nutrition expert. Identify students to serve on your committee or help with the project. Student participation is key!
6. **Know the reason for organics at schools.** Use the information from the following sources to build your case and become informed: **www.beyondpesticides.org, www.farmtoschool.org, www.organicvalley.com, www.organic.org, www.allorganicslink.com, www.organicconsumersassociation.org, www.generationgreen.org, www.eatwellguide.com, http://www.soilassociation.org/foodforlife, www.freshbaby.com, www.wholefoodsmarket.com** and **www.stonyfield.com**. If you do not have internet access, call Beyond Pesticides 202-543-5450 for help. If you have a co-op in your area, you may want to contact it for resources and help.
7. **Involve the media.** Write letters to the editor about the problems you see and the solutions. Cite statistics. Send press releases to local newspapers and radio stations to announce events or important meetings, and any progress made. Suggest your local paper do a feature story on school lunches. If the school has a newspaper, get students to write articles on the need for organics.
8. **Stay tuned to the process.** Whether your school agrees to ban some junk foods, discontinue vending services, change the cafeteria menu…whatever it is, stay involved. Keep your commitment intact to oversee the process and to step in if implementation doesn't go as expected. Hold regular meetings to ensure commitment.
9. **Advocate for the issue:** Write letters to public officials to help change public policy. Be sure to include letters from the students.
10. **Inspire others. Celebrate** all victories no matter how small. Tell your story to the media. Share your story with others, such as Beyond Pesticides, at **info@beyondpesticides.org**, Stonyfield's Creating Healthy Kids blog at: **menuforchange@stonyfield.com**.

These steps have been adapted from Stonyfield Farm's Menu for Change, "Ten Steps to Changing Your School's Menu" from **http://www.stonyfield.com/MenuForChange/parentsAction/MFCParentActionKit.cfm**

## Footnotes

[1] Curl CL, RA Fenske, and K Elgethun. 2003. Organophosphorus pesticide exposure of urban and suburban pre-school children with organic and conventional diets. *Environmental Health Perspectives* 11(3): 377-382.

[2] Lu C, K Toepel, and R Irish, et al. 2006. Organic diets significantly lower children's dietary exposure to organophosphorus pesticides. *Environmental Health Perspectives* 114(2): 260-3.

[3] Asami DK, YJ Hong, DM Barrett, and AE Mitchell. 2003. Comparison of the total phenolic and ascorbic acid content of freeze-dried and air-dried marionberry, strawberry, and corn grown using conventional, organic, and sustainable agricultural practices. *Journal of Agricultural and Food Chemistry* 51(5): 1237-41.

# Local Mom Organizes for Organic School Lunches

## An interview with Vanessa Ruddy, Olympia, Washington

*Beyond Pesticides interviewed Vanessa Ruddy of Olympia, Washington, a parent and active member of her school community, who has been instrumental in establishing an organic school lunch program in her child's school and has led the way for other schools in the community, state and nation.*

### BP: How did you get interested in organic food?

**VR:** My interest in healthy foods began 35 years ago when I was 15 years old when I became a vegetarian. I attended boarding school in England and while there I did not have many healthy food choices. The British had the worst food and reputation for bad food, equal to America! As children, we were fed white bread and processed cheese. I actually grew up living on three continents and I found real food in other countries!

I never ate school lunches here in the U.S., but my sons, now 25 and 12 years old, did. My first son loved to go to school partly because while there he got to eat junk food. However, my second son went to an independent school, ages 4-9, where we decided to have a healthy food policy for the children.

### BP: Describe the school community.

**VR:** We became aware of an alternative school in Olympia, Lincoln Elementary, where my younger son started in the second grade. Although it is considered a progressive school, I was surprised and disappointed to find the same school lunch menus as the other schools. This was happening in a school where children are taught about social issues and environmental education, they have a school garden, wetland and a pesticide-free school lawn. The principal is quite savvy about protecting children from toxic "evils" and poor nutrition.

Every day at Lincoln children complained about the school lunches, calling it disgusting, poison, etc. The lunch consisted of fried and sugary foods that a lot of the kids had no choice but to eat because of the free lunch program. I realized that this would be the perfect place to set up a healthy school lunch and then considered the idea for about a year before taking action.

### BP: What steps did you take to initiate the change to organic?

**VR:** I began by placing a telephone call to the supervisor of the school lunch program. He sounded very friendly. I was imagining an 80 year-old institutional ogre, which was not the case. I identified myself as a parent at Lincoln, and asked if we could improve the school lunch program. He got excited, "Yeah, great idea. I'm busy now, but get back to me." With that I assumed that I was going to have to do all the cooking and meal planning, so I waited until I could get others to help on this big project. Before the completion of the school year (2001), I asked to put up a sheet to recruit any parents interested in changing the school lunch program. Cheryl Petra, the principal, welcomed this request, and about 20 people put their name on the list to help.

### BP: Were the decision makers responsive?

**VR:** I called the supervisor again in September. While on the phone he said, "what would you like to do?" Wow! He was giving ME the options. My mind raced— what do I want? Heck, "How about organic foods for starters?" He replied, "Let's set up a meeting." It is helpful that he is from a farming background, and therefore knows more about food production then most school lunch program supervisors. To arrange for the distribution of organic food to the school, he arranged a meeting with Washington State Department of Agriculture's (WSDA) Small Farms program coordinator, a representative from Charlie's Produce in Seattle, and a distributor of organics in western Washington. At one of the meetings, the WSDA coordinator brought samples of foods I had selected. The cost was reviewed and some reallocations were made. We found that money for the desserts could be allocated to organics.

### BP: Was there a lot of parent involvement?

**VR:** For me, this was all a dream coming true. Although parent attendance decreased as we continued to have meetings, their interest did not. They supported me 100%.

### BP: How long did it take to set up the program?

**VR:** By October (one month later), the supervisor agreed to use Lincoln Elementary as a pilot program. With that, a six-foot salad and fruit bar was rolled out, with a sign that said "Organics." A cafeteria worker said, "Vanessa, you would have thought it was Christmas, the way their eyes lit up." Only one overweight child complained about no desserts.

### BP: Were there other activities that spun off from this?

**VR:** To ensure that the organic program would last, we set up meetings on a regular basis. I engaged the teachers by asking them if their classes would like to learn about organic food and why it is important. We also decided to come up with a children's health manifesto. This was met with excitement from the kids. An open meeting was held once a month with the principal, supervisor of

the school lunch program, anyone else interested, and me. We also met with local farmers to discuss opportunities for possible local farm involvement with the program. The outreach to the farmers enlarged the goal to become twofold: support local farmers while feeding the children better food.

## BP: How did this program support the community?

**VR:** After the fruit and salad bar had been successfully running for two months, I thought the larger community needed to be aware of this and I contacted the media. Once the story appeared in the papers, TV reporters came down from Seattle. I contacted National Public Radio (NPR), which agreed to do a story. The interviewer was amazed at how "savvy" the kids were on pesticides. The media attention helped spread the word and allowed other parents who dreamed of having organics in their school see it was possible. By the end of the year, nine out of the ten elementary schools in Olympia had organic school salad bars. They were asking to be put on the list. Some cooks complained, and some school cooks refused. The media attention reached USDA school lunch program officials in Washington DC. They sent a representative out to Olympia to give our school and everyone involved a certificate.

**I learned that the U.S. is the only country that does not have a nutritionist writing the lunch program, where it exists. Instead of a nutritionist, our country is told what to do by the food industry.**

## BP: Where do you go from here?

**VR:** I recently visited Berkeley to research their organic food policy, which includes a nutrition education program for the whole community, something I am trying to introduce in Olympia. In Olympia, money is one of our biggest limitations. Berkley's program includes a staff member who writes grants—they received a $500,000 grant. They also have a nutritionists on staff. In my research regarding the presence of school nutritionist around the world, I learned that the U.S. is the only country that does not have a nutritionist writing the lunch program, where it exists. Instead of a nutritionist, our country is told what to do by the food industry. Local supervisors do have autonomy and choices, but if they are not educated in food matters, then it's tough luck for the children.

## BP: Do you have any advice for parents?

**VR:** My advice to parents interested in getting organic food into their child's school is this: Do what I did; go to the media and don't stop! Get people on your side and gather information. There are plenty of websites with resources. With assistance of an intern from Evergreen State College, we have completed Olympia's data report called *Revitalizing the School Lunch Program* Download the report at (http://osd.wednet.edu/media/schools/A_Salad_Bar.pdf). Network and find people who can work together with you on this issue, and don't forget about the importance of educating the kids about organics.

**Veronica Ruddy** *is a parent of a sixth grader at Lincoln Elementary School in Olympia, WA. She can be reached at* ***vanessaruddy2749@hotmail.com****. For more information on organics in schools, see Beyond Pesticides' article* (Pesticides and You*, Winter 2004-05) on organic school gardens at* ***www.beyondpesticides.org*** *or contact Beyond Pesticides for a copy.*

# Beyond Pesticides' 25TH Anniversary Gala Honors Leaders

*The following three pages profile the recent work of the three recipients of Beyond Pesticides' "Dragonfly Award," which will be presented at the organization's 25th Anniversary Gala Dinner in Washington, DC, May 18, 2006. Actor and activist Ed Begley, Jr. will MC. Author and scientist Sandra Steingraber and Beyond Pesticides board members will present awards. For more information on attending the Gala and the following National Pesticide Forum, see www.beyondpesticides.org/forum.*

## U.S. Rep. Rush Holt Seeks to Protect Children from Pesticides

Since his election to the U.S. House of Representatives in 1998, Rush Holt (D-NJ) has been a tireless advocate for children's environmental health. An original sponsor of the *School Environment Protection Act*, he co-chairs the Congressional Children's Environmental Health Caucus. He also focuses his energy on sustainable development, medical research, farmland protection, human rights and more. Prior to serving as a Member of Congress, he was assistant director of Princeton University's Plasma Physics Laboratory.

Responding to an alarming study in the *Journal of the American Medical Association* (JAMA) on detailing the dangers of pesticides to children, U.S. Representative Rush Holt held an August 3, 2005 press conference to promote federal legislation that will protect students and employees from exposure to these chemicals at schools. "This study confirms that action is necessary to prevent our children from being poisoned on the playground," said Rep. Holt. "The current patchwork of state laws is inadequate to protect our most precious commodity." The study, "Acute Illnesses Associated with Pesticide Exposure at Schools," was published in the July 27, 2005 issue of JAMA (Vol. 294, No. 4).

Also participating in the press conference was New Jersey Department of Environmental Protection Commissioner Bradley Campbell; state and local elected officials; staff from the New Jersey Environmental Federation and Beyond Pesticides; medical experts; and, education activists supporting Holt's legislation. "Mr. Holt's legislation is needed to establish a uniform standard of protection from pesticide exposure in schools," said Jane Nogaki of the NJ Environmental Federation. "Kids and pesticides just don't mix."

The peer-reviewed JAMA study analyzed 2593 poisonings from 1998 to 2002. It found that incidence rates of acute pesticide-related illnesses among children increased significantly from 1998 to 2002. Over two-thirds of poisonings were associated with pesticides used at schools. The study pointed to the absence of federal law regulating school pesticide use. Rep. Holt's *School Environment Protection Act of 2005* (SEPA), H.R. 110, requires local educational agencies and schools to implement integrated pest management systems to minimize the use of pesticides in schools, and provide for notification of the use of such chemicals. "Mr. Holt's legislation is needed to protect children from a daily dose of chemicals in their classrooms, playgrounds, and athletic fields," said Michele Roberts of Beyond Pesticides.

### Specifically, SEPA:

- Only permits the use of conventional pesticides on school grounds after the school has followed an approved safe pesticide management program and it has been determined that a pest cannot be managed using the least toxic management practices and products;
- Requires that school staff and parents be notified 72 hours prior to the use of the pesticide; and,
- Mandates the posting of warning signs 72 hours in advance of a pesticide application and are required to remain in place for 24 hours.

**"Our children deserve to learn and play in a safe environment," said Rep. Holt. "This study demonstrates the need to establish a national standard governing the use of pesticides. I call on Congress to pass the *School Environment Protection Act*."**

## Pesticide Reform: Its accomplishments and challenges

Norma Grier is the executive director of the Northwest Coalition for Alternatives to Pesticides (NCAP), an organization that she co-founded in 1977. For more than three decades she has been a grassroots leader in reducing and eliminating unnecessary pesticide use. Ms. Grier also serves on the board of directors of the Oregon League of Conservation Voters. The following piece is in her own words.

Today, the pesticide reform movement is alive and well because more people have an understanding that pesticides are everywhere. Pesticides, by design, are harmful to life, and they pollute our water, air, food, and bodies. A growing population recognizes the urgent need and opportunities for changing how pesticides are used. It's a rewarding time to be active in pesticide reform.

The current depth of public concern about pesticides is in sharp contrast to the 1970s. Following the uproar created by Rachel Carson's *Silent Spring*, Congress approved sweeping changes to the national pesticide law in 1972. In the decade that followed, most people believed that government had taken care of the pesticide problem.

Now, pesticides have captured attention again, in large part due to the visionary, tireless and courageous efforts of numerous grassroots activists, community groups, environmental scientists, government and elected officials, and donors. More people are deciding every day to avoid pesticides. They vote with their dollars at the grocery store when they reach for organically grown products. They choose lawncare without pesticides so that their children and pets can romp in the grass without worrisome exposure. They demand pure drinking water. They insist on a pesticide-free environment at their child's school. People expect their homes, neighborhoods and schools to be safe for families and loved ones.

This new reality presents a huge opportunity for pesticide reform organizations. Here are a couple examples of how my own organization has made progress.

Pesticide-free solutions to home and garden pest problems are in high demand. In the last two years, the Northwest Coalition for Alternatives to Pesticides (NCAP) has signed up 10,000 people to participate in our Healthier Homes and Gardens program. Participants receive a monthly emailed tip about managing common pests without pesticides, and they get access to a hotline to answer specific questions. Our organization recruited people at home and garden shows, at community events, and through working with supportive mail order businesses that put a postcard about the program in their customer's packages. We learned that people are hungry for this kind of information. And further, when given the opportunity, hundreds of people have been willing to lend support on action issues such as contacting EPA about the immorality of testing pesticides on humans.

Since three-quarters of U.S. pesticides are used to grow food and fiber, it's important to promote alternatives in agriculture. NCAP's sustainable agriculture program is working on potatoes, because more than half the nation's potatoes are grown in the Northwest, and potatoes use more pounds of pesticides per acre than any crop grown in our region.

**The pesticide industry's power gives it unprecedented access to decisions about pesticide regulation. But, there are plenty of signs that people are tired of paying for the pesticide industry's bill of goods including cancer, birth defects, contaminated air and water, and unhealthy soils.**

In collaboration with the Shoshone-Bannock Tribes, we set up a demonstration project on the Fort Hall Indian Reservation in Idaho. A "green manure" mustard crop was grown after wheat harvest and before potato planting to eliminate the need for fumigants. In the first year, in addition to preventing application of 9,000 pounds of metam sodium, the farmer's increased profit using the green manure crop was $280 per acre. Those numbers catch a grower's attention. Soon, because of a collaborative effort led by NCAP, Idaho will be famous not only for its potatoes, but its organic potatoes.

The picture is not entirely bright. The pesticide industry's power gives it unprecedented access to decisions about pesticide regulation. The pesticide industry's marketplace influence runs deep and strong. But, there are plenty of signs that people are tired of paying for the pesticide industry's bill of goods including cancer, birth defects, contaminated air and water, and unhealthy soils. Parents are rejecting pesticides and convincing their communities to establish pesticide-free parks. Organics is the one growth sector in agriculture. Alternative products are occupying more shelf space in garden stores. These hopeful signs show that the pesticide reform movement is successfully attracting more people. It's exactly what we need to do as we build towards a world free of pesticides. *– Norma Grier*

# A Case for Revisiting the Safety of Pesticides

**By Theo Colborn**

Theo Colborn, Ph.D. is the director of the Endocrine Disruption Exchange, Inc., which she founded in 2003, and a former senior scientist at the World Wildlife Fund. Her research on endocrine disruptors led to her co-authorship of *Our Stolen Future*. This book shocked the public, providing evidence that human-made chemicals in the environment, including pesticides, disrupt the endocrine system and lead to serious health impacts.

**Editors Note:** *The following are excerpts from the discussion section of "A Case for Revisiting the Safety of Pesticides: A Closer Look at Neurodevelopment," by Theo Colborn, Ph.D., published in the January 2006 issue of Environmental Health Perspectives (Vol. 114, No. 1). See http://ehp.niehs.nih.gov/members/2005/7940/7940.html for the full article.*

There is a great deal of uncertainty about the neurodevelopmental effects of pesticides among the human studies presented [in this article]. Exposure has become too complex because of the hundreds of pesticide active ingredients on the market, confounded by background exposure to industrial chemicals that share similar effects. In addition, functional changes are expressed over a continuum, making it difficult to document the damage, which often is expressed as more than one lesion and at different intervals or stages of development.

Although the information is available, EPA has rarely used open literature in its risk assessments, generally using only data submitted by manufacturers. Industry continues to use traditional toxicologic protocols that test for cancer, reproductive outcome, mutations, and neurotoxicity, all crude end points in light of what is known today about functional end points. EPA should accept non-guideline, open literature to determine the toxicity of a chemical. For example, Brucker-Davis published a comprehensive review of the open literature in which she found 63 pesticides that interfere with the thyroid system. Yet, to date, EPA has never taken action on a pesticide because of its interference with the thyroid system.

The amazing litany of diverse mechanisms discovered in the series of chlorpyrifos studies raises serious questions about the safety of not only chlorpyrifos (CPF) and the other organophospahates (OPs), but all pesticides in use today. Most astounding is the fact that a large part of chlorpyrifos toxicity is not the result of cholinesterase inhibition, but of other newly discovered mechanisms that alter the development and function of a number of regions of the brain and central nervous system. These findings send a warning that even though an OP pesticide like CPF may have a very high EC50 for acute toxicity as a result of cholinesterase inhibition, it may have other toxic strategies that are far more egregious than cholinesterase inhibition.

The knowledge gained from a decade of [chlorpyrifos and 2,4-D brain studies] not only demonstrates the insidious nature of chlorpyrifos and 2,4-D exposure, but it also demonstrates the weaknesses in current standard practices for determining the safety of a pesticide or any other synthetic chemical. Even an EPA analysis of developmental neurotoxicity studies stated that EPA's current developmental neurotoxicologic testing protocol is "not a sensitive indicator of toxicity to the offspring" and urged EPA "to further consider if it will use literature data." In the case of CPF and 2,4-D, it appears that those who reviewed the data failed to understand its significance or had other reasons to ignore it. EPA needs to convene a panel of independent experts to review these studies for applicability to determine if and how they can be used for registration.

In most animal studies pesticides are administered at high oral or subcutaneous doses orally, not reflecting that, for most humans and wildlife, exposure could in many instances be dermal or via inhalation and, in many cases, over a long period of time at low doses. EPA currently requires chronic toxicity studies, but it is locked into using high doses to elicit effects and has not overcome the difficulty of detecting effects from chronic or ambient exposure or low doses. In addition, the human pharmacokinetics of pesticide exposure can either enhance or reduce the health impacts depending on individual variations.

In the future, the most efficient, comprehensive assays will take advantage of the fact that most chemicals have more than one effect in one system. Cross-disciplinary teams will be required to design these assays so that every organ system is carefully screened for damage. And most important, this will reduce by thousands the numbers of animals needed for testing. However, improved neurodevelopmental tests with laboratory animals will not fulfill their greatest potential if they are not backed up by better batteries of tests to detect functional disabilities in children.

**To protect human health, a new regulatory approach is also needed that takes into consideration this vast new knowledge about the neurodevelopmental effects of pesticides, not allowing the uncertainty that accompanies scientific research to serve as an impediment to protective actions.**

# Planting Deep Organic Roots

## Town health code incorporates organic pest management

**By Pat Beckett**

The Board of Health in the Town of Marblehead, MA, on December 7, 2005, continued in its groundbreaking work to protect its historic, coastal community from unnecessary pesticide exposure when it voted to codify the town's 2001 Organic Pest Management (OPM) policy as a health regulation. "It puts teeth in the policy," says Wayne Attridge, Director of Public Health. "We already have a [OPM] system in place, and it's working. That's how we know the regulation is going to work." This move to regulate the prohibition of pesticides on all Marblehead town land, including athletic playing fields, strengthens and safeguards the Board's commitment to organic turf and landscape management in the future. The health regulation calls for financial penalties for any violation. It also makes provision for the possibility of a civil suit for damages to compensate the Town for all costs incurred as a result of any violation.

### Board of Health Seeks Pesticide Phase-Out

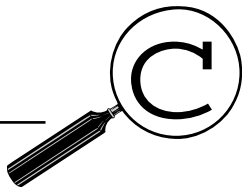
First approached with the idea of considering pesticides as a public health issue by the citizen activist group, Marblehead Pesticide Awareness Committee (MPAC) in 1997, the Board of Health has shown continuous support for MPAC's "Awareness through Education" campaign. To this end, the Board of Health committed itself to the goal of reducing and eliminating the use of toxic chemical pesticides in Marblehead and issued its "Statement on Pesticides" as part of a public health education campaign on pesticide issues. This was followed with a *Spring Alert* educational flyer, which highlighted the inadequacy of little yellow lawn signs to protect the public from pesticide exposure. The *Spring Alert* flyers were sent home with every school child one year, and to every homeowner another year.

The 2001 policy prohibits known, likely or probable human carcinogens or probable endocrine disruptors, and those pesticides that meet the criteria for Toxicity Category I or II, as defined by EPA. It was a visionary step beyond typical integrated pest management (IPM) plans called for by the passage of the *Children and Families Protection Act* passed in Massachusetts in 2000. Pat Beckett, co-chair of MPAC and the Living Lawn Project in Marblehead, worked on the policy with the Board of Health. She recalls, "After a long study of the history of IPM and various policies that were out there, we decided to push for an *organic mandate*, as we felt that was the "gold standard" we should be striving for. We wanted a policy that would not only provide real protection for our children from pesticide exposure, but also move the town to develop an actual organic turf management plan for our athletic fields – one that would mandate prevention over treatment of any pest problem.

### Prevention Over Treatment

And that is exactly what has happened. Chip Osborne, a horticulturalist and member of MPAC and the Living Lawn Project, was elected to the Recreation, Parks and Forestry Commission. For the past three years, and as Chairman of that commission, he took on the task of developing the organic turf program now entering its fourth year. Mr. Osborne has become the "go-to" guy for expert advice on organic sports turf management in the Northeast. He has lectured widely from Maine to Florida to turf professionals, and groups and communities looking to replicate Marblehead's success in replacing the typical regime of toxic lawn care chemicals with an organic approach. "It's not rocket science," said Mr. Osborne, "but simple soil science, and sound horticultural practices that create the conditions conducive to growing and maintaining good turf. There was a lot of mythology out there when we started around the impossibility of maintaining playing fields without the use of chemical pesticides. In Marblehead, we had a mandate to dispel those myths – and as we begin our fourth growing season, we can say that's just what we've done."

*For more information and a copy of the health regulation, go to* **www.livinglawn.org** *or contact MPAC at* **info@livinglawn.org** *or 877-332-3276, ext. 15. The Town of Marblehead Board of Health can be reached at 781-631-0212. Chip Osborne will be leading a workshop at the 24th National Pesticide Forum, May 19-20, 2006, in Washington D.C.*



ChemicalWATCH Factsheet

A BEYOND PESTICIDES/NCAMP FACTSHEET

# Piperonyl Butoxide (PBO)

Piperonyl Butoxide (PBO), a highly toxic substance that causes a range of short- and long-term effects, including cancer and adverse impacts on liver function and the nervous system, is one of the most commonly used synergists in pesticide products. Synergists are chemicals added to pesticide formulations to enhance the toxicity of the active ingredients. PBO is frequently used, especially in aerosol products and mosquito sprays, to increase the potency of pyrethrin and synthetic pyrethroids, as well as other types of insecticides.[1] Products generally contain between five to ten times as much PBO as pesticide.[2]

Many different formulations of insecticide products contain PBO. These include dusts, sprays, foggers, repellents and pediculicides (lice killers); garden, lawn, ornamental plant, and, agricultural pesticides; mosquito abatement products, termite treatments, veterinary pesticides; and insecticides for human clothing, bedding, and mattresses.[3] According to surveys by the Environmental Protection Agency (EPA), PBO is one of the most commonly used ingredients in insecticides. It is currently found in approximately 1600 to 1700 registered pest control products.[4] On labels, PBO is sometimes listed as an active ingredient, but may also be considered an inert ingredient and not listed. PBO may also be listed as Butacide, Pybuthrin, ENT – 14250, and CAS Reg. No. 51-03-6.[5]

Because of its widespread use, PBO is prevalent in the residential environment. A recent study of pregnant women from northern Manhattan and the Bronx found PBO in air samples from over 80% of the women's residences.[6] The pesticides that are most commonly mixed with PBO, synthetic pyrethroids, are among the most frequently found in the human toxic body burden by the Centers for Disease Control (CDC).[7] Residues are also regularly found on food, especially lettuce, lemons, spinach and tomatoes,[8] as well as basil, chive, cilantro, herbs, mint, pears, bell peppers, oranges, squash, and other fruits and vegetables.[9] While EPA claims that acute dietary food risk is very low, and that chronic dietary exposure is below the acceptable intake limit, others site deficiencies in EPA reviews.[10]

PBO functions as a synergist by slowing the breakdown of toxic chemicals in insects. The first step in the breakdown of many types of chemicals in insects is oxidization by a group of microsomal enzymes called P450 mono-oxygenases, located in the liver. PBO inhibits the activity of these enzymes, and thus prevents the metabolism of many types of molecules, including insecticides. This keeps the pesticide in its toxic form for longer periods of time, increasing the amount of damage it can do to the insect. A heavy dose of PBO makes an organism temporarily vulnerable to a variety of toxic chemicals that would be easily tolerated otherwise.[11,12]

## Acute Toxicity

Studies suggest that by interfering with the metabolism of hormones, PBO may damage humeral organs such as the thyroid, adrenal, and pituitary glands.[13] PBO has a low to moderate toxicity based on short-term laboratory animal studies. The acute oral LD50, or dose that kills half the test population, was determined to be 6.15 g/kg for rats.[7] The LD 50 for inhalation of PBO by rats is greater than 5.9 g/kg.[14] It is predicted that the oral lethal dose for a human is 5.15 g/kg, or between 1 pint and 1 quart for a 150 lb person.[15]

Symptoms caused by ingestion of PBO in large doses include nausea, cramps, vomiting, and diarrhea.[16] Inhalation of large amounts of PBO may cause tearing, salivation, labored breathing,[17] accumulation of fluids in the lungs,[18] and may be linked to respiratory problems, including asthma. Acute and repeated dermal (skin) and eye contact has been shown to be slightly irritating, but is not linked to long-term damage.[19]

Overdoses of PBO have been shown to cause hyperexcitibility, unsteadiness, coma, seizures, and brain damage in animals.[20] Most rat deaths in studies are attributed to hemorrhages in the digestive tract, particularly the large intestine. Acute exposure in animals has also triggered hepatic (liver) changes and injury, anemia and loss of appetite, as well as changes in the kidneys, nasal bleeding, loss of muscle coordination, and abdominal swelling.[21]

## Long-Term Toxicity

The primary effect of long-term exposure to PBO in animals is an increase in liver and thyroid weight, liver and kidney damage, and a decrease in body weight. These symptoms were observed in a diet of 52.8 mg/kg or more a day in a chronic study with dogs.[22]

### Cancer

PBO is labeled as a group C carcinogen, a possible human carcinogen. [23] Currently there is no data from accidental exposure available regarding its carcinogenicity in humans; the only information is from animal studies. Several studies have shown that PBO treatment in rats causes an increase in liver cancer at high doses.[24] Some studies have shown that PBO treatment in rats corresponds with a very slight increase in thyroid cancer.[25]

### Mutagenic Effects

It is generally accepted that PBO does not demonstrate any significant potential for mutagenicity (genetic damage).[26,27]

However, this conclusion is not accepted by everyone, and some studies have shown evidence of genetic damage,[28] including a study that demonstrated gene mutation in mouse lymphoma cells.[29]

**Immune System Effects**
PBO weakens the immune system by inhibiting lymphocyte response.[30] Lymphocytes are a class of white blood cells that consume potentially dangerous pathogens and release antibodies. Inhibiting lymphocyte response weakens the body's ability to defend against foreign invaders. Furthermore, by preventing the breakdown of toxic chemicals, PBO increases the damage they can do to the body.

**Reproductive Effects**
PBO has been shown to adversely affect a variety of reproductive functions. Two-generational laboratory studies on rats show that litter weight and size are less for mothers exposed to high concentrations of PBO, and there is an increase in birth defects and fetal death.[31] In one study the difference in the average weight of PBO-exposed offspring immediately after birth is negligible, but 7-14 days post-natal is significantly greater for those mothers that are exposed to PBO than for those that are not.[32] EPA maintains that results for teratogenicity (the ability to produce birth defects) in animals have been mixed,[33] and while some studies suggest some teratogenicity, most do not. PBO may also interfere with sexual development because the enzymes it inhibits are responsible not only for the breakdown of toxic chemicals but also for the metabolism of other compounds such as steroids, which include the sex hormones. Rats exposed to PBO over the course of two years experience an atrophy of the testes a decrease in weight of the seminal vesicles (sperm producing structures), and an increase in ovarian weights. [34] There is no evidence that PBO affects fertility.[35]

**Neurotoxicity**
Data has shown that PBO alone interferes with enzymes that maintain homeostasis of sodium and calcium in the brain and nervous system, possibly affecting neural response.[36,37] Additionally, it increases the neurotoxicity of other compounds.[38] Despite this data, EPA believes that these neurotoxic effects are slight and maintains that PBO poses no neurological risk.[39]

Behavioral changes have been noted with PBO as well. In a laboratory experiment, exposed rats experience more trouble navigating a maze than unexposed rats. The exposed rats travel longer distances and turned more frequently in the maze.[40] PBO also induces changes in olfactory behavior of the offspring of exposed mothers. Offspring of exposed mothers are less likely to enter a compartment that smells like home than unexposed mothers.[41] Exploratory behavior in mice increases as the dose of PBO they were treated with increased.[42] This data shows that PBO has the ability to affect behaviors in mammals.

**Other Chronic Effects**
Research on rats has found that PBO can cause intestinal ulcers and bleeding.[43] Liver damage is common in studies,[44] and kidney damage has been found as well.[45] Long-term ingestion of PBO causes anemia, a decrease in the amount of hemoglobin (oxygen-transporting molecules) in blood,[46] and increases the blood cholesterol level in rats.[47] PBO can also damage the larynx, and there have been reports that it can cause labored breathing, an accumulation of fluid in the lungs,[48] nasal bleeding, abdominal swelling, and loss of the ability to coordinate muscle movement.[49] There has been a fair amount of investigation into the effects of dermal contact with PBO since it is used as a topical agent for lice, but there has been no evidence of it causing any local or systemic toxicity, and the amount of PBO absorbed from skin contact is characterized by some researchers as low.[50]

## What are synergists?

A synergist is a chemical formulated in pesticide products, in addition to the active and inert ingredients, that increases the potency of the active ingredient. While the increased potency makes the pesticide more deadly to their targets, synergists may also compromise the detoxifying mechanisms of non-target species, including humans. Exposure to an insecticidal synergist like PBO may make a person temporarily vulnerable to a variety of toxic insults that could otherwise be tolerated.

Although PBO is rarely, if ever, used alone, most studies examine it individually. When combined with pyrethrins or other insecticides, the toxic effects of the chemicals cannot simply be added together. The effects are multiplicative. Since PBO amplifies the effects of other pesticides, evaluating its danger alone is of limited value. Most resources, including the published EPA docket and most of the references used in this factsheet, fail to address the health effects of common PBO combinations.

## Environmental Effects

PBO is considered moderately toxic to fish, moderately to highly toxic to invertebrates (including crustaceans and insects), and highly toxic to amphibians.[51] In one study, concentrations of less than one part per million (ppm) killed water fleas, shrimp, and oysters.[52] It is also very toxic to a common type of earthworm.[53] Ingested PBO has a low to very low toxicity in birds.[54]

Not only does PBO kill organisms, it is known to interfere with the reproduction of many types of wildlife at much lower concentrations than those required for mortality. The bio-concentration potential for PBO is low,[55] but can be moderate in some aquatic organisms.[56] PBO also inhibits the breakdown of toxic chemicals in wildlife and the soil, increasing the concentrations of other, more acutely potent, pesticides.

## Environmental Fate

PBO is relatively short-lived in the environment and has a low to moderate potential to contaminate groundwater. One study

**Not only does PBO kill organisms, it is known to interfere with the reproduction of many types of wildlife at much lower concentrations than those required for mortality. ... PBO also inhibits the breakdown of toxic chemicals in wildlife and the soil, increasing the concentrations of other, more acutely potent, pesticides.**

found PBO in river water at a concentration of 9.7µg/L.[57] It is rapidly degraded when exposed to sunlight, with a degradation half life of about one day in soil exposed to sunlight, and 14 days in soil without sunlight. The rate of degradation is also affected by how much oxygen is in the environment (particularly in aquatic systems), moisture levels, and application methods.[58] There is less information available about PBO's persistence indoors, but one study found that PBO persisted for at least two weeks after a cockroach treatment on toys and in dust in a kindergarten.[59]

### Regulatory Status and History

In the late 1930's U.S. manufacturers of pesticides began looking for a way to increase the potency of pyrethrum, which was being imported from Japan, out of concern that its import could be disrupted. PBO was first synthesized in 1947 by Herman Wachs, who worked for Dodge & Olcutt, Inc. It was made from the naturally occurring raw material safrole. From 1952 onwards the U.S. has been manufacturing large amounts of PBO.[60]

In April 2005, EPA released human health and environmental fate and effects risk assessments and related documents for PBO. This docket is available at www.regulations.gov, docket ID EPA-HQ-OPP-2005-0042. A public comment period was open through June 27, 2005, and the EPA review is projected to be completed by August 3, 2006.

The main concern expressed by the public commentary regarding this docket is that EPA should not evaluate PBO alone, but also should evaluate its synergistic effects, as this is the context in which it is used, and the evaluations of pyrethrins do not take this increased toxicity into account. Furthermore, the review lacks urban environmental data, despite the fact that this is the primary use of PBO.

## Common Products Containing PBO

*Although EPA maintains that the risk from chronic dietary and water exposure to PBO is very low,[i] it is in dozens of products widely used in the home and community and not fully evaluated for synergistic effects. It is commonly sprayed in insecticide formulations by municipalities as part of mosquito abatement. Children's exposure to PBO is of concern because of their special vulnerability. The following list is a sampling of commonly used products on the market containing PBO. As an ingredient, PBO adds to the overall toxicity of otherwise hazardous pesticide products.*

707 Jackpot Formula V – Crawling Insect Spray
Adams Flea & Tick Mist
Bayer – Advanced Garden Mosquito Killer Plus
Bonide Wasp & Hornet Killer, Aerosol
Bonide Ant, Roach & Spider Killer
Champion Sprayon Multi Purpose Insect and Lice Killer
Cutter Bug Free Backyard Outdoor Fogger
Deep 6 Wasp and Hornet Killer
Garden Safe – Garden Dust Insecticide
Garden Safe Brand Flying & Crawling Insect Killer
Miracle Gro Bug Spray
Ortho Plant Care
Ortho Tomato & Vegetable Insect Killer Ready to Use
Raid Flea Killer Plus
Raid Ant & Roach Killer
Raid Commercial Insect Killer
Raid House & Garden Bug Killer
Repel Outdoor Fogger, Camp Fogger
RID Lice Killing Shampoo & Mousse
Schultz Houseplant & Garden Insect Spray
Shoofly Screen and Surface Insect Spray
Shoofly Hornet Wasp Jet bomb II
Spectracide Tomato & Vegetable Insect Spray
Spectracide Flea and Tick Spray 2
Spectracide Pro Wasp & Hornet Killer
Spectracide Bug Stop Insect Killer, Aerosol
Tegrin-LT Lice Treatment Kit
Terro Ant Killer Spray
Zodiac FleaTrol Flea & Tick Shampoo and Flea and Tick Spray

## Endnotes


1. Cox, Caroline. 2002. Insecticide Synergist Factsheet: Piperonyl Butoxide. *Journal of Pesticide Reform*. 22: 12-20. (accessed Jan 2006) www.pesticide.org/Piperonyl-Butoxide.pdf.
2. US Dept. of Health & Human Services: Agency for Toxic Substances & Diseases Registry. Sept. 2003. Toxicological Profile for Pyrethrins and Pyrethroids. (accessed Jan 2006) www.atsdr.cdc.gov/toxprofiles/tp155pdf.
3. National Pesticide Telecommunications Network (NPTN). 2000. "Piperonyl Butoxide: Technical Fact Sheet." (accessed Jan 2006) http://npic.orst.edu/factsheets/pbotech.pdf.
4. US EPA. 2005. "Overview of the Piperonyl Butoxide Risk Assessments." Docket ID EPA-HQ-OPP-2005-0042 p.2 (accessed Jan 2006) http://www.regulations.gov.
5. US EPA/OPP Chemical Ingredients Database. Piperonyl Butoxide. (accessed Jan 2006). http://ppis.ceris/perdue/edu/htbin/epachem.com.
6. Whyatt, R.M. 2002. Residential pesticide use during pregnancy among a cohort of urban minority women. Environ. Health Persp. 110: 507- 514.
7. Centers for Disease Control (CDC). 2005. *Third National Report on Human Exposure to Environmental Chemicals*. [http://www.cdc.gov/exposurereport/] (Accessed February 24, 2006).
8. PAN Pesticides Database. CAS#51-03-6: Piperonyl Butoxide. (accessed Jan 2006) www.pesticideinfo.org.
9. California Department of Pesticide Regulation. 2002. Summary of Pesticde Use Report Data. Indexed by Chemical. (accessed Jan 2006) www.cdpr.ca.gov.
10. US EPA. 2005. "Human Health Risk Assessment." Sec. 4.2.2.2-4.2.2.3. Docket ID EPA-HQ-OPP-2005-0042 p.2 (accessed Jan 2006) http://www.regulations.gov.
11. Scott, JG et al. 2000. Inhibition of cytocrome P450 6D1 by alkynylarenes, methylenedioxyarenes, and other substituted aromatics." *Pesticide Biochemistry & Physiology.* 67: 63-71.
12. Keseru, GM. 1999. Piperonyl butoxide-mediated inhibition of cytochrome P450-catalyzed insecticide metabolism: a rational approach." *Pesticide Science*. 55: 1004-1006.
13. Graham, C. 1987. 24-Month dietary toxicity and carcinogenicity study of piperonyl butoxide in the albino rat. Unpublished report No. 81690 from Bio-Research Ltd. Laboratory, Seneville, Quebec, Canada. Submitted to WHO by Piperonyl Butoxide Task Force. In Caroldi, S. Piperonyl Butoxide. First Draft. IPCS INCHEM. (Accessed Jan 2006) http://www.inchem.org/documents/jmpr/jmpmono/v92pr15.htm.
14. Breathnach, R. 1998. The safety of piperonyl butoxide. In D.G. Jones, ed. *Piperonyl butoxide: The insecticide synergist*. San Diego: Academic Press. p. 20.
15. Gosselin, R.E., R.P. Smith, H.C. Hodge. *Clinical Toxicology of Commercial Products*. 5th ed. Baltimore: Williams and Wilkins, 1984., p. II-310. In Piperonyl Butoxide. National Library of Medicine: Hazardous Substance Database. (accessed Jan 2006) http://toxnet.nlm.nih.gov.
16. Prentiss, Inc. 1998. Material safety data sheet: 655-113 Prentox® piperonyl butoxide technical. (accessed Jan 2006). www.prentiss.com/msds/pdf/655_113.pdf.
17. World Health Organization and Food and Agricultural Organization. 1996. Pesticide residues in food — Evaluations 1995. [Part II] Toxicological and environmental. Geneva, Switzerland: World Health Organization. Pp. 282. In Cox, Caroline. 2002. Insecticide Synergist Factsheet: Piperonyl Butoxide. *Journal of Pesticide Reform*. 22: 12-20. www.pesticide.org/PiperonylButoxide.pdf.
18. Bateman, D.N. 2000. Management of pyrethroid exposure. Clin. Toxicol. 38: 107-109. In Cox, Caroline. 2002. Insecticide Synergist Factsheet: Piperonyl Butoxide. *Journal of Pesticide Reform*. 22: 12-20. www.pesticide.org/Piperonyl-Butoxide.pdf.
19. Breathnach, R. 1998. (Ref. #14).
20. World Health Organization and Food and Agricultural Organization. 1996. (Ref. #17).
21. Breathnach, R. 1998. (Ref. # 14).
22. US EPA. 2005. Human Health Risk Assessment. Sec. 4.2.2.3. Docket ID EPA-HQ-OPP-2005-0042 (accessed Jan 2006) http://www.regulations.gov.
23. Ibid.
24. Nat'l Cancer Inst. Carcinog. Tech. Rep. Ser. 1979. Bioassay of PBO for possible carcinogenicity. 120: 1-131.
25. US EPA. 2005. Human Health Risk Assessment. Sec. 6.1.3 Docket ID EPA-HQ-OPP-2005-0042 (accessed Jan 2006) http://www.regulations.gov.
26. Butler, WH, KL Gabriel, FJ Preiss, TG Osimitz. 1996. Lack of genotoxiciy of piperonyl butoxide. *Mutat Res* 371: 249-58.
27. Beamand, JA, et al. 1996. Lack of effect of piperonyl butoxide on unscheduled DNA synthesis in presision-cut human liver slices. *Mutat Resis*. 371: 273-82.
28. Cox, Caroline. 2002. (Ref. #1); US Dept. of Health & Human Services: Agency for Toxic Substances & Diseases Registry, 2003. (Ref. #1).
29. McGregor, PB, et al. 1988. Responses of the L5178Y tk+/tk- mouse lymphoma cell forward mutation assay: III. 72 coded chemicals. *Environmental and Molecular Mutagenesis*. 12: p.85-154.
30. Diel, F. et al. 1999. Pyrethroids and piperonyl butoxide affect human T-lymphocytes in vitro. *Toxicol. Lett*. 107: 65-74.
31. Tanaka, T. et al. 1994. Developmental toxicity evaluation of piperonyl butoxide in CD-1 mice. *Toxicol Lett*. 71: 123-129.
32. Tanaka T. 2003. Reproductive & neurobehavioral effects of piperonyl butoxide administered to mice in the diet. *Food Addit Contam* 20: 207-14.
33. US EPA. 2005. Human Health Risk Assessment. Sec. 1.3-6 Docket ID EPA-HQ-OPP-2005-0042 (accessed Jan 2006) http://www.regulations.gov.
34. Breathnach, R. 1998. (See Ref. #14).
35. Breathnach, R. 1998. (See Ref. #14).
36. Kakko I, Toimela T, Tahti H. 2000. Piperonyl butoxide potentiates the synaptosome ATPase inhibiting effect of pyrethrin. *Chemosphere* 40: 301-5.
37. Grosman, N, F Diel. 2005. Influence of pyrethroids & piperonyl butoxide on the $Ca^{2+}$ - ATPase activity of rat brain synaptosomes and leukocyte membranes. *Int. Immunopharmacol*. 5: 263-70.
38. Friedman, M.A. and L. R. Eaton. 1978. Potentiation of methyl mercury toxicity by piperonyl butoxide. *Bull. Environ. Contam. Toxicol*. 20: 9- 10.
39. US EPA. 2005. Human Health Risk Assessment. Sec. 1.2 Docket ID EPA-HQ-OPP-2005-0042 (accessed Jan 2006) http://www.regulations.gov.
40. Tanaka, T. 1993. Behavioral effects of piperonyl butoxide in male mice. *Toxicol. Lett*. 69: 155- 161.
41. Tanaka, T. 1992. Effects of piperonyl butoxide on F1 generation mice. *Toxicol. Lett*. 60: 83-90.
42. Tanaka 2003 (Ref. # 32).
43. Maekawa, A. et al. 1985. Lack of evidence of carcinogenicity of technical-grade piperonyl butoxide in F344 rats: Selective induction of ileocaecal ulcers. *Fd. Chem. Toxic*. 23: 675-682.
44. Fujitani, T., T. Tanaka, Y. Hashimoto, and M. Yoneyama. 1993. Subacute toxicity of piperonyl butoxide in ICR mice. *Toxicol*. 83: 93-100.
45. Fujitani, T., Y. Tada, and M. Yoneyama. 1993. Hepatotoxicity of piperonyl butoxide in male F344 rats. *Toxicol*. 84: 171-183.
46. Takahashi, O. et al. 1994. Chronic toxicity studies of piperonyl butoxide in F344 rats: Induction of hepatocellular carcinoma. *Fund. Appl. Pharmacol*. 22: 291-303.
47. Fujitani, T. et al. 1992. Sub-acute toxicity of piperonyl butoxide in F344 rats. *Toxicol*. 72: 291- 298.
48. Hayes, W.J., Jr., E.R. Laws Jr., (eds.). Handbook of Pesticide Toxicology Volume 1. General Principles. New York, NY: Academic Press, Inc., 1991., p. 341 In *Piperonyl Butoxide*. National Library of Medicine: Hazardous Substance Database. http://toxnet.nlm.nih.gov.
49. Breathnach, R. 1998 (See Ref. #14).
50. Breathnach, R. 1998 (See Ref. #14).
51. US EPA. 2005. Environmental Fate and Ecological Risk Assessment. Docket ID EPA-HQ-OPP-2005-0042 p. 5 (accessed Jan 2006) http://www.regulations.gov; PAN Pesticides Database. CAS#51-03-6: (Ref. #8).
52. Osimitz, TG and JF Hobson. 1998. An ecological risk assessment of piperonyl butoxide. In D.G. Jones, ed. *Piperonyl butoxide: The Insecticide synergist*. San Deigo: Academic Press. p. 122-135.
53. Roberts, B.L. and H.W. Dorough. 1984. Relative toxicities of chemicals to the earthworm Eisenia foetida. Environ. Toxicol. Chem. 3: 67- 78. In Cox, Caroline. 2002. Insecticide Synergist Factsheet: Piperonyl Butoxide. *Journal of Pesticide Reform*. 22: 12-20. www.pesticide.org/PiperonylButoxide.pdf.
54. Osimitz, Hobson. 1998. (Ref. #52).
55. Osimitz, Hobson. 1998. (Ref. #52).
56. Meylan WM et al; 1999 *Environ Toxicol Chem* 18: 664-72. In *Piperonyl Butoxide*. National Library of Medicine: Hazardous Substance Database. (accessed Jan 2006) http://toxnet.nlm.nih.gov.
57. LeBlank, LA, JL. Orlando, KM Kuivila. 2004. Pesticide Concentrations in Water and in Suspended and Bottom Sediments in the New and Alamo Rivers, Salton Sea Watershed, California, April 2003. U.S. Geological Survey. Data Series 104. Sacramento, California. (Accessed Jan 2006). http://permanent.access.gpo.gov/waterusgsgov/water.usgs.gov/pubs/ds/ds104/index.htm.
58. Arnold, D.J. The Fate and Behavior of Piperonyl Butoxide in the Environment. In *Piperonyl Butoxide: The Insecticide Synergist*; Jones, D.G. ; Ed ; Academic: San Diego, CA, 1998. pp.105-119.
59. Fischer, A, and T. Eikmann. 1996. Improper use of an insecticide at a kindergarten. *Toxicol. Lett*. 88: 359-364.
60. Tozzi, A. 1998. A Short History of the Development of Piperonyl Butoxide as an Insecticide Synergist. In D.G. Jones, ed. *Piperonyl butoxide: The insecticide synergist*. San Diego: Academic Press. Pp. 122-135.
61. US EPA. 2005. Overview of the Piperonyl Butoxide Risk Assessments. Docket ID EPA-HQ-OPP-2005-0042 (accessed Jan 2006) http://www.regulations.gov.

# The Minnesota Honey Bee Battle

## MN Supreme Court protects pollinators from pesticides

In a landmark decision, the Minnesota Supreme Court ruled that landowners who spray pesticides on their property can be held liable for damages to beekeepers' neighboring apiaries. (*Anderson, et al. v. International Paper*, March 2005) The case was brought by three beekeepers who raise bees for honey and sale. This ruling sets a standard that could have dramatic ramifications for pesticide use across the country. The court found that, regardless of prior opinions identifying foraging bees as "trespassers," landowners with knowledge or notice of foraging honey bees on their property are still responsible to provide reasonable care in the application of pesticides.

In the most recent development in the case, a local pesticide spray applicator, who applied the insecticide Sevin XLR Plus (carbaryl) to hybrid poplar tree plantations, agreed to relinquish his spray airplane and assign any future insurance claims as settlement, and the beekeepers withdrew monetary claims for damages arising from lost beehives. This settlement follows an earlier settlement in summer 2005 between the beekeepers and the MN Department of Natural Resources (DNR) in which the department agreed to pay $335,000 to the beekeepers and publish a brochure educating pesticide users on the importance of protecting pollinators, such as bees, when using these products. The spraying occurred partly on land managed by MN DNR as an experimental plot for a biomass fuel project.

The MN honey bee battle began in the late 1990s, when beekeepers began to notice high mortality rates and sharp declines in honey production of commercial beehives in the vicinity of trees enrolled in the Federal Conservation Reserve Program (CRP), which are regularly sprayed with various insecticides and herbicides. While environmentalists place the highest priority on restoring native bee populations, which are in decline due to pesticide use, loss of habitat and other forces, domesticated honey bees play an important role in agricultural production.

Additional claims by the beekeepers against International Paper Company for negligent pesticide spraying remain unresolved. A tentative court date is scheduled in Douglas County District Court for mid-June 2006.

## Backgrounder: Disappearing Pollinators

**Eds. Note.** *When the MN court decision hit the airwaves, we contacted Xerces Society for Invertebrate Conservation, the best non-profit education organization on pollinator conservation. What follows is adapted from:* Pollinator Conservation Handbook, *"Pesticides" chapter. Shepherd, M., S. Buchmann, M. Vaughan, and S. Hoffman Black. 2003. Xerces Society for Invertebrate Conservation. Portland OR. For more information on this book, please contact the Xerces Society, www.xerces.org or 503-232-6639.*

In the early 1970s, the blueberry farmers of New Brunswick, Canada experienced a sudden decline in harvests because of the disappearance of the native bumble bees, mason bees, and mining bees that pollinate their crops. The lack of bees, they learned later, was caused by the aerial spraying of the synthetic pyrethroid insecticide fenitrothion onto adjacent woodlands to kill spruce budworm. Even after the spraying was stopped, it took three years for bee populations

to rebound and for fruit harvests to recover to their pre-spraying levels. In the southwestern United States, beekeepers reported large kills of their honey bees after insecticides were applied to Bermuda grass grown for seed. The bees were apparently foraging for pollen on the grass flowers because there were not enough other blooming plants in these areas, and in the process they collected insecticide, which killed them. In Washington state, the organophosphate insecticide diazinon applied to control aphids on alfalfa also decimated foraging alkali bees, which are an important pollinator of alfalfa; the death of female bees led to a 95-percent drop in the number of underground bee larvae in three nearby nesting sites studied by one investigator.

Virtually all of the research on the effect of pesticides on bees focuses on honey bees because of their importance to agriculture. However, the use of managed populations of solitary bees as pollinators of some crops—in particular, alfalfa leafcutter *(Megachile rotundata)* and alkali bees *(Nomia melanderi)* for alfalfa —has provided opportunities to extend our understanding of the impact of pesticides on native bees. The incidents described above are just three well-documented poisonings out of the many thousands that have occurred. The documentation of the New Brunswick bee kill is unusual in that it relates to wild bees. Far more often, the impacts of pesticides on managed pollinators are documented while the extent of the killing of wild bees goes unnoted.

One thing is clear: insecticides and herbicides are having a disastrous effect on both managed and wild bee populations. Millions of pounds of pesticides are applied to farms, fields, lawns, flower beds, and roadsides every year. Insecticides kill pollinators directly, while herbicides reduce the diversity and abundance of the flowering plants that pollinators feed upon. Many pesticides degrade slowly, remaining as a lingering toxic hazard to pollinators and other wildlife.

Despite the threat, pesticide use in North America has continued to grow. In California, for example, pesticide sales grew by an average of 12.4 million pounds per year between 1991 and 1998. In the United States, according to the Environmental Protection Agency (EPA), total pesticide use in 1998 and 1999 exceeded 1.2 billion pounds - more than 20 percent of the pesticides used worldwide. Herbicides accounted for the largest proportion of this usage, followed by insecticides and fungicides.

Pesticides are not just a problem on agricultural lands. Studies conducted by the U. S. Geologic Survey and some municipalities have detected higher concentrations of pesticides in streams in urban areas than in agricultural areas. We should not be surprised by this. A study in the Puget Sound Basin found that more pounds of pesticides were applied per acre in urban neighborhoods than on agricultural fields.

## Impacts of Pesticides

Foraging bees are poisoned by pesticides when they absorb the fast-acting toxic chemicals through their integument (the outer "skin" that forms their exoskeleton), drink toxic-tainted nectar, or gather pesticide-covered pollen or micro-encapsulated poisons. If they are foraging while the pesticides are being applied, the spray or dust covers them, killing significant numbers of bees in the field. If they are foraging on recently sprayed fields, they absorb toxic chemicals from the residues on plants, which kills them more slowly.

Smaller bees—the majority of native bees—are more sensitive; they have a larger surface area relative to their body volume and so absorb doses that are relatively higher. Thus, insecticide residues on plants remain toxic longer for smaller bees, and they are killed by lower concentrations of poisons (such as those resulting from spray drift). After a significant kill, beekeepers may find thousands of dead honey bees in and around each hive. One can only imagine the thousands of dead native bees that at the same time are scattered around the landscape out of sight.

### Planting Native Flora for Bees

Bees require two essential components in their habitat: somewhere to nest and flowers from which to gather nectar and pollen. Native plants are undoubtedly the best source of food for bees, because plants and their pollinators have coevolved. Listed below are some plants that are good sources of nectar or pollen. Individual species have not been included because we hope the list will be useful across the U.S. Use a wildflower guide or contact local nurseries to find your local species.

Aster, Black-eyed Susan, Caltrop, Creosote bush, Currant, Elder, Goldenrod, Huckleberry, Joe-pye weed, Lupine, Oregon grape, Penstemon, Purple coneflower, Rabbit-brush, Rhododendron, Sage, Scorpion-weed, Snowberry, Stonecrop, Sunflower, Wild buckwheat, Wild-lilac, Willow.

Even less-than-lethal doses of pesticides can have substantial adverse effects. Bees that are exposed outside the nest may have trouble navigating their way back to the nest after foraging, or they may be unable to fly at all. Other symptoms include aggressive or agitated behavior, jerky or wobbly movements, or paralysis, all of which make foraging and nest building difficult. Sub-lethal doses can result from direct contact with pesticides or from toxins brought into the nest with nectar and pollen, and may impact egg laying in the nest as well as the next generation of bees.

## Alternatives to Pesticides

There are many things you can do to eliminate or limit the need for pesticides.

- **Ensure that your plants are healthy.** A plant that is growing vigorously, with minimal stress, can avoid or outgrow many disease and insect pest problems. It is preferable to choose plants appropriate to the conditions rather than to try to create artificial conditions to suit an exotic plant. A locally native plant will by nature grow better in your local conditions than a non-native plant.
- **Good soil is the foundation of a healthy garden.** Providing soil amendments and adequate nutrients will benefit your plants. Conventional chemical-based and factory-manufactured fertilizers are not necessary; composts and natural fertilizers are very effective. Natural fertilizers tend to improve the soil not only by adding nutrients but by improving its structure and organic material content as well.
- **Recognize and work with naturally occurring controls against pests.** A healthy and diverse pollinator garden has most of the necessary habitat elements to encourage native predators or parasites of pest insects, while pesticides often eliminate the natural enemies of common pest species and leave you with chronic problems. You should also avoid over-the-counter biological controls, as they can cause long-term ecological problems. For example, the wide-scale release of non-native ladybird beetles (commonly referred to as "ladybugs") is thought to be a key reason for the decline in native ladybird beetles. It is much better to encourage your own native insect controls than to introduce species that are not locally native.
- **More tips for a healthy lawn and garden.** In small areas, practices such as hand picking and crushing insects or spraying a stream of soapy water to dislodge aphids from plants may be practical and effective. You can also limit the spread of disease by practicing good sanitation—basically, removing diseased leaves and other material from the area. However, this may not be practical in large areas, where managers may want to implement the approach known as integrated pest management as an alternative to pesticides alone.

## When Pesticide Use Occurs

Although you likely do not use pesticides yourself, there may well be times when you find yourself talking to people who do. Explain to them that they would want to minimize the damage done to pollinators that benefit their plants, and to other insects that are the natural enemies of many pest insects. If pesticides are used, it is important they are not applied when pollinators are active, or during those seasons when there are blooms present on the plants. Finally, bee nesting areas, caterpillar host plants, and places where there are fly and beetle larvae should never be sprayed.

Studies have shown that greater quantities of pesticides are applied in domestic yards and gardens than on farmland. Home gardeners can buy any available product and use it without training or supervision, with the result that chemicals are often applied in back yards in quantities far greater than those recommended by the manufacturer.

Pesticides on larger, commercially managed landscapes have their own problems. They may be applied in a variety of ways, from backpack sprayers to aerial application. Pesticide drift from aerial spraying onto adjacent crops or wildflowers may kill 80 percent of foraging bees close to the source, but drift can continue to be dangerous for a mile and a half or further. Not only is aerial application an inefficient and destructive method, it is also an expensive one.

While there are EPA guidelines to protect pollinating insects during the application of pesticides, these have been developed to protect honey bee hives and the few other bee species that are managed for pollination. They provide little protection for wild bees, because there are no restrictions on pesticide use to protect pollinators when managed bees are not active, despite the fact that wild bees may be foraging on field margins or nearby wildlands. Moreover, unless people adhere to them, the guidelines offer no protection for pollinators at all. For example, spraying for mosquito abatement by local county and city governments should be done at night, but when "public health" programs get behind schedule, agencies do not necessarily follow their own guidelines. Daylight spraying can devastate local bee populations.

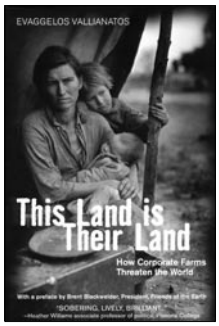
Pesticides will always have an impact on pollinators, whether it is because the poisons kill the bees directly in the fields or because they linger on foraging plants. Because of this, the best decision is to avoid pesticides use.

*The Xerces Society for Invertebrate Conservation is an international non-profit organization dedicated to protecting biological diversity. The Society works to protect invertebrates and their habitats through science-based advocacy, education, and conservation projects.. In its Pollinator Conservation Program, the Xerces Society works with people from all walks of life to help them better understand the insects that provide the essential service of pollination, and provide them with the confidence and skills to protect these important creatures.*

# This Land Is Their Land

## How Corporate Farms Threaten the World

*Evaggelos Vallianatos, Ph.D. (Monroe, Maine: Common Courage Press, 2006, 315pp; $19.95 paperback)*

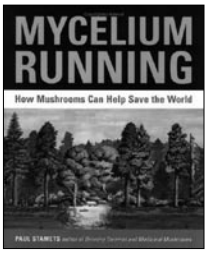



Evaggelos Vallianatos has an infectious and hopeful laugh. This might seem at odds with the deeply distressing findings of his new book about corporate agriculture and the damage that, he writes, it inflicts on our culture, economy and democratic process worldwide. Dr. Vallianatos is an historian and biologist who has written a personal account that weaves his Greek background and traveled observations into an historical analysis that is often gripping and poetic. Dr. Vallianatos shares with his readers his roots in Kephalonia, Greece as the son of a peasant farmer. The family farm raised wheat, barley, lentils, grapes, olive oil with small flocks of sheep and goats. "The laughter, the games, the food, and the wine made for exquisite labor that connected us to our Greek culture," he writes. Greek civilization, he writes, was anchored on the family farm, with celebrations honoring Demeter, the Greeks' greatest agrarian goddess. The book traces the destruction of the family farm and the transition to industrialized agriculture. In his view, pre-industrialized farming took a myriad of forms, but nowhere did it transform land into a commodity. On pesticides, Dr. Vallianatos says, "Pesticides are the political elixirs of America's agribusiness empire. They serve no other purpose. . . Pesticides become political tools for reorganizing rural America" as a colony of agribusiness. The key thesis: "Wherever industrialized agriculture takes root, it poisons more than the land. It sets farmer against farmer, dividing communities, impoverishing rural towns, taking away the economic means to support a democratic form of government and life." To prove this, Dr. Vallianatos takes his reader from Greece, Brazil and the Amazon rainforest, Louisiana (cancer alley and the coastal wetlands), a North Carolina hog summit, to California organic farms. He concludes, "The only positive trend in American and global agriculture is the steady growth of organic or biological farmers blending traditional knowledge and ecological wisdom." This hopeful tone is struck with a warning that we must ensure small scale agriculture to preserve organic integrity. *His other books include Fear in the Countryside and Harvest of Devastation.* – *Jay Feldman*

# Mycelium Running

## How Mushrooms Can Help Save the World

*Paul Stamets (Berkeley, CA: Ten Speed Press, 2005, 339 pp; $35.00 paperback)*




I have been raving about *Mycelium Running* to everyone I see these days. Paul Stamets makes a convincing case that we can help "save the world" by growing mushrooms.

Above all, Mr. Stamets completes our vision of the world by helping us understand the role of fungi, so that even a scientist trained in a reductionist tradition can understand that the soil is a living entity whose life is intertwined with the life of the plants and animals that live in it and on it. In addition to their essential role as decomposers, fungi feed plants and animals directly. They form a communication system. They detoxify toxic chemicals.

This life in the soil is fascinating. Organic gardeners and farmers once talked about "feeding the soil" instead of "allowable inputs." Mycorrhizal mushrooms form symbiotic relationships with plants. For example, Mr. Stamets reports on research on the symbioses showing that three distinct tree species shared sugars through soil mycorrhizae, with trees in the sun giving up nutrients to those in the shade. And he has found, for example, that when broccoli and brussels sprouts are mulched with sawdust inoculated with elm oyster mushroom spawn, the yields are four to six times that of beds without the mushrooms. And there are choice edible mushrooms, too!

*Mycelium Running* is also directly relevant to our efforts to prevent and eliminate the spread of toxic chemicals. Mr. Stamets and others have discovered a way to break through an obstacle to using fungi to protect homes from carpenter ants and termites. He also describes the use of fungi to detoxify toxic chemicals, such as dioxins, organophosphates, PCBs, and many wood preservative chemicals, including pentachlorophenol. He also tells how filters of mushroom spawn can remove pathogens, nutrients, and toxins from runoff.

*Mycelium Running: How Mushrooms Can Help Save the World* places a big emphasis on the "how." It has given me the information I need to *do* things like using medicinal mushrooms, introducing edible mushrooms into my garden to improve the yield of my vegetables, improving the growth of transplants with mycorrhizae, and propagating fungi to protect my woods. – *Terry Shistar*

# BEYOND PESTICIDES MEMBERSHIP & SUBSCRIPTIONS

❑ **YES, make me a member of Beyond Pesticides (includes subscription to *Pesticides & You*).**
❑ $25 Individual ❑ $30 Family ❑ $50 Public Interest Organizations ❑$15 Limited Income

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❑ **YES, I'd like to receive Beyond Pesticides' monthly *Technical Report*. $20 with membership or subscription.**

If outside the United States, please add $10.00 each for memberships and subscriptions.

# RESOURCES

## T-Shirts + Totebags

❑ Beyond Pesticides' Praying Mantis T-shirt. Printed on slate blue, 100% organic cotton with soy ink. Sizes S-XL. $15 each; 2 for $25.

❑ "Beyond Pesticides" large totebag. Blue and black logo printed on 100% organic cotton canvas. $10 each.

## Books

❑ *A Failure to Protect.* Landmark study of federal government pesticide use and pest management practices. $23.00. *Summary and Overview* $5.00.

❑ *Unnecessary Risks: The Benefit Side of the Risk-Benefit Equation.* Explains how the EPA's Risk-Benefit Analyses falsely assume the need for high-risk pesticides, how "benefits" are inflated, how alternatives might be assessed, and the public's right to ask more from its regulators. $10.00.

❑ *Safety at Home: A Guide to the Hazards of Lawn and Garden Pesticides and Safer Ways to Manage Pests.* Learn more about: the toxicity of common pesticides; non-toxic lawn care and why current laws offer inadequate protection. $11.00

❑ Voices for Pesticide Reform: The Case for Safe Practices and Sound Policy. A study documenting stories of tragic pesticide poisoning and contamination, and successfully used alternatives that avoid toxic chemicals. $20.00 *Summary: Voices for Pesticide Reform $5.00*

❑ Poison Poles: Their Toxic Trail and the Safer Alternatives. A study on the largest group of pesticides – wood preservatives, the contamination associated with treated wood utility poles and the available alternatives. $20.00

❑ *Pole Pollution.* Deals specifically with the wood preservative pentachlorophenol, and the EPA's shocking findings about its toxicity. $7.00.

## Back Issues

❑ Back issues of *Pesticides and You* $2.00 each

❑ Back issues of *Technical Reports* $1.00 each

## Brochures ($2.00 each; bulk discounts available)

❑ Least Toxic Control of Lawn Pests
❑ Agriculture: Soil Erosion, Pesticides, Sustainability
❑ Estrogenic Pesticides
❑ Pesticides and Your Fruits and Vegetables
❑ Pesticides – Warning: These Products May Be Hazardous to Your Health
❑ Pesticides in Our Homes and Schools
❑ Asthma, Children and Pesticides: What You Should Know
❑ The Safer Choice: How to Avoid Hazardous Pesticides

## Testimony

❑ Lawn Care Chemicals, 3/28/90 or 5/9/91, $4.00
❑ Federal Insecticide, Fungicide, Rodenticide Act (FIFRA), 4/23/91 or 6/8/93, $4.00
❑ Food Safety, 10/19/89, 8/2/93, or 6/7/95, $4.00
❑ School Environmental Protection Act (SEPA) 7/18/01, $4.00
❑ New York City's Response to the Encephalitis Outbreak, 10/12/99 $4.00
❑ Parents: Right-to-Know-Schools, 3/19/97 $3.00

## Publications

❑ Building Blocks for School IPM $15.00
❑ Expelling Pesticides from Schools: Adopting School IPM $15.00
❑ Beyond Pesticides' West Nile Virus Organizing Manual $15.00
❑ Safer Schools $5.00
❑ Least-Toxic Control of Pests $6.00
❑ Community Organizing Toolkit $12.00
❑ Model Pesticide Ordinance, Model School Pest Management Policy, Model State School Pesticide Law $5.00 each
❑ Building of State Indoor Pesticide Policies $4.00
❑ The Right Way to Vegetation Management $4.00

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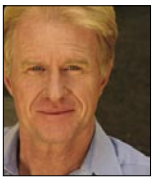
## REGISTER NOW:

# Beyond Pesticides 25th Anniversary Gala and 24th National Pesticide Forum

## May 18-20, 2006 in Washington, DC


On Thursday, May 18, Beyond Pesticides will host its 25th Anniversary Gala Dinner in Washington, DC. The party will be followed by our 24th National Pesticide Forum, May 19-20. Forum topics include: asthma, organics, lawn and landscape care, schools, lessons from successful movements, cutting edge research, neurological development, water contamination, antibacterial products, and much more. Register at **www.beyondpesticides.org/forum**.

### HOST AND PRESENTER:



**Ed Begley, Jr.,** who first came to audiences' attention for his role in *St. Elsewhere*, describes himself as an actor and activist. Arriving at Hollywood events on a bicycle, Mr. Belgley chooses to take action rather than "forget it and hope that government and corporations will figure it out." He serves on the boards of several environmental groups and has recently appeared in *A Mighty Wind, Six Feet Under* and *Arrested Development*. Mr. Begley will MC the Gala.

**Sandra Steingraber,** ecologist, author, and cancer survivor, is an internationally recognized expert on the environmental links to cancer and reproductive health. Her most recent work, *Having Faith: An Ecologist's Journey to Motherhood*, serves as both a memoir of her pregnancy and an investigation of fetal toxicology. Dr. Steingraber's other books include Living Downstream and Post-Diagnosis. Dr. Stegraber will present Theo Colborn with her award.

### HONOREES INCLUDE:

**Theo Colborn** is the director of the Endocrine Disruption Exchange. She co-authored of *Our Stolen Future*, which provided evidence suggesting chemicals, including pesticides, disrupt the endocrine system and lead to serious health impacts.

**Norma Grier** is the executive director of the Northwest Coalition for Alternatives to Pesticides (NCAP), an organization that she founded with others in 1977. For more than three decades she has been a grassroots leader in the movement.

**Representative Rush Holt** was elected to the U.S. House of Representatives in 1998. He has been a tireless advocate for children's environmental health, an original sponsor of the School Environment Protection Act. He is co-chair of the Congressional Children's Environmental Health Caucus.

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