Pesticides and You

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

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New Databases Support Going Toxic-Free

Organic Food:
Eating with a Conscience

For you, workers and the environment

www.eatingwithaconscience.org

Pesticide-Induced Diseases Database

www.beyondpesticides.org/health

Also in this issue - **Beyond Slime:** The least-toxic control of slugs and snails

New Beyond Pesticides Databases Support Toxic-Free

Two new Beyond Pesticides databases, released in the last month and featured in this issue of PAY, are tools for action. They are conceived out of an urgency to effect the changes in practices and policy necessary to go toxic-free.

The first tool, *Organic Food: Eating with a Conscience*, evolves out of the notion that a focus on how pesticides affect the consumer regardless of their effects on the environment and workers (i.e., pesticide residue-driven decision making) will not get us to where we need to go. The second, *Pesticide-Induced Diseases Database*, emerges from a collective body of scientific literature that tells us a solution dependent on severely flawed regulatory tools (i.e., risk assessment-driven decision making) offers limited protection.

Eating with a Conscience: Good for you, workers, and the environment

Our food purchases have a direct effect on the health of our environment and those who grow and harvest what we eat. We launched the *Organic Food: Eating with a Conscience* guide to show consumers why food labeled organic is the right choice. In addition to health issues linked to pesticide residues on food, our food buying decisions support or reject hazardous agricultural practices, protection of farmworkers, and stewardship of the earth.

The *Eating with a Conscience* guide explains to consumers the effect they are having on health and the environment when they purchase food grown with chemical-intensive methods, even if a large number of residues do not remain on the finished food product. USDA organic certification is the only system of food labeling that is subject to independent public review and oversight, assuring consumers that toxic, synthetic pesticides used in conventional agriculture are replaced by management practices focused on soil biology, biodiversity, and plant health. Organic practices under the *Organic Foods Production Act* eliminate commonly used toxic chemicals in the production and processing of food that is not labeled organic, pesticides that contaminate our water and air, hurt biodiversity, harm farmworkers, and kill bees, birds, fish and other wildlife.

Recent media attention has focused consumers on purchasing foods that are often referred to as "clean," but grown with toxic chemicals that show up as residues on food in small or non-detectable amounts. While this approach is helpful to consumers in alerting them to hazardous residues on food, consumers may not think about the fact that these "clean" food commodities can be grown with hazardous pesticides that get into waterways and groundwater, contaminate nearby communities, poison farmworkers, and kill wildlife.

For example, while conventional onions grown with toxic chemicals show low pesticide residues on the finished commodity, *Eating with a Conscience* documents that there are 63 pesticides with established tolerances for onions: 26 are acutely toxic, creating a hazardous environment for farmworkers, 60 are linked to chronic health problems (such as cancer), 8 contaminate streams or groundwater, and 54 are poisonous to wildlife. While not all listed pesticides are applied to every onion, it is impossible at the point of sale to identify which specific chemicals are used.

With our *Eating with a Conscience* guide, Beyond Pesticides is asking consumers to, when possible, buy organic food and make the right food choice –good for you, the environment and workers.

Pesticide-Induced Diseases Database

A read through the scientific literature on pesticides and major preventable diseases afflicting us in the 21st century (asthma, autism and learning disabilities, birth defects and reproductive dysfunction, diabetes, Parkinson's and Alzheimer's, and numerous types of cancer) suggests that one of the first responses called for is an all out effort to stop using toxic pesticides. The *Pesticide-Induced Diseases (PID) Database* begins an ongoing effort by Beyond Pesticides to maintain a comprehensive listing of the studies that support the shift to toxic-free. (Many have been tracked on our *Daily News Blog*.) The database helps us challenge the failure of risk assessment to adequately prevent major diseases and supports a transformational approach to regulation that defaults to no pesticides, only allowing the exception when essentiality is established (or when alternative practices and products do not exist) and when the hazard does not threaten health and the environment (from production through disposal). This alternatives assessment approach creates a regulatory trigger to adopt alternatives and drives the market to go green. Under risk assessment, we constantly play with "mitigation measures" that the PID database tells us over and over is a failed human experiment.

The goal is to use the epidemiologic studies that link pesticides with major diseases to support ending pesticide dependency in the management of land and buildings, whether preventing insect, rodents or unwanted plants. If we continue on the current regulatory road, we will continue to find hazardous pesticides in the umbilical cords of newborns, as the Johns Hopkins University study cited in this issue of PAY does. Worse, we will continue to debate for decades whether that exposure in linked to one of the major diseases. Meanwhile, we have not asked the simple question, "Is there another practice that would make these substances unnecessary?"

These databases can guide practices and policies to go toxic-free at home, schools, hospitals, workplaces, as well as in the decision and policy making of the local, state and federal government. To do less allows the continuation of unnecessary risks.

Jay Feldman is executive director of Beyond Pesticides.

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

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Carpenter Ants

Help! I saw a carpenter ant lurking in my home. How do I know if I have an infestation and how can I get rid of them?
- Bill, Illinois

Dear Bill,

Unlike termites, carpenter ants do not eat wood; rather they chew and excavate the wood with their strong, saw-like jaws to create nesting sites. Infestations are usually noticed because of the foraging activities of worker ants in the house. In the summertime, carpenter ants found indoors do not necessarily indicate that there is a nest—they may just be wandering in from outdoors. Watch these ants to determine their nesting location. As with any integrated pest management strategy, locating the source of the infestations is an important first step. In spring and summer, carpenter ants are more active at night. If only a few ants are seen at one time, you may need to use baits, such as jellies or honey, to attract enough ants to find their entrances.

Once you have discovered the nesting location of the carpenter ants, you then need to determine the extent of the infestation. This can be done by a pest control company, however be aware that unscrupulous companies do exist that may falsely report an infestation in order to solicit a treatment contract. Most companies will inspect your home without obligation.

If you do your own inspection, look for any and all signs that may indicate wood boring activity, such as sawdust, mildew, cracks, holes and insect droppings (also known as "frass"). Conduct a thorough inspection, using a screwdriver to carefully probe for hollow spots in suspicious areas. If you find hollow places, continue to probe and look for evidence of carpenter ants. If you find evidence of wood-boring activity, try to determine if the activity is recent. For instance, is the sawdust or the frass fresh or old and dry? If you discover live carpenter ants, you can be absolutely sure that you have an active infestation. Continue until you are satisfied that you have done a thorough inspection and have properly assessed the situation.

Preventive Measures

Carpenter ant activity is usually associated with moisture problems in structures. As a remedial action, and, more importantly, as a long-term strategy to prevent future insect infestations, efforts to reduce moisture should be taken. This may include the repair of leaks in roofs and around windows, the maintenance of adequate ventilation in damp areas such as basements and crawl spaces, the use of vapor barriers, and the proper grading of soil to drain water away from the house. Firewood and lumber should be stored away from the house and elevated. Tree branches should be kept pruned away from the house to prevent easy access from outdoor nests.

Another preventive approach is to use naturally-resistant wood for repairs or new construction. Naturally-resistant wood species include cedar, cyprus and jarrah. Pressure-treated wood may also be used, although there are some significant concerns about its toxicity (see www.beyondpesticides.org/wood). If you choose to use this wood, we recommend taking the following precautions: do not use it for any surface that may come into contact with food, never burn it, and never saw it without respiratory protection. We strongly recommend against using any recycled wood treated with pentachlorophenol or creosote.

Control Methods

There are some relatively non-toxic ways to eliminate a carpenter ant infestation. If you have successfully located the nest, treatment may be as simple as removing the wood containing the queen and brood. Alternatively, you or your pest management professional can use a low toxicity material (such as those described below) to kill the carepenter ants. Some of these materials can also be placed in attics and walls as a preventive measure.

One option for carpenter ant control is the use of boric acid-based products. Boric acid is a natural mineral that has been used in medicine for many years. It does not volatilize into the air or pose the con-

Get Printed!

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

There are many ways you can contact us. Join other members and activists in discussions on our facebook page www.facebook.com/beyondpesticides or follow us on twitter www.twitter.com/bpncamp! And as always, you can send questions and comments to:

Beyond Pesticides, 701 E Street SE #200, Washington, DC 20003, or info@beyondpesticides.org

siderable health concerns associated with synthetic pesticides; however, it can still pose hazards and should be used with care. (See Beyond Pesticides factsheet.)

Since carpenter ants can live only in a very narrow temperature range, they can also be killed by exposing them to temperatures hotter or colder than what they can tolerate. One such procedure involves tenting the structure and applying heat. Freezing carpenter ants is also an effective method, which is usually applied with a system of pumping liquid nitrogen into walls where ants have been discovered. Because nitrogen is a natural part of our atmosphere, it does not have the residual dangers associated with the use of synthetic pesticides, but depletes oxygen in closed spaces and can cause asphyxiation.

When dealing with a carpenter ant infestation, it's important to remember that carpenter ant damage progresses slowly. Many pest control companies will try to scare you and pressure you into treatment using toxic chemicals; however, you have time to make an informed decision, so look for a long-term solution, not just a temporary control. *For more information on the least-toxic control of carpenter ants and other insects, visit www.beyondpesticides.org/alternatives/factsheets.*

Tiny Biting Insects

How do you get rid of no see ums? It looks like lemongrass and mint may work to get rid of them. Any thoughts?
- Nicole, Florida

Hi Nicole,
These tiny little pests, also commonly referred to as "Biting Midges," exist in very similar conditions to mosquitoes, and cannot live without moisture. The best way to get rid of them is to remove areas of standing water and excess moisture.

You can avoid bites by wearing long sleeves, long pants and hats outside when they are active. You can supplement this by using a least-toxic botanical bug repellent that uses lemon grass or mint essential oils as you mention, however, check the ingredients to make sure there are no toxic pesticides!

Additionally, it's important to note that because of their small size, No-See-Ums can sometimes pass through standard 16 mesh screening, or areas where the screen is damaged. If you notice that these pests are getting into your home and it's becoming a problem, you might consider getting a smaller mesh. (You can find specific No-See-Um mesh here: www.metroscreenworks.com/screenwire.php.)

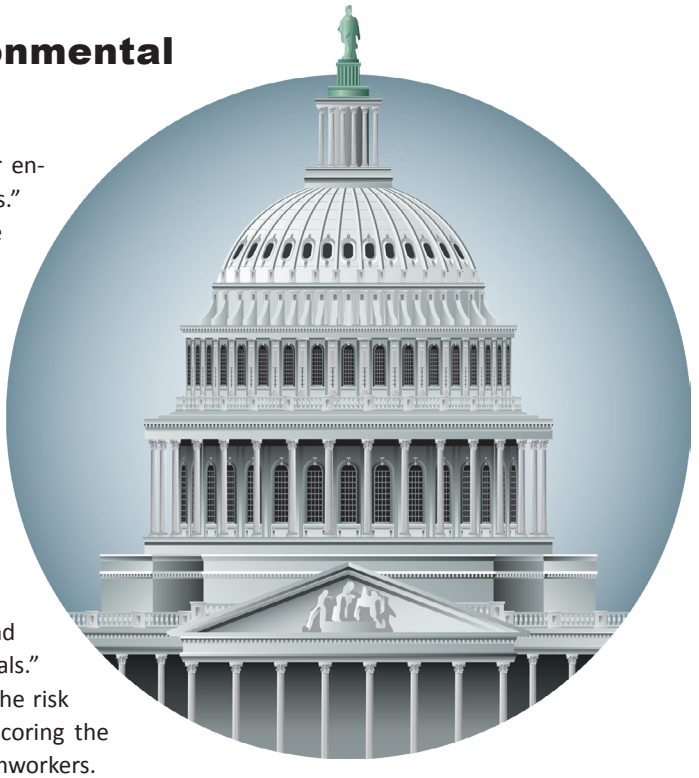
Activist Corner

For many folks, summertime is synonymous with mosquito bites and in response to the many questions we receive every day on how to deal with these sometimes obnoxious pests without toxic chemicals, we have designed a 30-second public service announcement that you can distribute to your local radio station.

"Want to know how to protect yourself and your family from mosquitoes and toxic chemicals? Start by dumping standing water around your home and using only safe, pesticide-free insect repellents. Be sure to avoid repellents containing DEET as it can react with other commonly used chemicals as well as with certain medicines. For more information and to get your community to adopt safer mosquito management strategies, call 202-543-5450 or go to www.beyondpesticides.org/mosquito. A public service message from Beyond Pesticides."

Help prevent mosquitoes and the use of the toxic pesticide DEET. You can download this message at www.beyondpesticides.org/mosquito. Let us know the name of your radio station, city and state, so that we can follow-up.

President's Cancer Panel Says Environmental Cancers Greatly Underestimated



Even with the growing body of evidence linking environmental exposures to cancer in recent years, a report released May 6, 2010 by the President's Cancer Panel finds that the true burden of environmentally-induced cancer is greatly underestimated. The Panel's report, *Reducing Environmental Cancer Risk: What We Can Do Now*, concludes that while environmental exposure is not a new front in the war on cancer, the grievous harm from carcinogenic chemical use has not been addressed adequately by the nation's cancer program. Beyond Pesticides has applauded the chairman's precautionary approach and urged President Obama to heed the panel's call to "use the power of your office to remove the carcinogens and other toxins from our food, water, and air that needlessly increase health care costs, cripple our Nation's productivity, and devastate American lives."

Part Two of the report focuses on environmental contaminants, and its second chapter focuses specifically on agriculture. The chapter begins, "The entire U.S. population is exposed on a daily basis to numerous agricultural chemicals. Many of these chemicals are known or suspected of having either carcinogenic or endocrine-disrupting properties." It continues, "Between three and five million individuals and their families work as migrant or seasonal workers. Due to working and housing conditions, including lack of child care that forces parents to take their children with them into the fields, these workers and their families often have disproportionate exposures to pesticides and other agricultural chemicals." The report also emphasizes the risk of exposure *in utero*, underscoring the need to protect pregnant farmworkers.

The Panel also points out that the Environmental Protection Agency's (EPA) chemical registration process does not eliminate these chemicals from our lives. "Nearly 1,400 pesticides have been registered by EPA for agricultural and non-agricultural use. Exposure to these chemicals has been linked to brain, central nervous system (CNS), breast, colon, lung, ovarian (female spouses), pancreatic, kidney, testicular, and stomach cancers, as well as Hodgkin's and non-Hodgkin's lymphoma, multiple myeloma, and soft tissue sarcoma…Approximately 40 chemicals classified by the International Agency for Research on Cancer (IARC) as known, probable, or possible human carcinogens, are used in EPA-registered pesticides now on the market."

EPA Moves to End All Uses of Toxic Pesticide Endosulfan

After years of pressure from environmental groups concerned about the chemical's health effects, the Environmental Protection Agency (EPA) announced that it is taking action to end all uses of the organochlorine insecticide endosulfan (in the DDT family). EPA has decided that new data collected in response to its 2002 Reregistration Eligibility Decision (RED) proves that endosulfan poses unreasonable risks to farmworkers. EPA also has found that there are risks above the agency's level of concern to aquatic and terrestrial wildlife, as well as to birds and mammals that consume contaminated aquatic prey. EPA is currently negotiating a cancelation agreement with endosulfan's manufacturers. Environmentalists are critical that the pesticide has remained on the market this long, but urge the agency to act swiftly and not include a lengthy phase-out period, as is often the case with voluntary cancelation agreements.

First registered in the 1950s, endosulfan is used on a variety of vegetables, fruits, cotton, and on ornamental shrubs, trees and vines. According to EPA, crops with the highest use include tomatoes, cucurbits, potatoes, apples and cotton. Acute poisoning from endosulfan can cause headaches, nausea, vomiting, convulsions, and in extreme cases, unconsciousness and even death. Studies have linked endosulfan to smaller testicles, lower sperm production, an increase in the risk of miscarriages and autism. Endosulfan is capable of long range transport and is known to contaminate the Arctic and other pristine areas thousands of miles from where it was applied. *For more information, see the endosulfan profile on the Pesticide Gateway, www.beyondpesticides.org/gateway.*

Supreme Court Ruling Offers Some Protection from GE Crops

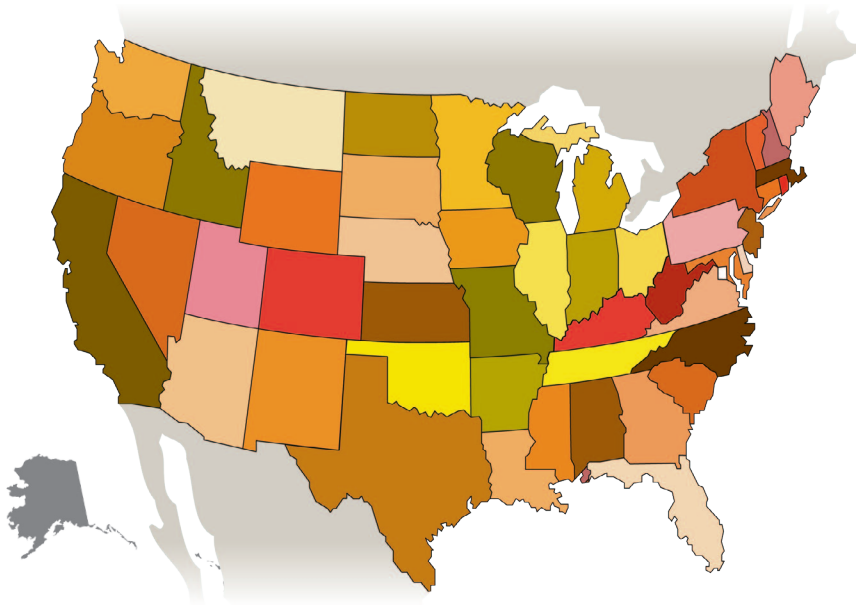
In its June 21, 2010 ruling in *Monsanto v Geertson Seed Farms*, the press widely reported that the U.S. Supreme Court sided with the St. Louis-based biotech company, but its decision may offer some protection from genetically engineered (GE) crops. In a 7 to 1 decision, the high court overturned a lower court injunction on the planting of GE alfalfa, yet planting the crop still remains illegal until the U.S. Department of Agriculture (USDA) completes assessing its environmental review. In 2006, the Center for Food Safety (CFS) and several other farming and environmental groups, including Beyond Pesticides, filed suit on behalf of Geertson Seed Farms. The suit led to a U.S. District Court ruling that USDA violated the *National Environmental Protection Act* (NEPA) by approving the sale of GE alfalfa without requiring an environmental impact statement (EIS). Monsanto was forced to stop selling the seed until a comprehensive EIS is prepared and assessed. The ruling was upheld in two appeals. The Supreme Court decision, while reversing the lower courts, allows the environmental reviews to go forward.

Monsanto's Steve Welker in the company's press release calls the ruling, "exceptionally good news." The Supreme Court did agree with the lower court's ruling that USDA violated NEPA when it approved the planting of GE alfalfa. The lower courts ruled GE alfalfa illegal to plant, thus making a ban unnecessary. The Court agreed that gene flow is a serious environmental and economic threat. Interestingly, Justice Steven Breyer recused himself because his brother, District Judge Charles Breyer, had issued the original ruling, while Justice Clarence Thomas did not recuse himself despite having worked as a Monsanto attorney for two years. *For more information on genetically modified crops, visit www.beyondpesticides.org/gmos.*

EPA Fines Monsanto for Distributing Misbranded GE Cotton

The U.S. Environmental Protection Agency (EPA) announced that Monsanto has agreed to pay a $2.5 million penalty, the largest civil administrative penalty settlement ever received under the *Federal Insecticide, Fungicide and Rodenticide Act* (FIFRA), to resolve misbranding violations related to the sale and distribution of genetically engineered (GE) cotton seed products. Monsanto's Bollgard and Bollgard II cotton seed products are genetically engineered to contain the bacterium-based pesticide *Bacillus thuringiensis* (Bt). EPA restricted planting of the cotton seed product in ten Texas counties to protect against pests becoming resistant to Bt. Monsanto was required to control the sale and distribution of the cotton seed by including information on the planting restrictions in its labeling and grower guides. In 2007, Monsanto disclosed to EPA that it had distributed misbranded cotton seed to customers in the restricted counties. Monsanto subsequently corrected the grower guides and in September 2008 EPA lifted the planting restrictions for Bollgard II.

GE crops can contaminate conventional or organic crops through "genetic drift" and take a toll on the environment, through insect and weed resistance, water contamination and adverse impacts on pollinators and other non-target organisms. GE crops present a unique risk to organic growers. Wind-pollinated and bee-pollinated crops, such as corn and alfalfa, have higher risks of cross pollination between GE crops and unmodified varieties. Currently, no provision exists to effectively protect organic farms from contamination, although EPA has required "refuges" or non-GE planted barriers around sites planted with GE crops. The long-term health effects of consuming GE food are still untested.



Under Pressure EPA Denies Ohio's Request to Use Restricted Pesticide

Under pressure from environmental groups, the Environmental Protection Agency (EPA) has refused the state of Ohio's request for an emergency exemption to use the restricted pesticide propoxur to control bed bugs, stating that the chemical "presents unreasonable risk." Propoxur is a highly toxic broad spectrum organophosphate insecticide. All indoor residential uses of this neurotoxic and carcinogenic chemical were voluntarily canceled in 2007. The Ohio Department of Agriculture, deeming the increases in bed bug infestations an emergency, requested an exemption to use propoxur and the Ohio Senate's adopted a resolution urging EPA to grant it. Beyond Pesticides, with a coalition of environmental and public health groups, opposed the request and asked EPA to deny the exemption, citing the serious public health threat associated with the chemical, as well as the availability of alternatives.

While bed bug populations have rebounded in recent years, due to growing resistance to widely used insecticides, relying on even more toxic chemical control is not a feasible option. In April of 2009, EPA held the first ever *National Bed Bug Summit* to solicit recommendations from scientists, state and local officials, pest control operators and the general public on the best methods of control. Bed bugs can be effectively controlled without the use of dangerous chemical pesticides. Heat treating furniture and laundering linens in hot water will kill bed bugs without the use of chemical controls. Habitat modification, such as sealing cracks, and removing clutter, can prevent an infestation from occurring. *For more information on treating bedbugs, read Beyond Pesticides' factsheet, "Bed Bugs: Back with a Vengeance," www.beyondpesticides.org/infoservices/pesticidesandyou/Winter06-07/bedbugs.pdf.*

Ontario Ban Results in Major Decline of Pesticides in Water

Just over a year after Ontario, Canada banned the sale and use of most lawn and garden (or "cosmetic use") pesticides, a study finds a greater than 80% decline of the most commonly used lawn pesticides in urban streams. The *2008-2009 Urban Stream Water Quality Study* by the Ontario Ministry of Environment and Conservation Authorities collected data from 10 urban streams. Nearly 170 samples were taken both before and after the cosmetic pesticide ban. Sampling points were selected in areas mainly influenced by residential runoff —away from golf courses, sewage treatment plant effluents, and agricultural applications. The samples were analyzed for 105 pesticides and pesticide degradation products. Preliminary results show a significant drop in concentrations of three commonly used lawn care products: 86% decrease of 2,4-D, 82% of dicamba, and 78% of MCPP. Previous estimates indicate that these three herbicides accounted for over half the total amount of pesticides used by lawn care companies in Ontario.

Despite the general good news, levels of glyphosate and carbaryl remain high. Aside from its use in agriculture and on golf courses, glyphosate can still be used for "non-cosmetic" purposes, like killing poison ivy. Carbaryl is still allowed to be used to control fleas on pets, in addition to its agricultural uses. Its persistence in sediment may also explain its continued high levels. The Ontario pesticide policy took effect on April 22, 2009, banning the use of over 250 pesticide products for cosmetic purposes. It does not affect pesticides used in farming or forestry, and golf courses are exempt, but must meet certain conditions to minimize environmental impacts.

For more information on lawn pesticides, alternatives, model policies and more, see www.beyondpesticides.org/lawn.

Flawed Study Attacks Organic Farming Based on False Assumptions

In what advocates say is a flawed study, research at the University of Guelph in Ontario, Canada concludes that organic agriculture can be less environmentally friendly than chemical-intensive conventional methods. After analyzing the study, Beyond Pesticides found that the study does not actually evaluate an organic system. Instead, it substitutes natural-based pesticides that are approved for use in organic systems for synthetic pesticides in a conventional soybean field, while ignoring the underlying systems required in organic farming techniques. The study, which was published June 22, 2010 in the online journal *PLoS One*, tested six pesticides and compared their environmental impact and effectiveness in killing soybean aphids in conventional soybean fields. The scientists examined four synthetic pesticides, two conventional products (cyhalothrin and dimethoate) and two "reduced-risk" pesticides (spirotetramat and flonicamid). They also examined a mineral oil-based organic pesticide that smothers aphids and a fungal product (*Beauvaria bassiana*) that infects and kills insects.

The researchers evaluated the active ingredients for factors such as leaching rate, runoff, toxicity from skin exposure, consumer risk, toxicity to birds and fish, and breakdown time. They also conducted field tests on how well each pesticide targeted aphids while leaving beneficial insects unharmed. The researchers say mineral oil, which requires the largest application because it kills aphids through suffocation, has the greatest impact on the environment. While the conventional pesticides used in the study are linked to endocrine disruption, cancer, reproductive effects, neurotoxicity, organ damage and more, the authors cite the killing of beneficial insects as the reason mineral oil received the worst rating. Organic advocates say it is unlikely organic farmers would use mineral oil in the same manner as the researchers. "It's certainly a misconception to imagine that organic farmers are farming just the same way as pure conventional farmers but substituting organically approved pesticides and fertilizers for synthetic ones," organic certifier Simon Jacques told Toronto's *Globe and Mail* newspaper.

The authors, who made policy recommendations against supporting organic agriculture, received funding from the Canadian government, but acknowledge taking money from Bayer, Monsanto, Pioneer Hi-Bred, Dow, BASF, Syngenta, DuPont and others for projects within the past five years. *For information on going organic for you, workers and the environment, see www.beyondpesticides.org/organicfood.*

Fungus Proven Effective Pesticide for Organic Agriculture

Researchers at Swansea University in the UK have discovered a naturally occurring fungus as an alternative to pesticides for a wide range of crops. The fungal biological control agent, *Metarhizium anisopliae*, performed very well against the larvae of western flower thrips and vine weevils when applied as a spray or premixed into the growing medium. The researchers were able to achieve almost total control of the pest by combining the *Metarhizium* with nematodes, making it a huge environmental success. Tariq Butt, PhD, who led the ongoing research at Swansea, believes this new development could help reduce the use of pesticides and their impact on the environment while reducing costs for farmers.

The same fungus has already been proven an effective biological pesticide in controlling carpenter ants and termites in the home. Mushroom expert Paul Stamets, who spoke at Beyond Pesticides' 2006 National Pesticide Forum in Washington, DC, has figured out a way to grow *Metarhizium anisopliae* to attract carpenter ants and other insect pests and infect them with the fungus that later kills them. However, in doing so, he says his philosophy "is not to wage war against the insect kingdom but to enlist fungal allies for the intelligent, natural and localized control of targeted insects." *Watch Paul Stamets's presentation in streaming video at www.beyondpesticides.org/forum/videos.*

This photo, included in Paul Stamets' 2006 presentation at the National Pesticide Forum, shows an ant that has been infected and killed by a fungal-based pesticide.

Study Compares Organic and Conventional Eggs, Misses Big Picture

A study comparing the quality of various types of chicken eggs —including conventional, free-range and organic— failed to examine pesticide residues or vitamin content, nor does it consider the environmental and health impacts of conventional, chemical-based production systems. The U.S. Department of Agriculture (USDA) study, which examined fat and protein content, egg white and shell thickness, and other physical characteristics, concludes that there is no difference among the various egg types and shoppers' decision comes down to "ethical and moral choices." The study, "Physical quality and composition of retail shell eggs," was originally published in the March 2010 issue of the journal *Poultry Science*. The study is now receiving attention after a recent article in *Time* magazine points out that organic eggs are often three times more expensive than conventional factory farm eggs and misleads readers to believe that factory eggs are the best option.

The study did not examine other nutritional factors that farmers using organic methods often claim to be higher in organic eggs, such as vitamins A and E, beta carotene, folate, omega-3 fatty acids. Organic egg production also prohibits the prophylactic use of antibiotics and arsenic in chicken feed, as well as requiring outdoor access and organically produced grains. Chemically-treated grains in conventional chicken feed can cause environmental damage in the form of water contamination, wildlife poisoning, and can be hazardous to those who work on or live near farms. The *Time* article references other studies showing that free-range chickens are more likely to be contaminated with PCBs and other environmental contaminants because of their access to the outdoors, where such pollutants may be present. While this could be true for "free-range" eggs, organic certification requires residue testing that should identify sites that have environmental contamination. *For more information on the importance of eating organic food for you, workers and the environment, visit www.beyondpesticides.org/organicfood.*

Non-Persistent Pesticides Found in Umbilical Cord Blood

Researchers have found common household pesticides in the majority of umbilical cord blood of babies born at Johns Hopkins Hospital in Baltimore, MD. The study looks at concentrations of organophosphate (OP), carbamate, pyrethroid, and organochlorine pesticides in samples of umbilical cord serum to provide an estimate of exposure to the fetus. In addition to tracking pesticide concentrations, researchers also sought to identify demographic and socioeconomic factors associated with pesticide exposure *in utero*. Levels of the synthetic pyrethroid insecticide permethrin are highest among infants of mothers who did not complete high school. On the other hand, highly educated mothers have babies with higher cord serum concentrations of DDT mixtures, suggesting an association with consumption of foods contaminated with DDT, such as fish. Other common contaminants include: bendiocarb, propoxur and piperonyl butoxide. OPs, which have been banned for residential uses, are far less common.

Because many of these pesticides disappear from the human body within a few days, the study suggests that the pregnant women either experience regular, chronic exposure, which may cause fetal development problems, or that they are exposed shortly before childbirth, perhaps even in the hospital, the authors speculate. "We can see that they've been exposed, but we don't know if there are health consequences," says first author Gila Neta, PhD, an epidemiologist who is now at the National Cancer Institute. The full results of this study, "Distribution and Determinants of Pesticide Mixtures in Cord Serum Using Principal Component Analysis" can be found online in the June 15, 2010 issue of the journal *Environmental Science & Technology*.

Organic Food: Eating with a Conscience

For you, workers and the environment

Editors note: *In June 2010, Beyond Pesticides launched its online guide, "Organic Food: Eating with a Conscience," which shows consumers why organic food is the best option. Recent media attention has focused consumers on purchasing foods that are often referred to as "clean," but grown with toxic chemicals that show up as residues on their food in only small amounts or are not detectable. While this approach is helpful in alerting consumers to hazardous residues on food, those very same "clean" food commodities can be grown with toxic pesticides that get into waterways and groundwater, contaminate nearby communities, poison farmworkers and farm families, and kill wildlife. View the guide at* ***www.EatingWithAConscience.org****.*

Our food choices have a direct effect on the health of our environment and those who grow and harvest what we eat. That's why food labeled organic is the right choice. In addition to serious health questions linked to actual residues of toxic pesticides on the food we eat, our food buying decisions support or reject hazardous agricultural practices, protection of farmworkers and farm families, and stewardship of the earth.

The Organic Choice is Clear

It is important to eat organic food –nurtured in a system of food production, handling and certification that rejects hazardous synthetic chemicals. USDA organic certification is the only system of food labeling that is subject to independent public review and oversight, assuring consumers that toxic, synthetic pesticides used in conventional agriculture are replaced by management practices focused on soil biology, biodiversity, and plant health. This eliminates commonly used toxic chemicals in the production and processing of food that is not labeled organic –pesticides that contaminate our water and air, hurt biodiversity, harm farmworkers, and kill bees, birds, fish and other wildlife.

Food Choices Based Only on Pesticide Residues Fall Short

To help explain the urgent need for a major shift to organic food consumption, Beyond Pesticides has begun the *Eating with a Conscience* database which evaluates the impacts on the environment and farmworkers of the toxic chemicals allowed for use on major food crops, grown domestically and internationally. We have started with those foods that have been identified widely in the media as "clean." While the Clean 15/Dirty Dozen list generated by Environmental Working Group is helpful in alerting consumers to hazardous residues on food, pesticide residues are only part of the

Domestic and International Food Production

The Eating with a Conscience database, based on legal tolerances (or allowable residues on food commodities), describes a food production system that enables toxic pesticide use both domestically in the United States and internationally. In many cases, while a pesticide's use may have been canceled in the U.S., EPA's continued allowance of a tolerance means that (i) residues have bioaccumulated or remain in the domestic market after use has stopped or (ii) the use of a pesticide banned or discontinued in the U.S. may continue in the country of export. As a result, in purchasing those food commodities with legal tolerances for pesticides no longer used in the U.S., consumers support agricultural production practices in other countries that are associated with the range of adverse effects noted in the database.

story. It turns out that those very same "clean" food commodities may be grown with hazardous pesticides that get into waterways and groundwater, contaminate nearby communities, poison farmworkers, and kill wildlife, while not all showing up at detectable levels on our food.

Chlorpyrifos: A Case Study

Chlorpyrifos is a neurotoxic insecticide that was banned for household use in 2000 because of the hazards it poses to human health, especially to children. However, it is still widely used in agriculture, resulting in exposure to farmworkers, farm families and others living near agricultural areas. It is also a frequent water contaminant and a long-range contaminant, exposing communities and contaminating pristine areas far from where it was applied. A Harvard University study links exposure to organophosphate pesticides like chlorpyrifos to attention deficit hyperactivity disorder (ADHD).

Chlorpyrifos is registered for use on more than half of the 15 "cleanest" fruits and vegetables (asparagus, cabbage, corn, grapefruit, kiwi fruit, onion, peas and sweet potatoes).

Farmworkers

While taking hazardous pesticides out of food production reduces hazards on the farm, farmworkers often face a lot of hardships that are not addressed by this guide. Farmworkers have long fought for better working conditions, wages and labor practices. To complement the contribution you are making by purchasing organic food, consider contacting the following organizations to learn what more you can do.

- Campesinos sin Fronteras, *www.campesinossinfronteras.org*
- Centro Campesino, *www.centrocampesino.net*
- Coalition of Immokalee Workers, *www.ciw-online.org*
- Domestic Fair Trade Association, *www.dftassociation.org*
- Farmworker Association of Florida, *www.farmworkers.org*
- Farmworker Health and Safety Institute, *www.farmworkersafety.org*
- Farmworker Justice, *www.fwjustice.org*
- Farm Labor Organizing Committee, AFL-CIO, *www. supportfloc.org*
- Farmworker Support Committee (CATA), *www.cata-farmworkers.org*
- Lideres Campesinas, *www.liderescampesinas.org*
- Northwest Treeplanters and Farm Workers United, *www.pcun.org*
- United Farm Workers, *www.ufw.org*

Choosing Organic: For you, the environment and workers

Eating with a Conscience looks at the toxic chemicals that are allowed in the production of the food we eat and the environmental and public health effects resulting from their use. The chart below provides a summary of the health and environmental effects of the pesticides with established tolerances (domestic or import) for 15 low residue crops, starting with the least residues. Its purpose is to highlight the impacts of the conventional, chemical-intensive agricultural system - in addition to pesticide residues.

Low Residue Crops	Farmer/Worker Acute Poison	Farmer/Worker Chronic Poison	Stream Contaminant	Ground Water Contaminant	Wildlife Poison	Long-Range Transport
Onion	X	X	X	X	X	X
Avocado	X	X	X	X	X	not documented
Corn	X	X	X	X	X	X
Pineapple	X	X	X	X	X	X
Mango	X	X	not documented	not documented	X	X
Peas	X	X	X	X	X	X
Asparagus	X	X	X	X	X	X
Kiwi	X	X	X	X	X	X
Cabbage	X	X	X	X	X	X
Eggplant	X	X	X	X	X	X
Cantaloupe	X	X	X	X	X	X
Watermelon	X	X	X	X	X	X
Grapefruit	X	X	X	X	X	X
Sweet Potato	X	X	X	X	X	X
Honeydew	X	X	X	X	X	X

Eating with a Conscience is based on pesticide tolerances (residue limits for pesticides used in the U.S. or by countries exporting to the U.S.) and taken from EPA's *Tolerances by Commodity, Crop Group, or Crop Subgroup Index*, updated July 2009. Effects evaluated include:

1. Farmer/Worker Acute Poison: Any pesticide rated EPA Toxicity Class I (highly hazardous) and Class II (moderately hazardous) is considered acutely toxic. These pesticides create a hazardous work environment for people who work and/or live on or near farms.

2. Farmer/Worker Chronic Poison: Any pesticide shown to be a carcinogen, kidney/liver, reproductive or developmental toxicant, nervous or immune system poison, or endocrine disruptor is considered to be a chronic poison. Exposure to these pesticides is linked to long-term health effects for people who work and/or live on or near farms.

3. Stream Contaminant: In its *Pesticides in the Nation's Streams and Ground Water, 1992–2001* report, the U.S. Geological Survey (USGS) identifies pesticides detected in more than 10% of all streams sampled as "detected most frequently." Using USGS *Pesticide National Synthesis Project* data, pesticides detected in greater than 10% of all sampled streams are identified.

4. Ground Water Contaminant: In its *Pesticides in the Nation's Streams and Ground Water, 1992–2001* report, the U.S. Geological Survey (USGS) identifies pesticides detected in more than 2% of all ground water sampled as "detected most frequently." Using USGS *Pesticide National Synthesis Project* data, pesticides detected in greater than 2% of all sampled ground water are identified.

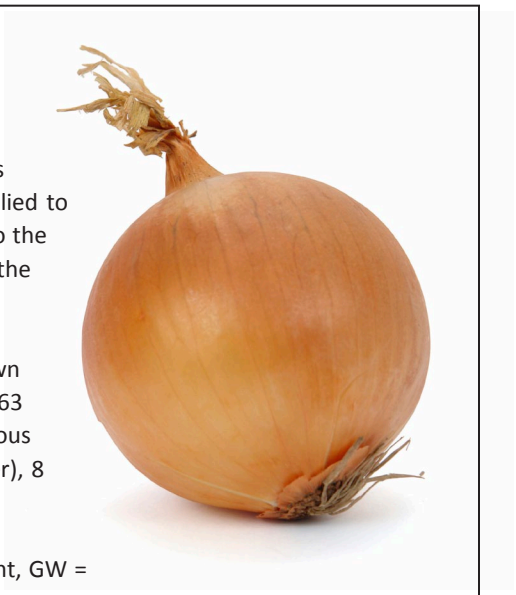
5. Wildlife Poison: Pesticides identified by EPA to be toxic (moderately to highly toxic) to bees, birds, fish, aquatic organisms and other wildlife have established tolerances for this crop.

6. Long-Range Transport: Pesticides identified as long-range transporters with certain chemical properties are able to travel great distances by air, water and through the food chain. They contaminate communities and ecosystems hundreds to thousands of miles from their application site.

Using the Eating with a Conscience Database

In the current database, consumers can identify chemicals that are used in the production of foods that have been characterized as "clean" in the media, despite the use of highly hazardous pesticides in their production. The database is being expanded to include all of the most commonly consumed foods. A webpage in the database, as depicted below, provides a summary of the hazards associated with the crop's production and the pesticides that are allowed by EPA to be used. The pesticide names link to detailed chemical profiles in Beyond Pesticides' *Gateway on Pesticide Hazards and Safe Pest Management*, which contains detailed citations.

Onions



Below are the pesticides with established tolerances (residue limits for pesticides used in the U.S. or by countries exporting to the U.S.) for onions. While not all the pesticides on the list are applied to every onion, there is no way to tell which pesticides are applied to any given piece of conventional produce on your store shelf. You may consider talking to the farmers at your local farmers market about the pesticides they use, but eating organic is the only way to know for sure.

Health and environmental effects summary: The database shows that while onions grown with toxic chemicals show low pesticide residues on the finished commodity, there are 63 pesticides with established tolerance for onion, 26 are acutely toxic creating a hazardous environment for farmworkers, 60 are linked to chronic health problems (such as cancer), 8 contaminate streams or ground water, and 54 are poisonous to wildlife.

Key: A = acute health effects, C = chronic health effects, SW = surface water contaminant, GW = ground water contaminant, W = wildlife poison, LT = long-range transport.

Acetamiprid (A, C, W)
Acibenzolar-S-methyl (C, W)
Avermectin B1 (A, C, W)
Azinphos-methyl (A, C, W)
Azoxystrobin (C, W)
Bensulide (A, C, W)
Boscalid (C, W)
Bromoxynil (A, C, GW, W)
Captan (A, C, W)
Carboxin (C, W)
Carfentrazone-ethyl (W)
Chlorothalonil (A, C, W)
Chlorpyrifos (A, C, SW, W, LT)
Clethodim (A, C)
Crotoxyphos (A, C, W)
Cymoxanil (C)
Cypermethrin (A, C, W)
Cyprodinil (C, W)
Cyromazine (C)
DCPA (C, SW, GW, W)
Deltamethrin (C, W)
Diazinon (A, C, SW, W, LT)
Dicloran (C, W)
Dimethenamid (A, C, W)
Dimethomorph (C, W)
Ethofumesate
Famoxadone (C, W)
Fenamidone (C, W)
Fluazifop-butyl (C, W)
Fludioxonil (C)
Flumioxazin (C, W)
Fluopicolide (C, W)
Fluroxypyr (C, W)
Folpet (C, W)
Fosetyl-aluminium (A, C)
Glyphosate (C, W)
Iprodione (C, W)
Lambda-cyhalothrin (A, C, W)
Malathion (A, C, SW-URBAN, W)
Maleic hydrazide
Mancozeb (C, W)
Mandipropamid (C, W)
Maneb (C, W)
Metalaxyl (A, C, W)
Methyl Bromide (A, C, W)
Methyl parathion (A, C, W)
Metolachlor (C, SW, GW, W)
Oxamyl (A, C, GW, W)
Oxyfluorfen (C, W)
Paraquat (A, C, W)
Pendimethalin (C, W)
Permethrin (A, C, W)
Propiconazole (A, C, W)
Propylene oxide (A, C)
Pyraclostrobin (C, W)
Pyrimethanil (C, W)
Pyriproxyfen (C, W)
Sethoxydim (C, W)
Spinetoram (C, W)
Spinosad (C, W)
Spirotetramat (C, W)
Tebuconazole (A, C, W)
Trifluralin (C, SW, GW, W, LT)

In-Depth Pesticide Information: The *Eating with a Conscience* website links to information on individual pesticides in Beyond Pesticides' *Pesticide Gateway*, a database that provides decision and policy makers, practitioners and activists with easier access to current and historical information on pesticide hazards and safe pest management, drawing on and linking to numerous sources and organizations that include information related to pesticide science, policy and activism.

Pesticide-Induced Diseases Database
www.beyondpesiticides.org/health

Wide Range of Diseases Linked to Pesticides

Database supports policy shift from risk to alternatives assessment

By Kagan Owens, Jay Feldman and John Kepner

The common diseases affecting the public's health are all too well-known in the 21st century: asthma, autism and learning disabilities, birth defects and reproductive dysfunction, diabetes, Parkinson's and Alzheimer's diseases, and several types of cancer. Their connection to pesticide exposure continues to strengthen despite efforts to restrict individual chemical exposure, or mitigate chemical risks, using risk assessment-based policy.

The *Pesticide-Induced Diseases Database*, launched by Beyond Pesticides, facilitates access to epidemiologic and laboratory studies based on real world exposure scenarios that link public health effects to pesticides. The scientific literature documents elevated rates of chronic diseases among people exposed to pesticides, with increasing numbers of studies associated with both specific illnesses and a range of illnesses. With some of these diseases at very high and, perhaps, epidemic proportions, there is an urgent need for public policy at all levels –local, state, and national—to end dependency on toxic pesticides, replacing them with carefully defined green strategies.

Data Supports Policy Change

The database is a tool to support efforts to eliminate the continued use of hazardous pesticides in favor of green strategies that emphasize non-toxic and least-toxic alternative practices and products. The studies in the database show that our current approach to restricting pesticide use through risk assessment-based mitigation measures is not working. This failed human experiment must be ended. The warnings of those who have expressed concerns about risk assessment, such as EPA Administrator under Presidents Nixon and Reagan, William Ruckelshaus, have been borne out by three decades of use and study. Mr. Ruckelshaus in 1984 said, "We should remember that risk assessment data can be like the captured spy: If you torture it long enough, it will tell you anything you want to know." EPA's risk assessment fails to look at chemical mixtures, synergistic effects, certain health endpoints (such as endocrine disruption), disproportionate effects to vulnerable population groups, and regular noncompliance with product label directions. These deficiencies contribute to its severe limitations in defining real world poisoning, as captured by epidemiologic studies in the database.

An enlightened policy approach to proposed or continued toxic chemical use, in an age where the adverse effects have been widely and increasingly documented, is to first ask whether there is a less toxic way of achieving the toxic chemical's intended purpose. Simply, "Is there another practice that would make the substance unnecessary?" This approach does not preclude and should demand the prohibition of high hazard chemical use, those chemicals that are simply too dangerous.

The alternatives assessment approach differs most dramatically from a risk assessment-based policy is in rejecting uses and exposures deemed acceptable under risk assessment calculations, but unnecessary because of the availability of safer alternatives. For example, in agriculture, where the database shows clear links to pesticide use and cancer, it would no longer be possible to use hazardous pesticides, as it is with risk assessment-based policy, when there are clearly effective organic systems with competitive yields that, in fact, outperform chemical-intensive agriculture in drought years. Cost comparisons must take into account externalities such as water pollution and water utility expenses, associated with chemical-intensive farming. The same is true for home and garden pesticide use and defined integrated pest management systems with prescribed practices and only specific substances as a last resort.

The database suggests clearly that we must take strategic action to shift away from pesticide dependency. Public policy must advance this shift, rather than continue to allow unnecessary reliance on pesticides. Regulatory restrictions must be tied to alternatives assessment that move chemicals off the market or prohibit their marketing as safer approaches and technologies emerge.

About the Database

In order to track the varying public health effects of pesticide exposure, Beyond Pesticides has established the *Pesticide-Induced Diseases Database*, which tracks diseases and other health issues linked to real world pesticide exposure, providing access to published studies and their findings. The database is housed on the Beyond Pesticides website at www.beyondpesticides.org/health, as it requires periodic updating. The current database, which contains hundreds of studies, itself is preliminary and will be added to over the coming months. We urge readers to send studies to info@beyondpesticides.org that you think should be added to the database.

Findings and Database Entries

Alzheimer's Disease

According to the Alzheimer's Association, Alzheimer's disease (AD), the most common form of dementia, is a progressive and fatal brain disease. As many as 5.3 million Americans are living with Alzheimer's disease. Alzheimer's destroys brain cells, causing memory loss and problems with thinking and behavior severe enough to affect work, lifelong hobbies or social life. Alzheimer's gets worse over time, it is fatal, and has no current cure.

At publication, the database lists 4 studies linking pesticides to Alzheimer's disease. While many studies link pesticides to neurological effects, research is just beginning to make the link between pesticides and AD. A recent study of individuals from an agricultural community in Utah shows increased risks among pesticide-exposed individuals for all causes of dementia (hazard ratio, HR, 1.38) and an even greater risk for AD (HR 1.42). The risk of AD associated with organophosphate exposure is the greatest (HR 1.53) followed by organochlorines (HR 1.49).[1]

Asthma

Since the mid-1980s, asthma rates in the U.S. have skyrocketed to epidemic levels, particularly in young children. In the U.S. alone, around 16 million people suffer from asthma. Asthma is a serious chronic disorder, and in some cases life-threatening disease, of the lungs characterized by recurrent attacks of bronchial constriction, which cause breathlessness, wheezing, and coughing. Researchers have found that pesticide exposure can induce a poisoning effect linked to asthma.

Low-income populations, people of color, and children living in inner cities experience disproportionately high morbidity and mortality due to asthma. According to the National Institutes of Health's National Institute of Allergy and Infectious Disease, African Americans are four to six times more likely than whites to die from asthma. Therefore, any time our policies allow regulators to permit uses of pesticides with known asthma effects, which is done daily, a disproportionate impact is felt in the African-American community. Among other policies, this toxics policy contributes

Beyond Agricultural Pesticide Exposure

While agriculture has traditionally been tied to pesticide-related illnesses, of the 40 most commonly used pesticides in schools, 28 can cause cancer, 14 are linked to endocrine disruption, 26 can adversely affect reproduction, 26 are nervous system poisons and 13 can cause birth defects. Of of the 30 most commonly used lawn pesticides, 19 can cause cancer, 13 are linked to birth defects, 21 can affect reproduction and 15 are nervous system toxicants. A number of published studies using animal toxicity data and human cells/tissue laboratory data also show that pesticides are linked to several major public health problems.

to a cycle of poverty, as asthma is the leading cause of school absenteeism due to chronic illness.

At publication, the database lists 41 studies linking pesticides to asthma. Studies show that pesticides not only trigger asthma attacks, but are also a root cause of asthma. A landmark 2004 study finds that not only do environmental exposures lead to above-average asthma rates among children, but that timing of exposure is also crucial. Examining over 4,000 school-aged children in California, the researchers discovered that children exposed to herbicides during their first year of life are four and a half times more likely to be diagnosed with asthma before the age of five; toddlers exposed to insecticides are over two times more likely to get asthma.[2]

Birth and Fetal Defects

In 2005, the births of three babies born in Florida with severe birth defects to mothers who all worked for Ag-Mart Produce, a company that produces chemically-treated tomatoes and other agricultural products, brought the connection between birth defects and pesticide exposure into the public consciousness. Birth defects are structural or functional abnormalities present at birth that cause physical or mental disabilities, ranging from mild to fatal. Researchers have identified thousands of different types of birth defects. Currently, birth defects are the leading cause of death for infants during the first year of life.

At publication, the database lists 19 studies linking pesticides to fetal and birth defects. A study published in the April 2009 issue of the medical journal *Acta Paediatrica* reports that the highest rates of birth defects for U.S. babies arise when conception occurs during the spring and summer months, when pesticide use increases and high concentrations of pesticides are found in surface waters. A strong association is found between higher rates of birth defects, including spina bifida, cleft lip, clubfoot and Down's syndrome, among women who conceive while nitrates, atrazine and other pesticides are at the high end of their seasonal fluctuations.[3]

Cancer

The link between pesticides and cancer has long been a concern. While agriculture has traditionally been tied to pesticide-related illnesses, 19 of 30 commonly used lawn pesticides and 28 of 40 commonly used school pesticides are linked to cancer. Even with the growing body of evidence linking environmental exposures to cancer in recent years, a report released May 6, 2010 by the President's Cancer Panel finds that the true burden of environmentally-induced cancer is greatly underestimated. The Panel's report, *Reducing Environmental Cancer Risk: What We Can Do Now*, concludes that while environmental exposure is not a new front on the war on cancer, the grievous harm from carcinogenic chemical use has not been addressed adequately by the nation's cancer program.

At publication, the database lists 260 studies linking pesticides to various forms of cancer *(see specific types of cancer below)*. While a number of published scientific studies using animal toxicity data and human cells/tissue laboratory studies show that pesticides are known or suspected to be carcinogenic, epidemiologic studies confirm laboratory results. The

review finds a significant association between cancer and pesticides used in agriculture and throughout the urban environment in homes, schools, and public places.

Brain Cancer – There are two main types of brain cancer. Primary brain cancer starts in the brain. Metastatic brain cancer starts somewhere else in the body and moves to the brain. According to the American Brain Tumor Association, brain tumors are the most common of the solid tumors in children, and the second most frequent malignancy of childhood. Brain tumors are the second leading cause of cancer-related deaths in males under 40 and the second leading cause of cancer-related deaths in females under age 20.

At publication, the database lists 30 studies linking pesticides to brain cancer. Researchers believe that insecticides that target the nervous system may play a role in the development of brain tumors. A population-based, case control study of children ten years of age or younger that analyzes functional genetic polymorphisms and parents' use of home insecticide treatments suggests that exposure in childhood to insecticides in combination with a reduced ability to detoxify them increases the risk of developing brain tumors. Several studies show adults with brain cancer are more likely to have been exposed to pesticides.[4]

Breast Cancer – Doctors estimate that one in eight women will be diagnosed with breast cancer in their lifetime. It is the leading cause of death in North America for women 35 to 50 years old. Genetics can only account for five to ten percent of cases. According to the Breast Cancer Fund, a growing body of scientific evidence suggests that exposures to toxic chemicals, including pesticides, in the environment are contributing to high breast cancer rates.

At publication, the database lists 11 studies linking pesticides to breast cancer. Some pesticides are breast carcinogens and others act by disturbing or mimicking hormones in the body, which can lead to breast cancer. (See Endocrine Disruption section.) A 2006 Long Island Breast Cancer Study Project report demonstrates that self-reported lifetime use of residential pesticides is associated with an increase in risk for breast cancer. The increase is found for women who report the use of pesticides overall, specifically lawn and garden pesticides, and is particularly high for households with professional applications.[5]

Leukemia – Cancer of the blood-forming cells of bone marrow, leukemia is the most common childhood cancer, accounting for 33 percent of the incidence of all childhood cancer and causing more deaths among children and adults under the age of 20 than any other cancer, yet strikes ten times as many adults as children. Several published studies show a "critical window of exposure" to pesticides, whether used in the home or from parental occupational exposure, that are associated with leukemia in children, showing an especially high risk correlation with pesticide exposure during the mother's pregnancy.

At publication, the database lists 40 studies linking pesticides to leukemia. Studies link leukemia to both residential and agricultural exposure to pesticides, for adults, children and *in utero*. One case-control study in California finds household pesticide use can nearly quadruple the

Epidemiology: The Challenge of Finding Patterns of Harm

Despite evidence to the contrary, chemical industry critics of epidemiologic studies linking pesticides to major diseases argue that they are of limited value because of their reliance on records and study participants' memory, among other issues. In fact, the correlation of patterns of chemical use with an effect is difficult to establish in epidemiology and therefore may underestimate hazard effects. When a correlation is established it raises serious concern. The epidemiologic studies in the *Pesticide-Induced Diseases Database* show an overall pattern that links pesticide exposure to major diseases.

Inherent limitations, such as the following, only add to the power of these studies as patterns of diseases tied to pesticide exposure emerge: (i) categorizing farmers all together as a group based on just the job title and not exposure assessments, yet farmers can have diverse exposure patterns from one another; (ii) seasonal and migrant farmworkers are not usually aware of the pesticide(s) which have been used where they are working; (iii) grouping chemicals by classes, when diseases may not be restricted to a certain chemical family; (iv) small number of study subjects; (v) recall bias among study participants; and, (vi) a lack of detailed exposure verification.

risk of childhood leukemia (odds ratio, OR, 3.8) and that garden pesticides increase the risk to over six-fold (OR 6.5).[6] A retrospective cohort mortality study of aerial pesticide applicator pilots, finds a significantly elevated risk for leukemia (OR 3.35).[7]

Lymphoma – Cancers that originate in the lymph system are referred to as lymphomas and include Hodgkin's lymphoma (HL) and non-Hodgkin's lymphoma (NHL). Lymphomas are the most common type of blood cancer in the U.S. It is the 7th most common in adults and the 3rd most common cancer in children. The more common non-Hodgkin's lymphoma is a cancer of the immune system. The incidence of NHL has been increasing over the past several decades and has doubled since the early 1970s.

At publication, the database lists 46 studies linking pesticides to lymphoma. According to the Lymphoma Foundation of America, 75 out of all 99 epidemiologic studies conducted on lymphoma and pesticides find a link between the two. The report states that data from the National Cancer Institute show that people develop lymphoma often in states and locations with the highest pesticide use. The report finds that farmers are at the highest risk for lymphoma.[8] Dozens of studies in the database confirm the risk to farmers and other pesticide applicators.

Prostate Cancer – Cancer of the prostate, a gland of the male reproductive system, is the second most common cancer among American men, with one in six men diagnosed during their lifetime. It is also the second leading cause of death for American men. Incidence and death trends show that prostate cancer has been slightly decreasing since 1994.

At publication, the database lists 23 studies linking pesticides to prostate cancer. Studies show elevated rates of prostate cancer in Vietnam veterans exposed to Agent Orange and to farmers and others with occupational pesticide exposure. A study published in 2003 in the *International Journal of Cancer* shows that individuals who have worked in agriculture have a 40% increased risk of having prostate cancer over the general population.[9] Other studies suggest that endocrine disruption is likely to be a mechanism for developing this type of cancer.

Soft Tissue Sarcoma Cancer that begins in the muscle, fat, fibrous tissue, blood vessels, or other supporting

tissue of the body, known as soft tissue sarcoma, is uncommon, yet risk is increased with exposure to certain chemicals, radiation therapy and certain genetic diseases.

At publication, the database lists 7 studies linking pesticides to soft tissue sarcoma. A 1995 case-control study of Denver children finds that yard pesticide applications are linked to a four-fold increase in risk to soft tissue sarcomas (OR 4.0).[10] Other studies associate living near agricultural areas with the disease.

Other Cancers – With so many pesticides on the market and possible combinations for exposure, there are scores of different types of cancers with scientific links to pesticides. As the President's Cancer Panel points out, "Approximately 40 chemicals classified by the International Agency for Research on Cancer (IARC) as known, probable, or possible human carcinogens, are used in EPA-registered pesticides now on the market."

At publication, the database lists 105 studies linking pesticides to other types of cancers. These include cancer of the bladder, bone, cervix, colon, eye, gallbladder, kidney/renal, larynx, lip, liver, lungs, mouth, esophagus, ovarian, pancreas, rectum, sinus/nasal, stomach, testicles and thyroid, as well as melanoma (a form of skin cancer), multiple myeloma (cancer of the plasma cells of bone marrow) and neuroblastoma (cancer of the nerve cells).

Developmental and Learning Disorders

Roughly one in six children in the U.S. has one or more developmental disabilities, ranging from a learning disability to a serious behavioral or emotional disorder. Scientists believe that the amount of toxic chemicals in the environment that cause developmental and neurological damage are contributing to the rise of physical and mental effects being found in children. Studies show children's developing organs create "early windows of great vulnerability" during which exposure to pesticides can cause great damage. In the U.S., requirements for testing pesticides and other chemicals for potential developmental and learning disorders are minimal.

A developing brain is much more susceptible to the toxic effects of chemicals than an adult brain. During development, the brain undergoes a highly complex series of processes at different stages. Interference from toxic substances that disrupt these processes can have permanent consequences. That vulnerability extends from fetal development through infancy and childhood to adolescence. Research has shown that environmental toxicants, such as pesticides, at low levels of exposure can have subclinical effects—not clinically visible, but still important adverse effects, such as decreases in intelligence or changes in behavior.

At publication, the database list 26 studies linking pesticides to learning and developmental disorders. These include general developmental delays, attention deficit hyperactivity disorder (ADHD) and autism. A 2009 study published in the journal *Pediatrics* links a mother's exposure to urban air pollutants known as polycyclic aromatic hydrocarbons (PAHs), which include pesticides, to a reduced intelligence quotient (IQ) in their children.[11]

At publication, the database lists 8 studies linking pesticides to ADHD. In one study linking ADHD to pesticide exposure, scientists from the University of Montreal and Harvard University examine data from the *National Health and Nutrition Examination Survey* (NHANES), a program of studies designed to assess the health and nutritional status of adults and children. The study shows that for children with a 10-fold increase in the concentration of dialkyl phosphate metabolites in their urine (an indicator of organophosphate exposure) the odds of ADHD increase by more than 50%. For the breakdown product dimethyl triophosphate, the odds of ADHD almost double in kids with above-average levels compared to those without detectable levels.[12]

Attention Deficit Hyperactivity Disorder – Attention Deficit Hyperactivity Disorder is a neurobehavioral developmental disorder that causes inattention, impulsivity, and hyperactivity. It is estimated that around two million children in the U.S. have ADHD.

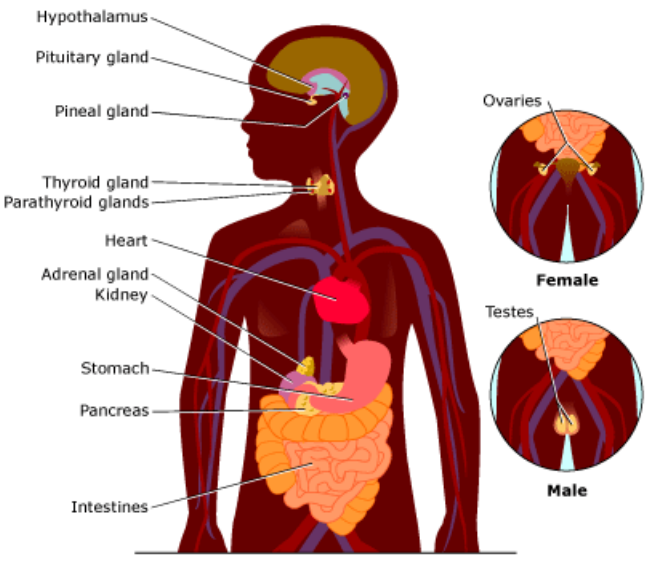
Autism – This complex developmental disorder, which is on the rise in both prevalence and incidence, includes behavioral problems with social interaction and communication. The symptoms range from mild to very severe, appearing before the age of three and lasting throughout a person's life. Research

Endocrine Disruption

Common household products –detergents, disinfectants, plastics, and pesticides– contain chemical ingredients that enter the body, disrupt hormones and cause adverse developmental, disease, and reproductive problems. Known as endocrine disruptors, these chemicals, which interact with the endocrine system, wreak havoc in humans and wildlife. The endocrine system consists of a set of glands (thyroid, gonads, adrenal and pituitary) and the hormones they produce (thyroxine, estrogen, testosterone and adrenaline), which help guide the development, growth, reproduction, and behavior of animals, including humans. Hormones are signaling molecules, which travel through the bloodstream and elicit responses in other parts of the body.

Endocrine disruptors function by: (i) Mimicking the action of a naturally-produced hormone, such as estrogen or testosterone, thereby setting off similar chemical reactions in the body; (ii) Blocking hormone receptors in cells, thereby preventing the action of normal hormones; or (iii) Affecting the synthesis, transport, metabolism and excretion of hormones, thus altering the concentrations of natural hormones. Endocrine disruptors have been linked to attention deficit hyperactivity disorder (ADHD), Parkinson's and Alzheimer's diseases, diabetes, cardiovascular disease, obesity, early puberty, infertility and other reproductive disorders, and childhood and adult cancers.

More than 50 pesticide active ingredients have been identified as endocrine disruptors by the European Union and endocrine disruptor expert Theo Colborn, PhD. Endocrine disruption is the mechanism for several health effect endpoints. See the related sections (Cancer, Developmental and Learning Disorders, Parkinson's disease, Reproductive Health) for more information.



The Endocrine System

has shown that people with autism have certain irregularities in several regions of the brain and/or abnormal levels of serotonin or other neurotransmitters in the brain, suggesting that autism is associated with the disruption of normal brain development early in fetal development.

At publication, the database lists 5 studies linking pesticides to autism. A study published in the October 2007 issue of *Environmental Health Perspectives* shows that children born to mothers living near agricultural fields, where organochlorine pesticides, specifically endosulfan and dicofol, are applied during their first trimester of pregnancy, are six times more likely to have children that develop autism.[13]

Diabetes

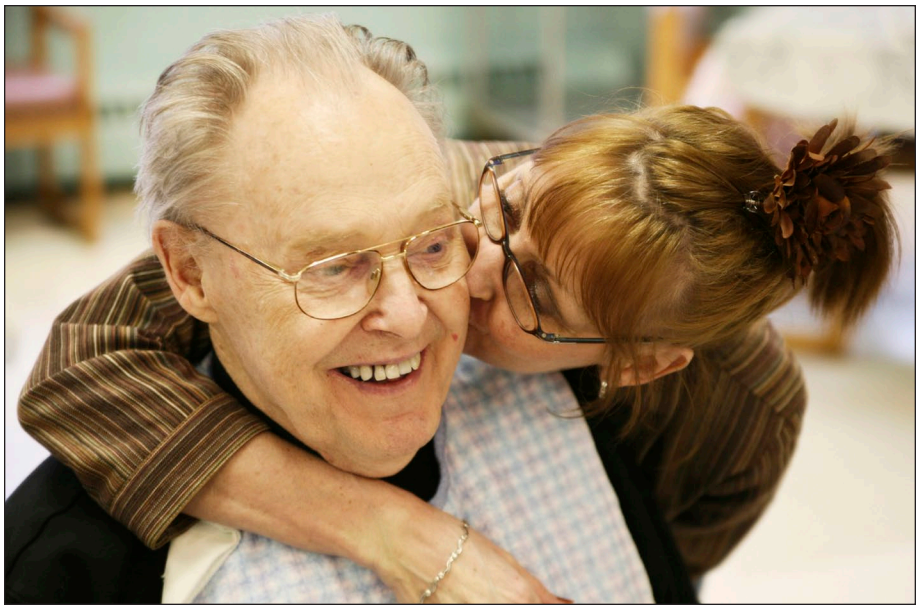
According to the American Diabetes Association, diabetes is a group of diseases characterized by high blood glucose levels that result from defects in the body's ability to produce and/or use insulin. Type 1 diabetes is usually diagnosed in children and young adults. In type 1 diabetes, the body does not produce insulin. Type 2 diabetes is the most common form of diabetes and is most common in communities of color and the aged population. In type 2 diabetes, either the body does not produce enough insulin or the cells ignore the insulin. Pesticides and other environmental factors are almost always linked to type 2 diabetes.

At publication, the database lists 6 studies linking pesticides to diabetes. Several studies show that pesticides and other pollutants can elevate the risk of type 2 diabetes by 20% to more than 100%. A study by the National Institutes of Health (NIH) finds pesticide applicators with regular exposure to pesticides are at greater risk for type 2 diabetes. Applicators that had used certain insecticides more than 100 lifetime days nearly doubled their diabetes risk.[14]

Parkinson's Disease

The second most common neurodegenerative disease, Parkinson's disease (PD) occurs when nerve cells in the *substantia nigra* region of the brain are damaged or destroyed and can no longer produce dopamine, a nerve-signaling molecule that helps control muscle movement. People with PD have a variety of symptoms including loss of muscle control, trembling and lack of coordination. They may also experience anxiety, constipation, dementia, depression, urinary difficulties, and sleep disturbances. Over time, symptoms intensify. At least one million Americans have PD and about 50,000 new cases are diagnosed each year. With less than one percent of cases caused by genetics, researchers have been looking for the potential risk factors for developing Parkinson's disease (PD). The epidemiological and toxicological evidence is repeatedly identifying exposure to pesticides, as well as specific gene-pesticide interactions, as significant adverse risk factors that contribute to PD.

At publication, the database lists 65 studies linking pesticides to Parkinson's disease. In a review of 40 epidemiological case-control studies from 1983-2005 published in the journal *Environmental Health Perspectives*, researchers evaluated the relationship between PD and pesticide exposure, finding sufficient evidence that an association exists and is strongest for exposure to herbicides and insecticides, and after long durations of exposure.[15]



Reproductive Health Effects

A robust body of literature details reproductive effects in fish, amphibians, and reptiles related to exposure to endocrine disruptors. Evidence of these effects has also been seen in wild mammals such as polar bears and seals. Environmental exposure assessments and wildlife, laboratory and epidemiologic studies show exposure to low-level environmental contaminants, such as pesticides and other chemicals, subtly undermines the ability to reproduce. The study of endocrine disruption is revealing mechanisms that show how specific environmental contaminants can alter fertility. Laboratory animal experiments have confirmed these wildlife findings.

At publication, the database lists 22 studies linking pesticides to reproductive health effects. These include decreased fertility in both males and females, antiandrogenic (demasculinizing) effects, increased rates of miscarriage, altered sex ratios and altered maturity. A 2006 study published in the journal *Epidemiology* has found inverse associations between pesticides and male testosterone levels. The study found that high levels of the urinary metabolites of chlorpyrifos (TCPY) and carbaryl and naphthalene (1N) correlate directly with low levels of testosterone in male subjects.[16] A number of epidemiological studies and animal laboratory experiments that show strong associations or linkages between infertility rates and exposure to pesticides support the conclusions of this study.

View Beyond Pesticides' full Pesticide-Induced Diseases Database at www.beyondpesticides.org/health.

Selected Citations

1 Hayden KM, et al. 2010. Occupational exposure to pesticides increases the risk of incident AD. Neurology, May 1;74(19):1524-30.
2 Salam, MT, YF Li, B Langholz, and FD Gilliland. May 2004. Early-life environmental risk factors for asthma: Findings from the children's health study. Environmental Health Perspectives 112 (6): 760-765.
3 Winchester, P., et al. 2009. Agrichemicals in surface water and birth defects in the United States. Acta Paediatrica, 98(4).
4 Nielsen, S.S., et al. 2010. Childhood brain tumors, residential insecticide exposure, and pesticide metabolism genes. Environmental Health Perspectives 118(1):144-149.
5 Teitelbaum, S.L., et al. 2007. Reported residential pesticide use and breast cancer risk on Long Island, New York. American Journal of Epidemiology 165(6):643-651.
6 Lowengart, R., et al. 1987. Childhood leukemia and parent's occupational and home exposures. Journal of the National Cancer Institute 79(1):39-46.
7 Cantor, K.P. and Silberman, W. 1999. Mortality among aerial pesticide applicators and flight instructors: Follow-up from 1965-1988. Am J Ind Medicine 36(2):239-47.
8 Osburn, S. 2001. Research Report: Do Pesticides Cause Lymphoma? Lymphoma Foundation of America. Anne Arbor, MI.
9 Settimi, L., et al. 2003. Prostate cancer and exposure to pesticides in agricultural settings. Int J Cancer 104(4):458-461.
10 Leiss, J., et al. 1995. Home pesticide use and childhood cancer: A case-control study. American Journal of Public Health 85:249-252.
11 Perera, F. et al. 2009. Prenatal Airborne Polycyclic Aromatic Hydrocarbon Exposure and Child IQ at Age 5 Years. Pediatrics, DOI: 10.1542/peds.2008-3506.
12 Bouchard, M. et al. 2009. Attention-Deficit/Hyperactivity Disorder and Urinary Metabolites of Organophosphate Pesticides. Pediatrics DOI:10.1542/peds.2009-3058.
13 Roberts EM, et al. 2007. Maternal Residence Near Agricultural Pesticide Applications and Autism Spectrum Disorders among Children in the California Central Valley. Environmental Health Perspectives 115(10).
14 Montgomery et al. 2008. Incident Diabetes and Pesticide Exposure among Licensed Pesticide Applicators: Agricultural Health Study, 1993–2003. American Journal of Epidemiology. 167(10):1235-1246.
15 Brown, T.P., et al. 2006. Pesticides and Parkinson's disease – Is there a link? Environmental Health Perspectives 114(2):156-164.
16 Meeker, JD, et al. 2006. Exposure to Nonpersistent Insecticides and Male Reproductive Hormones. Epidemiology. 17(1):61-68.

Beyond Slime

The least toxic control of slugs and snails

By Adelia Bles

Irregular holes in the leaves of your plants can have plenty of different causes, but the silvery trails of slime mean you have a slug problem. Slugs will destroy the leaves of established plants, but they prefer seedlings. They also feed on many fruits and vegetables prior to harvest, creating wounds in produce that makes it vulnerable to fungi and other diseases. Slugs can be most damaging in moist environments. To avoid desiccation slugs are most active at night or during wet weather. Slugs are closely related to snails; the main difference being the shell. A snail can barricade itself inside its shell, protecting it from drying out and from predators. While slugs do not have the protection of a shell, they also don't have its physical restraints, allowing them to squeeze through the tiniest spaces. To conserve moisture slugs will shelter in the soil or under debris during hot dry periods.

Slugs and snails are mollusks. They are more closely related to oysters and squid than insects or earthworms, so common insecticides are often useless. There is an incredible diversity of slugs and snails. Some are predatory, some herbivorous, some live on land and some are aquatic. Some are considered pests and some are considered a delicacy. If you are interested in protecting your plants instead of making escargot, there is no need to worry. Slugs and snails can be controlled effectively without any dangerous pesticides.

Moisture

The best way to prevent or control a slug or snail infestation is to reduce moisture, though it may take some time before you see results. Slugs and snails lack an insect's hard exoskeleton. Instead they require water to secrete a protective mucus or slime.

Clear away debris that may provide shelter, including wood piles, empty flower pots, and certain ground covers such as ivy. Snails and slugs may congregate in damp shady spaces, such as under a deck. These areas should be kept free of clutter and debris, and monitored regularly.

Water your plants in the morning instead of at night. On farms, using drip irrigation in addition to being efficient can also help control snail and slug populations on farms. Drip irrigation, also called trickle or micro irrigation, involves systems that slowly drip water directly on to the roots of a plant. Modern drip irrigation uses tubing or drip tape to channel water directly to crops. Compared to traditional irrigation where water is sprayed or allowed to flow over an entire field, resulting in losses from runoff and evaporation.

Trapping

Slow moving snails and slugs are easy to hand pick when they can be found. (To kill them you can drop them into a container of

Conventional Control

Is there anything more disgusting than those slimy sticky slugs? Yes there is Metaldehyde. Metaldehyde, a molluscicide or slug bait sold under the trade names Bug-Geta, Deadline, Corry's Slug and Snail Death, Slug-Fest, and Metarex, is approved for use on turf and various crops before the edible portion emerges. Like so many other commonly used pesticides it is toxic to humans, mammals, and birds. What makes metaldehyde so dangerous is its formulation. The pesticide is often mixed with food by-products such as molasses and bran to make it more attractive to slugs and snails. Unfortunately these added ingredients also make the bait more appetizing to children, dogs, horses, and other domestic animals.

Metaldehyde is neurotoxic. Symptoms of poisoning include ataxia or loss of coordination, twitching, tremors, and paralysis. Studies suggest Metaldehyde also has carcinogenic potential.

soapy water. Do not put dead slugs in the compost pile, they will give off a strong odor. Put dead slugs in a sealed container and throw them in the trash.) Trapping slugs can be as simple as providing a shady space for them to shelter during the day, such as an overturned flower pot, or board placed on the soil between plant rows. Check your traps in the morning and dispose of pests.

More elaborate traps can be bought from garden stores or online. You can also make a trap using a coffee can with a hole cut into the side about halfway up. Bury the can halfway so the hole is at ground level. Pour a few inches of beer into the can as bait. Slugs and snails are attracted to the yeasty smell, and will drown when submerged in alcohol. Yeast and water can also be used to attract snails and slugs, but they will not drown in the solution. The trap should be checked daily, and the beer solution should be changed every 4 days.

Exclusion

Slugs and snails will avoid crossing over acidic, basic or abrasive materials. Ash or diatomaceous earth can be used to create a barrier; however these materials are less effective when wet.

Copper bands or foils also create effective barriers to snails and slugs. The copper reacts with their mucus creating an electric shock. A copper band around a potted plant container will keep slugs and snails away. Just be sure there aren't any slugs or snails already in the container or you will be trapping the pest in with your plants.

Cultural Control

Slugs prefer tender young leaves. They tend to avoid plants with tough or spiny leaves. Plants with strong smells will repel snails or slugs. Ginger, garlic, mint, chives, red lettuce, red cabbage, sage, sunflower, fennel, foxglove, mint, chicory and endive may be unpalatable to them. These plants can be placed around the perimeter of your garden to prevent infestation.

Organic Pesticides

There is no need to resort to dangerous pesticides to control slugs or snails. There several organic products available, as well as numerous products you may already have in your house that can be used against slugs and snails.

Table Salt sprinkled on a slug can be very effective, but be careful, because it can also damage plants.

Caffeine is also an effective molluscicide. Scientists believe it acts as a neurotoxin. Caffeine concentrations of 1-2% are enough to kill slugs; however, such a high concentration can also damage plants. A much weaker concentration can still prevent feeding, without damaging crops. Caffeine, however, is not registered by EPA, so it is not available in commercial pesticides. A cup of instant coffee contains about .05% caffeine.

Many organic molluscicides contain Iron Phosphate. Iron phosphate when used properly is regarded as safe by EPA. In fact, it is the same compound found in vitamin supplements. However some commercially available and allowed for use in organic production can contain inert ingredients that have hazardous properties. The National Organic Standards Board is currently evaluating inert ingredients in some formulations and will be reviewing inert ingredients more broadly.

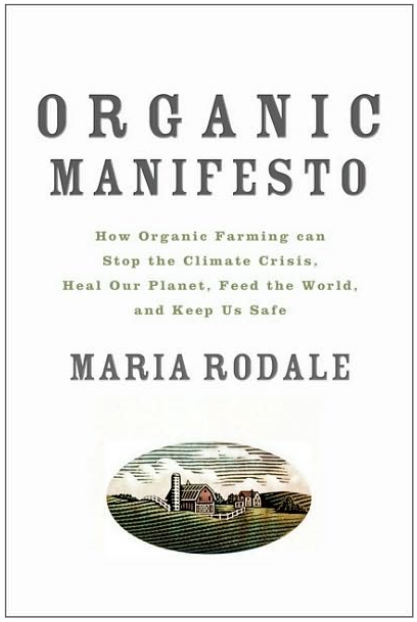
Mixing one part household ammonia with 10 parts water can be sprayed over the crown of the plant before foliage opens to prevent slug damage. If you spray on open foliage rinse with water.

For more information on least-toxic strategies for managing a wide variety of insects, plants and other unwanted creatures, contact Beyond Pesticides, 202-543-5450, or view least-toxic factsheets on the Beyond Pesticides website, www.beyondpesticides.org/alternatives/factsheets.

by Stephanie Davio

Organic Manifesto: How Organic Farming Can Heal Our Planet, Feed the World, and Keep Us Safe.

Maria Rodale, Foreword by Eric Schlosser, Rodale Press, 2010, 208pp. $23.99.



"If you do just one thing to change the world, go organic." This is the resounding message that Maria Rodale, the journalist, activist, mother and Chairman and CEO of Rodale, Inc. wants you to take away from her latest book, *Organic Manifesto*. Through interviews with government officials, doctors, scientists, business leaders, and farmers coast-to-coast, Ms. Rodale sheds new light on the state of 21st-century farming and connects the dots to get to the heart of an issue that is much bigger than most of us even realize. She examines the alliances that have formed between chemical companies that produce fertilizers, pesticides, herbicides, fungicides, and genetically altered seeds, the agricultural educational system that is virtually subsidized by those same companies, and the government agencies in thrall to powerful lobbyists, all of which perpetuate dangerous farming practices and deliberate misconceptions about organic farming and foods.

The book begins with a foreword by Eric Schlosser, author of *Fast Food Nation: The Dark Side of the All-American Meal*. He describes the book as an important tool for the organic movement which is being undercut by a "handful" of corporations that are in control of our food supply. During this time in our history where climate change and petroleum shortages threaten our nation's agricultural production, *Organic Manifesto* is a critical guide. "In a remarkably brief period of time, we have done tremendous damage to the environment and to ourselves," he explains. "Here you will find how we can start to undo it."

The first two parts of the *Organic Manifesto* detail the ways in which we are poisoning ourselves through the shortcomings of modern, chemical-intensive agriculture. Using clear and concise scientific data, Ms. Rodale shows us that all of the chemicals in our food (which also end up in our water supply) are poisoning us and our families. Cases of bacterial and viral infections in children are on the rise, asthma rates have skyrocketed, and diabetes and autism are both increasing at epidemic proportions. A vast and growing body of scientific evidence suggests that the toxic substances we are using to grow chemically engineered foods are destroying us.

The book describes not only how we are poisoning ourselves, but how we got to this point. Chemical companies have mislead consumers into thinking that not only are these chemicals safe, but that we cannot survive without them. Comparing the marketing strategy of these companies to that of the tobacco industry, she explains how they have embarked on a sophisticated and effective disinformation campaign. "Artificial" is now seen as "normal," "safe," and "conventional," she says.

If you had any doubts about the benefits of organic, this book will put an end to the confusion. Ms. Rodale offers a response to common myths about organic vs. chemical-intensive agriculture —organic food will not make you a hippie, for instance. More importantly, though, she offers evidence that organic food can feed the world and is much safer than chemical-intensive agriculture. As Eric Schlosser writes, this book is filled with her "wisdom, optimism, and common sense."

The last part of the book, "The Age of Healing," offers Ms. Rodale's hope for the future. She provides five clear and straightforward things that need to happen and lists an important task for each sector of society. She calls on the government to ban agricultural chemicals and genetically modified organisms; she calls on farmers to supply the organic demand; she calls on businesses to create innovative solutions; she calls on economists to measure strength, not growth; and finally, she calls on everyone, including you and I, to demand organic. While these are not light tasks, they are clear solutions to help heal our poisoned planet.

"Consumers have the power to change things," she declares. "Every purchase we make rewards either the good or the bad. If you demand organic—at our supermarkets, restaurants, and from the government—we can protect ourselves and our planet."

Maria Rodale also sits on the board of directors of the Rodale Institute, a 501(c)(3) nonprofit dedicated to pioneering organic farming through research and outreach. For over sixty-years, the Rodale Institute has been researching the best practices of organic agriculture and sharing our findings with farmers and scientists throughout the world, advocating for policies that support farmers, and educating consumers about how going organic is the healthiest options for people and the planet.

Triclosan: Sign the Pledge

Triclosan has exploded onto the market place in hundreds of consumer products ranging from antibacterial soaps, deodorants, toothpastes, cosmetics, fabrics, toys, and other household and personal care products. Studies are increasingly linking triclosan to a range of adverse health and environmental effects and the U.S. Food and Drug Administration recognizes the need to reevaluate its safety. At the same time, research concludes that antibacterial soaps show no health benefits over plain soaps.

Sign the pledge to not use or purchase products containing triclosan and support campaign efforts to end the consumer use of this hazardous chemical at:

www.beyondpesticides.org/antibacterial/triclosan-pledge.htm

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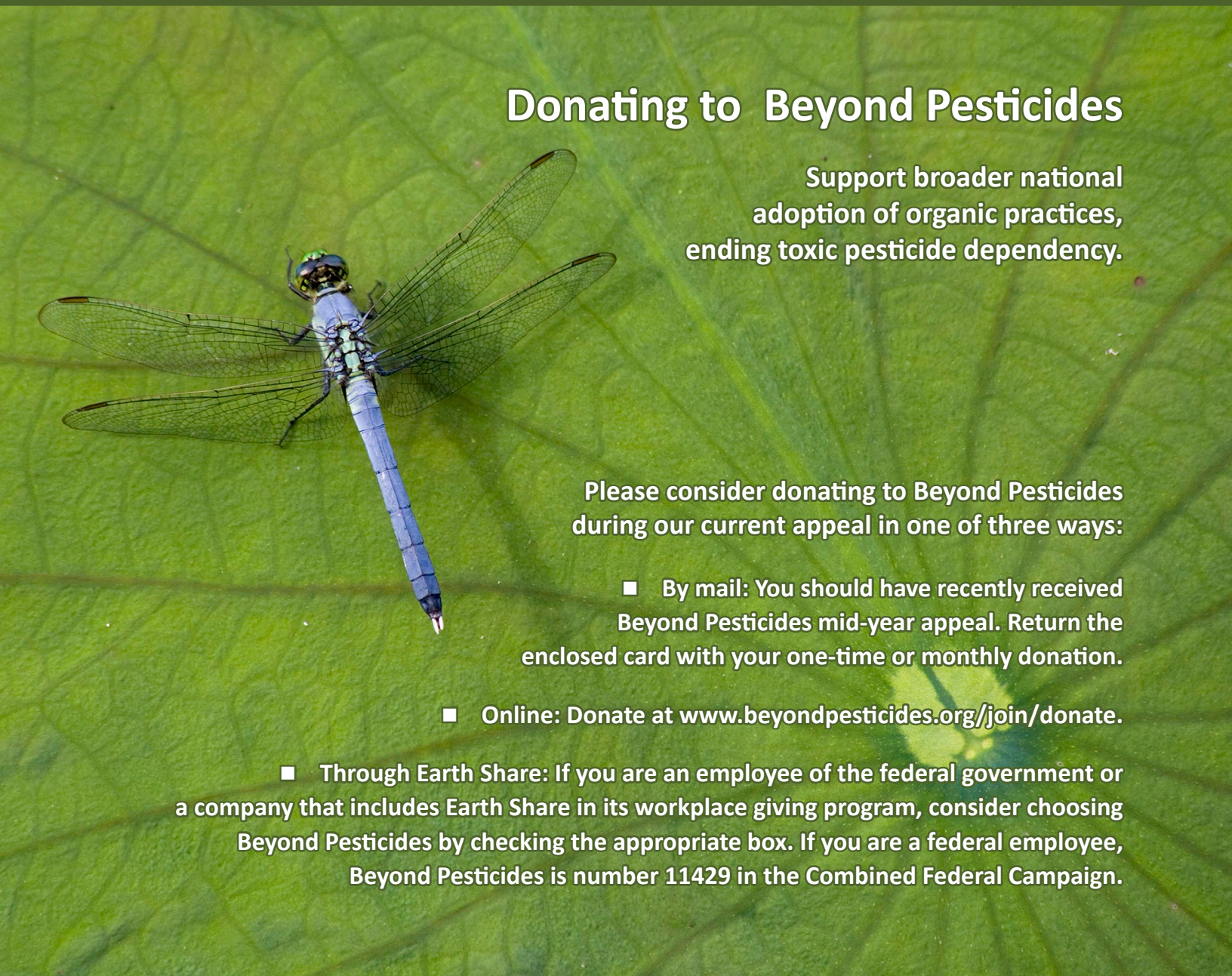

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- **Online: Donate at www.beyondpesticides.org/join/donate.**
- **Through Earth Share: If you are an employee of the federal government or a company that includes Earth Share in its workplace giving program, consider choosing Beyond Pesticides by checking the appropriate box. If you are a federal employee, Beyond Pesticides is number 11429 in the Combined Federal Campaign.**