THE PESTICIDE YOU USE TODAY CAN AFFECT YOUR FAMILY TOMORROW

PESTICIDES: THE RISKS, PREVENTION & HEALTHIER CHOICES

Pesticides are found in the air you breathe, in the food you eat, in the water you drink. They can be found on surfaces where children play. They are a health threat at home, schools, daycare centers, playgrounds, workplaces, and hospitals. They are everywhere.

But with a little care, you can protect yourself and your family from pesticides.

CONTENTS

Overview of Risks & Choices .......................................................... 2
Are Pesticides Safe? ...................................................................... 4
Who Is at Greatest Risk? ............................................................... 6
What Do I Do if I'm Exposed? ...................................................... 8
How Can I Prevent Harm From Pesticides? ............................. 11
People and Pets .......................................................................... 11
  • Food ....................................................................................... 11
  • Drinking Water ...................................................................... 12
  • Lice ......................................................................................... 12
  • Fleas & Ticks ......................................................................... 13
Indoors .......................................................................................... 14
  • Bugs ....................................................................................... 14
  • Mice & Rats .......................................................................... 14
  • Cleaning Products ............................................................... 15
  • Cosmetics ............................................................................. 15
Outdoors ..................................................................................... 17
  • Lawn & Garden .................................................................... 17
  • Golf Courses .......................................................................... 19
  • Athletic Fields ....................................................................... 19
  • Mosquitoes ........................................................................... 21
Are Pesticides in Maryland's Waterways? ................................. 25
What are Possible Long Term Injuries? .................................... 26
What Maryland Laws and Policies Can Protect Me and My Family? .......................................................... 30
  • Schools .................................................................................. 30
  • Landscaping Treated Signs ................................................ 31
  • Pesticide Sensitive Registry ................................................ 31
Appendix 1: Resources ................................................................. 33
Appendix 2: Contents and Types of Pesticides ............................ 34
OVERVIEW OF RISKS AND HEALTHIER CHOICES

WHAT ARE THE RISKS?
PESTICIDES CAN CAUSE:
- blurred vision
- diarrhea, nausea, and vomiting
- breathing problems
- headache and muscle pain

PESTICIDES ARE LINKED TO:
Diseases
- cancer
- asthma and other lung diseases
- Parkinson’s disease
- diseases of the immune system
- behavioral and neurological problems

REPRODUCTION PROBLEMS
- birth defects
- developmental problems
- infertility and low sperm counts

PESTICIDES MAY BE FOUND:
Indoors
- food you eat
- water you drink
- lice, flea and tick treatments
- cosmetic products like toothpaste, deodorants, and soaps
- cleaning products
- roach and mouse poisons

Outdoors
- decks, playgrounds, picnic tables
- lawn and garden products
- athletic fields
- community mosquito control programs
- well water
- golf courses
- insect repellents

THE GOOD NEWS!
THERE ARE SAFER CHOICES THAT WORK
You can use methods and products that
- do not include chemical pesticides and are “least toxic”
- work just as well
- are often cheaper

For:
- lawn and garden care
- managing insects and rodents
- treating lice problems
- protecting your pets from fleas and ticks
- protection from diseases carried by mosquitoes—like West Nile virus
- household cleaning and personal care products and
- wooden picnic tables, play area structures and decks

Due to the harm that pesticides can cause, it makes sense to use products that are least toxic.
ARE PESTICIDES SAFE?

WHAT ARE PESTICIDES?
Pesticides are chemicals that kill or keep away insects, rats, weeds, mold or other pests. Some pesticides can harm one’s health right away. Others can have long-term harmful health effects.

The full range of harm pesticides can do is not known. This is because few studies have looked at:
- how pesticides affect children
- what happens when people are exposed to them long-term
- what happens when people are exposed to a few different pesticides at the same time
- what happens when they combine with other chemicals or medicines in our bodies
- what happens if a person is exposed to a pesticide over and over again

“By their very nature, most pesticides create some risk of harm. [They] can cause harm to humans, animals, or the environment because they are designed to kill or [harm]… living organisms.”
— U.S. Environmental Protection Agency (EPA)

WHAT ILLNESSES OR INJURIES CAN THEY CAUSE?
We know from studies that pesticides are linked to cancer, birth defects, asthma and being sterile. See page 8 for signs of poisoning that can happen right after exposure. See page 26 for more information about long term health effects of pesticides.

Most people in the U.S. have pesticides in their bodies. In one study over 3,000 people were tested for pesticides.

It was found that:
- 90% of those tested had 5 to 16 pesticides in their bodies
- 76% had the pesticide permethrin in their bodies. This pesticide is in home and garden products, lice treatments and is used in Maryland for mosquito control
- 76% had the pesticide chlorpyrifos in their bodies. This pesticide was recently phased out for home use due to health concerns
- Most of the 6-11 year old children tested had very high levels of pesticides in their bodies. They had four times the amount thought to be acceptable by the U.S. Environmental Protection Agency (EPA)

PESTICIDES ARE IN YOUR BODY

PESTICIDES CAN’T EVER BE CALLED SAFE
It is not legal for companies that make pesticides and pest control companies to say that a pesticide is “safe.” They cannot claim it is “safe”
- even if it is registered for public use and
- even if it is used as directed

In some cases, the US EPA will register a pesticide for use even if it does not meet the US EPA safety standard for registering the product. For example, if farmers claim that they will lose crops and money if they cannot use a certain pesticide, the EPA can choose to register the product for sale.**

ADDITIONAL RISKS
Many people are not able to follow the instructions on pesticide product labels, which puts them at even greater risk. Some people simply do not follow the instructions.

*Based on a summary by the Pesticide Action Network North America (PANNA) after a review of the Centers for Disease Control and Prevention (CDC) pesticide data. The CDC data were published in the 2005 Third National Report on Human Exposure to Environmental Chemicals. See panna.org for more information
** US EPA Fact Sheet
Who is at Greatest Risk?

We are all at risk from illness linked to pesticides. But children, pregnant and nursing women, senior citizens with health problems, and people with weak immune systems are at greatest risk.

Why are Unborn Children and Babies More at Risk?

• Unborn children, infants, and children are at greater risk because they have not finished growing. Any poison in their bodies will get in the way of growth.
• Even low-doses of pesticides may cross the placenta and affect the fetus.
• Pesticides may be passed on in breast milk to the nursing baby.*
• If a woman has been exposed to pesticides, it may put her unborn child and breastfed babies at greater risk. It could cause birth defects, low birth weight, miscarriage, brain cancer, and leukemia.

Women who are pregnant or nursing should stay away from pesticides.

Children are Also More at Risk Because:

• Children eat, drink and breathe more than adults for their size and weight.
• Children play where pesticides are often applied, such as floors and lawns.
• Children put their hands in their mouths more often.
• They eat and drink larger amounts of products that have traces of pesticides. Two examples are applesauce and orange juice.

Did you know?

Most pesticides have not been fully studied for their effects on health – especially on children.

*Even though there is some risk, most doctors still say that breastfeeding is best for the infant.
What Should I Do if I Think I’ve Been Poisoned by Pesticides?

See your doctor or nurse or go to the emergency room if you have any signs of poisoning. Look at the list below. Don’t wait. Go within 24 hours after contact with a pesticide.

How Can I Tell if I Have Been Poisoned by Pesticides?

It is hard to tell. Pesticide poisoning can look like other illnesses. It can look like a flu or food poisoning. Doctors often miss it. Signs of pesticide poisoning include:

**Signs of Pesticide Poisoning**

**Digestive System**
- nausea
- vomiting
- diarrhea

**Aches and Pains**
- muscle and joint pain
- headache

**Nervous System**
- numbness
- change in vision

**Other Problems**
- very tired
- being dizzy
- mental confusion

Other signs of pesticide poisoning include:

- trouble breathing
- skin rashes
- ear, nose & throat irritation

See your doctor or nurse or go to the emergency room if you have any signs of poisoning. Look at the list below. Don’t wait. Go within 24 hours after contact with a pesticide.

**What Should I Do if I Think I’ve Been Poisoned by Pesticides?**

See your doctor or nurse or go to the emergency room if you have any signs of poisoning. Look at the list below. Don’t wait. Go within 24 hours after contact with a pesticide.

**How Can I Tell if I Have Been Poisoned by Pesticides?**

It is hard to tell. Pesticide poisoning can look like other illnesses. It can look like a flu or food poisoning. Doctors often miss it. Signs of pesticide poisoning include:

**Signs of Pesticide Poisoning**

**Digestive System**
- nausea
- vomiting
- diarrhea

**Aches and Pains**
- muscle and joint pain
- headache

**Nervous System**
- numbness
- change in vision

**Other Problems**
- very tired
- being dizzy
- mental confusion

Other signs of pesticide poisoning include:

- trouble breathing
- skin rashes
- ear, nose & throat irritation

“Medical problems caused by pesticide exposure are often misdiagnosed by health care providers.”

– Lynn Goldman, M.D., M.P.H., pediatrician, professor at Johns Hopkins University’s School of Public Health, and former Assistant Administrator of the Office of Prevention, Pesticides, and Toxic Substances, U.S. EPA.

**At the Doctor’s Office or the Emergency Room:**

✓ Tell the nurse or doctor that you were exposed to a pesticide
✓ Give the name of the product you were exposed to

✓ Your nurse or doctor may send a urine sample to the Maryland Environmental Chemistry lab. This will help them find out if you were poisoned so that you can be properly treated for a pesticide injury
✓ Your health care provider must report all illnesses related to pesticides to the county health department

**Reporting Illness or Injury Caused by Pesticides**

**As of 2004, healthcare providers in Maryland must report diagnosed or suspected cases of pesticide-related illness.**

It is the law!

The reports must be sent to the local county health department.

Please also report illness or injury that may be caused by pesticides to the Maryland Pesticide Network (MPN). This should be done by you and your doctor or nurse.


MPN will share the information it collects with doctors and nurses so that they can better understand the health effects of pesticides on their patients. It helps to get information from both you and your doctor or nurse about each health problem that could be linked to pesticides.

If you are not a Maryland resident, check with your local department of health about reporting illnesses caused by pesticides.

To learn more about pesticide poisoning, your doctor or nurse can go to www.mdpestnet.org. Click on the “kit” for health care providers.
How can I prevent harm from pesticides?

In People and Pets

Your food may contain pesticides

Eating just a few organic foods a week helps reduce the pesticides in your body.* Thoroughly wash or peel all fruits and vegetables that are not organic. Here is a list of the fruits and vegetables with the highest levels of pesticides.**

1. peaches
2. strawberries
3. apples
4. spinach
5. nectarines
6. celery
7. pears
8. cherries
9. potatoes
10. sweet bell peppers
11. red raspberries
12. imported grapes

Where can I find organic foods?
✓ At health food stores
✓ Supermarkets (in Natural or Healthy Food aisles). If they don’t carry them ask the manager
✓ At food co-ops or farmers markets
✓ Ask your cafeteria manager at school or work to offer them

While organic products usually cost a bit more, including organic food in your diet may help prevent health problems later in life.

Long-Term Pesticide Injuries

Some people become sick right after being exposed to pesticides. But most people do not know the effect on their health for years.

Long-term signs of pesticide poisoning may not show up for weeks, months and even years later. They may be linked to:
• certain types of cancer
• problems in how children grow and develop
• problems in the reproductive and nervous systems

• diseases of the lungs such as asthma
• problems with hormones and the immune system

(See p. 26 for detailed information about Long Term Pesticide Injuries)

Did you know?

About 2 billion pounds of licensed pesticides are used in the U.S. each year. Pesticide ingredients are in nearly 20,000 products.*

12 Most Contaminated***
(starting with the worst)
1. peaches
2. strawberries
3. apples
4. spinach
5. nectarines
6. celery
7. pears
8. cherries
9. potatoes
10. sweet bell peppers
11. red raspberries
12. imported grapes

*Centers for Disease Control and Prevention.

**This list was developed by the Environmental Working Group.

***To get a Shoppers Guide go to http://www.foodnews.org/walletguide.php

*Organic food is grown without pesticides.
YOUR WELL WATER MAY CONTAIN PESTICIDES

Test private well water several times each year. The level of toxins in your water may change with the season. Have it checked for pesticides, metals, and other toxins. This is very important if you have children or are planning to get pregnant.

If testing is too costly or your well is polluted, try to get your drinking water from somewhere else. It is a federal law that all city water must be tested for many toxins. But there is no law about testing private water systems that serve less than 25 people.

In Maryland: Call the Maryland State Certification Officer for Drinking Water Laboratories at (410) 537-3729 for more information on how to test your well water and how to find a lab.

SOME LICE SHAMPOOS MAY CONTAIN PESTICIDES

Risks
The U.S. EPA states that lice shampoos with pesticides should only be used as a last resort in severe cases. These shampoos have been shown to cause cancer or other problems in lab animals. Names of some pesticides you may see in lice shampoos are: lindane, malathion, permethrin and pyrethrin. Products that include these pesticides include: Kwell, NIX, Elimite, RID, A-200, Pronto, Clear, R&C, End Lice and Ovide.

PREVENTION AND ALTERNATIVES TO LICE SHAMPOOS
✓ Avoid sharing hats and combs
✓ Experts suggest using a fine-toothed metal comb for at least 12 days to remove all lice and their eggs
✓ Mayonnaise, olive oil, or products like Lice B Gone, or Hair Clean 1-2-3 can make it easier to comb out the nits

For more information go to www.headlice.org.

PROTECTING YOUR PETS AND YOU

Risks
Many flea and tick control products have pesticides in them. They may cause cancer or other health problems. As a result, they can be a threat to both pets and humans.

FLEA AND TICK PREVENTION AND ALTERNATIVES
It is best not to use chemical flea and tick dips, sprays, powders, foggers and bombs.

Less toxic methods you could use to control fleas and ticks on pets:
✓ Wash pet bedding often
✓ Vacuum often to keep down the fleas and flea eggs in your home. Change vacuum cleaner bags frequently
✓ Regularly comb pets with flea combs. Dip the comb into soapy water every time you sweep through your pet’s fur
✓ Use herbal flea and tick collars or other herbal products. These are sold in health food and some pet stores
✓ Check pets every day if they play in woody, grassy or brushy areas known to have ticks. Check your pets if they play with other animals who are often in the woods or brush
✓ Look for lumps everywhere on your pet’s body. Key places for ticks are around the head, neck, behind the ears and between their toes.

Wash your pet with non-chemical soaps that dissolve flea eggs. Just using soap and water can kill fleas if the soap is left on for about 5 to 8 minutes.

IF YOUR PET DOES HAVE TICKS:
Don’t break the ticks off! As with people, clean the area with soap and water. Apply an antiseptic like hydrogen peroxide then remove the tick with a tweezer. The tick can be killed by placing it in soapy water or alcohol. Pull the tick straight out. Don’t twist or crush it because part of the tick can remain inside and get infected.

Companies such as Nature’s Pet and Doctor Dog claim to offer effective non-chemical shampoos and treatments (please note: we do not endorse any products on the market). For more information, go online to:
• www.thegreenguide.com
• www.beyondpesticides.org.
**Reduce Pesticide Exposure Indoors**

**Keep Bugs and Mice Out of Your Home**

Pests usually enter bottom corners of doors. The following tips for sealing pests out will also save energy:

- Install or fix door strips on all outside doors. The rubber part of door strips will break down with time, so replace it if it is worn out
- Seal baseboards with caulk, especially in kitchens
- Plug holes with caulk or steel wool (use gloves!)
- Fix gaps and tears in window and door screens
- Put extra coarse steel wool in all holes larger than \( \frac{1}{4} \) inch to keep out mice and rats
- Caulk cracks around windows and doors

In houses also:

- Put rubber seals on the bottom of garage doors
- Seal holes where pipes and wires enter the foundation and siding
- Put in a chimney cap to keep animals from coming in through the chimney opening
- Caulk cracks on edge of the roof

**Risks**

Be careful! 80 percent of a person’s contact with pesticides happens indoors.* One expert states that the use of pesticide products in the home is the main source of exposure for children.** These poisons can stay in carpets, furniture, and stuffed toys for years.

**Seal Them Out**

It’s best to keep bugs and mice out in the first place. This means you must make any needed repairs to your home to help keep them out. Spring rains bring ants and cold weather brings mice and rats.

Insects and spiders can get in your home if there are gaps of more than \( \frac{1}{16} \) inch. Mice and rats can enter holes more than \( \frac{1}{4} \) inch.

*According to the US EPA.
** According to toxicologist William Pease, Professor University of California, Berkeley, School of Public Health.

**If It’s Too Late to Seal Them Out**

For the bugs and rodents that still show up that you don’t want to live with:

- Buy pest control products without chemicals. They are available at health food stores, some supermarkets and home improvement stores. Ask your local stores to carry non-chemical pest control products if they don’t already do so
- Use sticky traps, spring traps or live-capture traps for rodents

If a pest problem continues even after using the tips described above, use products that are least toxic such as:

- bait stations for insects
- soap sprays
- boric acid

To learn more about managing pests with the least toxic methods, go to “Ask the Biopestman” at www.mdpestnet.org, and www.beyondpesticides.org.

**Did you know?**

Maryland law limits the use of pesticides in public schools. Pesticides can only be used as a last resort, when all non-toxic methods and products have been exhausted or are not reasonable. (See page 30 for more information.)

**Your Household and Cosmetic Products May Contain Pesticides**

**Antibacterial or Antimicrobial Products**

Any product that says it protects you from germs may contain pesticides. Thousands of these products now exist. They kill bacteria, virus and mold. They often have pesticides called triclosan or triclocarban, which may be harmful to your health.

Triclosan and Triclocarban only kill bacteria. They do not kill viruses, which often cause colds and the flu!
Antimicrobial pesticides are often found in products such as:
- household cleaning products
- toothpastes
- deodorants
- sponges
- tissues
- hand soap
- facial products
- dishwashing liquid

Disinfectants also kill germs—they are pesticides too. For example, chlorine bleach is found in many household products. It can irritate the airways if it is inhaled. It can also be toxic if it is used with other household products that have acids or ammonia.

**Non-Chemical Ways to Kill Germs:**

- **Wash hands often for at least 10-15 seconds especially after using the bathroom, before handling food, or when you are around someone who is ill**
- **Disinfect sponges each week. Put them in boiling water for a few minutes, then microwave them for a few minutes**
- **Wash cleaning and dish rags in hot water often**
- **Over-the-counter hydrogen peroxide can be used to kill germs. (It is also used for skin cuts and scrapes. Buy a 3% concentration or less)**
- **Some essential oils, such as tea tree and pine oils are said to kill germs. They are in some cosmetic and other products. Store them out of children’s reach**

**Regular Soap Works!**

The Centers for Disease Control and Prevention (CDC) states that washing hands with regular soap and warm water is a very good way to ward off infections.*

A study of 238 households found that households using antibacterial products did not keep viruses away any better than those that did not use these special products.

To learn more about germ-fighting products go to: “Antimicrobial Products: Who Needs Them?” at www.watoxics.org/content/pdf/Antimicrobials.pdf.

**Did you know?**

Pesticides can stay in your home and in the environment for months, years and even decades.

---

**Reduce Pesticide Exposure Outdoors**

**Keep Pests and Pesticides out of Lawns and Gardens**

**Seeding:**

- ✓ Plant native grass that resist lawn disease. Check with a nursery to find out about what grass grows best in your area. You may also want to call the local cooperative extension
- ✓ Overseed lawns each year. This will help to create a dense lawn that will crowd out weeds

**Tending the lawn:**

- ✓ Aerate the lawn. This will let water, nutrients and air reach the roots of the grass. You can find lawn aerators at any hardware store. They are usually made of steel spikes attached to a small tool, sandals, or a machine
- ✓ Fertilize lawns and plants with manure, compost or a natural organic fertilizer
- ✓ Lawn mower blades should be set to 3” so the grass is not too short. This will let the grass grow longer roots and crowd out weeds. Leave a light layer of clippings to naturally fertilize the soil
- ✓ Water less often, but longer, to build deep roots
- ✓ Rake out the dense layer of grass on the soil’s surface to discourage pests.

---

**Risks**

Children living in homes where yards are treated with pesticides may be:
- up to 4 times more likely of having sarcoma (a form of cancer) and
- 3 times more likely of having leukemia.*

There are 36 commonly used lawn pesticides. A Beyond Pesticides** report finds that:
- 14 are linked to cancer
- 15 are linked to birth defects
- 21 are linked to reproductive effects
- 24 are linked to damage to the nervous system,
- 22 are linked to liver or kidney damage
- 34 can cause allergies or are irritants.

---

*See also the CDC website at www.cdc.gov


**For more information go to http://www.beyondpesticides.org/lawn/factsheets/facts&figures.htm
In Maryland, public schools can only use pesticides on school grounds after all non-toxic choices have been tried or are not reasonable.* The state of Connecticut has banned all use of pesticides on the grounds of their elementary schools!

Are you interested in starting a “pesticide-free lawn” campaign in your community or on your campus? If so, contact the Maryland Pesticide Network (www.mdpestnet.org; 410-849-3909) for a-Pesticide-Free Lawn Campaign packet. Also contact the National Coalition for Pesticide-Free Lawns at www.beyondpesticides.org/pesticide-freelawns/about/index.htm.

To learn more about pest management and lawn care companies that use less toxic products go to www.beyondpesticides.org. Click on Info Services menu and go to the Safety Source page.

These companies claim to use and sell least-toxic pest control products and methods:
- www.americanplantfood.com
- www.naturalawn.com
- www.nutri-lawn.com
- www.extremelygreen.com
- www.guarding-our-earth.com
- www.elmoreroots.com

In Maryland, public schools can only use pesticides on school grounds after all non-toxic choices have been tried or are not reasonable.* The state of Connecticut has banned all use of pesticides on the grounds of their elementary schools!

Stay away from recently sprayed athletic fields, golf courses and other treated grounds when you can. Call the manager of the grounds to find out when they last sprayed. Golf courses use about seven times the amount of pesticides used on farms! Athletic field employees, golfers and golf course employees should wash their hands before eating.

Don’t sit, lie down, or play on lawns recently sprayed with pesticides.

In Maryland, as well as some other states, pesticide companies must put up signs saying that the area was recently treated with pesticides.

Outdoor Wooden Structures May Have Pesticides

Wood preservatives are pesticides. They are used to protect wood from mold, insects and bacteria. Most wood treated with preservatives is sold as pressure-treated wood, and used in such things as decks, picnic tables, and playground equipment.

---

* For more information on this Maryland law see page X.
One of the main chemicals that was used to treat wood is CCA. Its chemical name is chromated copper arsenate. This is a form of arsenic.

**Arsenic-Treated Wood is No Longer Available for Most Common Uses**
Wood suppliers stopped using CCA to treat wood in 2003 because it is known to cause cancer. Plus it can leak for years into soil and groundwater.

**Don’t Burn Old Wood Treated with CCA**
Burning this wood puts a large amount of arsenic into the air.

**Alternatives to Pressure-Treated Wood**
You can get treated wood that does not have arsenic. One of these products is wood treated with ACQ. It should not be used in or near water because it has copper in it. Copper is very toxic to fish.

Look for products made of recycled materials. They need almost no upkeep. They don’t splinter and they last longer. Also, there are some types of wood that hold up better in all kinds of weather. These include cedar, cypress, locust, and ironwood (ipe). These woods also are very slow to decay. You can find all of these products at local lumber and home supply stores, and online.

**Protect Yourself and Your Family Around Treated Wood**

- Always wash hands after spending time on a deck, playground, or other treated wood structure
- Cover treated wood tables with a cloth to keep food and drinks from making contact
- Seal or weatherproof deck and other treated wood surfaces at least once a year
- Do not use mulch that uses treated wood
- Keep children away from wood utility poles and the soil around them. They are also treated with hazardous pesticides

**Get Treated Wood Tested for Arsenic**
- Ask your community, housing association, school or college campus administration to test structures made from treated wood for arsenic
- Test home decks and other structures made from treated wood
- Test the soil around these structures for arsenic as well

The Environmental Working Group offers wood and soil testing kits. See their website at: [www.ewg.org/reports/poisonwoodrivals/order-form/php](http://www.ewg.org/reports/poisonwoodrivals/order-form/php)

**How You Can Avoid Mosquitoes Without Using Hazardous Products**

- Permethrin, Sumithrin, (and other synthetic pyrethroid pesticides)

**Risks**

**Did you know?**
Mosquitoes are a nuisance. They can also carry diseases such as West Nile virus. However, pesticides used in Maryland and around the country for mosquito control are harmful as well

**Pesticides used for mosquito control**
- Permethrin, Sumithrin, (and other synthetic pyrethroid pesticides)

These pesticides can make lung disease such as asthma worse. Studies show that contact with low doses may be linked to Parkinson’s disease. The US EPA has rated these chemicals as a possible cause of cancer in people

- Piperonyl-Butoxide (PBO)
  PBO is mixed with the pesticides Permethrin and Sumithrin to make them more effective. The US EPA has also rated PBO as possibly causing cancer

- Naled
  is an organophosphate pesticide. This pesticide is spread by airplane to control mosquitoes in some areas of Maryland. It is rated by the US EPA as a toxin that harms reproduction and human growth. It is in a class of pesticides linked to harming the nervous system. They are now under review by the US EPA. Several pesticides in this class are already being phased out for use around homes due to health concerns

Washington, D.C. does not use pesticides for adult mosquitoes. This is because they are more toxic and may cause health concerns, such as asthma. Washington, D.C.’s mosquito control program relies on prevention and killing mosquito larvae. The pesticides used to kill these mosquito larvae are less toxic.
If Your Community Signed Up for the Maryland Department of Agriculture (MDA) Mosquito Control Program:
- You can ask MDA not to spray within 300 feet of your home. However, in the event of a public health emergency, your request may not be honored.
- Contact MDA at 410-841-5870 to sign up for the 300 foot buffer if your community is being sprayed for adult mosquitoes.

Prevention:
It is Possible to Manage Mosquitoes without Pesticides.

**No standing water**

- Mosquitoes breed in standing water. No standing water, no mosquitoes! **Even something as small as a rain-filled bottle cap can become a site for breeding mosquitoes.**
- Drain, remove, or store anything that may collect rainwater. This includes cans, containers, buckets, garbage cans and lids, potted plant containers, old tires, and toys.
- Change water in containers for birds, pets and other wildlife every four days.
- Clean rain gutters of leaves and standing water.
- Turn over unused wading pools. If the upturned outer rim of the pool holds water, empty it as well.

**Keep them out of your home**

- Use window and door screens.
- Keep window and door screening repaired.

**Outdoors**

- When outside, wear long sleeve shirts and long pants, especially at dawn and dusk when mosquitoes are most active. They are less drawn to light colored clothes.
- Plant herbs, such as catnip and rosemary that are said to keep away mosquitoes.
- Buy or build bird and bat houses for mosquito-eating purple martins and bats.

- Use large fans outdoors, as mosquitoes do not like moving air.
- Stock ponds with mosquito-eating fish, such as gambusia. But be careful. Only stock these fish in ponds with no outlets. You don’t want the fish to get out in waters where they may disrupt other fish or water life.

**Insect Repellents**

Infants under 2 months should not use insect repellents at all.

**DEET May be Dangerous to Infants and Children**

- Products with DEET (N,N-diethyl-meta-toluamide or N,N-diethyl-3-methylbenamide) are thought to work well at preventing mosquito bites. But doctors say that children should not use products that have more than 10 to 30% DEET.*

Studies show that seizures in children and other health problems may be linked to the use of DEET.

Doctors suggest that adults not use products that have more than 30% DEET.

In April 2005, the CDC suggested two DEET-free products:
1. Picardin. This product is as effective as DEET.
2. Oil of lemon eucalyptus. In two recent studies, it gave a protection time “similar” to low dose DEET products.

Avoid using DEET with other chemicals!
A study in which lab rats were exposed to DEET and Permethrin (a pesticide used in Maryland for mosquito control) found that the rats had problems with motor skills, learning and memory from their exposure to these two chemicals.

If using DEET, follow these EPA warnings:
- Follow directions when you use mosquito repellents. Use just a thin film to cover clothing or exposed skin.
- Wash off repellents with soap and water when you come inside.
- Put repellents only on exposed skin and/or clothing. Do not use under clothing.
- Never use them over cuts, wounds, or irritated skin.
- Do not apply to eyes and mouth.

---

*American Academy of Pediatrics
Put only a little around your ears. Do not apply sprays directly on your face. Spray on your hands first and then spread it on your face
• Do not let children handle repellents
• Do not apply them to children’s hands or skin. First apply to your own hands and then put it on the child’s clothing. Wash clothing after coming inside
• Do not spray in enclosed areas. Try not to breathe a repellent spray. Do not use near food

Non-Chemical Choices
Non-chemical repellents can be found in health food stores. When using non-chemical repellents you need to put them on more often than you do DEET products. Examples include:
• Herbal Armor
• Green Ban
• SUN
• Oil of eucalyptus—see p.23.

Are Pesticides in Maryland’s Waterways?

There is little recent information on pesticides in the waters of Maryland. This includes the Chesapeake Bay, the coastal bays, and the rivers that flow into them. Herbicides are the pesticides most often found in bodies of water. They are used to kill weeds and unwanted plants. Low levels of many of these toxins have been found in surface waters throughout the Delmarva Peninsula.

Also, pesticides have been found in water samples from the Choptank and Patuxent Rivers. Some of the pesticides found were banned years ago, such as DDT.

Most of the water samples had levels of pesticide below those likely to cause death to marine life. But studies show that they affect the health of fish and other water life.

Examples are:
• Atrazine: This pesticide may harm the endocrine system of animals
• Chlorpyrifos: This chemical has been shown to disrupt the sense of smell in fish. They need their sense of smell for feeding, defense and reproduction

More research is needed to find out what harm pesticides may cause aquatic life in both fresh and salt water.

*Note that MPN does not endorse any product.
**WHAT ARE THE LONG TERM PESTICIDE INJURIES?**

**PESTICIDES AND REPRODUCTION**

Studies link pesticides with:
- lower sperm counts
- higher rates of miscarriages and stillbirths
- infertility
- breast tumors, problems with ovaries and endometriosis
- cancer of the testes, prostate enlargement
- altered fetal and child development

**PESTICIDES AND RESPIRATORY DISEASE**

Contact with pesticides can make breathing problems worse. Several pesticides cause asthma and allergy attacks. There are over half a million adults and 151,000 children with asthma in Maryland. Asthma in children has greatly increased (160%) in the past 20 years. Some experts think it could be caused in part by air pollution. Polluted air often contains pesticides.

**PESTICIDES AND ASTHMA IN CHILDREN**

“People with existing respiratory problems, including asthma, allergies, and emphysema, are encouraged to stay indoors during spray events,” cautions the Maryland Department of Health and Mental Hygiene.

About five million U.S. children now have asthma. Some say that pesticides are needed to control roaches and other pests that can trigger asthma attacks. But some pesticides used to control these pests may in fact add to the asthma problem.

Children are more likely to be harmed by chemicals in the air than adults. Their lungs are not fully mature. They also have faster breathing rates because they are more active.

**PESTICIDES LINKED TO LUNG DISEASE**

These are some of the pesticides used in Maryland that may be linked to lung disease:
- synthetic pyrethroids such as Permethrin and Sumithrin
- organophosphates such as Malathion and Naled
- pyrethrins (made from chrysanthemum flowers)
- carbamates (carbaryl carbuforan)
- organochlorines such as Lindane used in lice products
- fumigants
- rodenticides
PESTICIDES LINKED TO DISEASES OF THE NERVOUS SYSTEM AND BEHAVIOR PROBLEMS

IN CHILDREN
Studies show that infants exposed to pesticides may have severe health and mental development problems. Contact with even low levels of pesticides before birth or as young children can lead to brain damage.*

Childhood problems linked to pesticides include:
- learning disabilities
- attention deficit disorders
- developmental delays
- emotional and behavioral problems

A study compared preschool children in two farming regions in Mexico. One community was exposed to heavy pesticide use. The other used little or no pesticides. The children in the community with high pesticide use had a wide range of problems. Some of these were:

- poor hand-eye coordination
- less physical strength
- memory problems
- difficulty drawing
- more aggressive and difficult behavior

BEYOND CHILDHOOD

Some pesticides can affect the human nervous system. They can have both a short and a long-term impact. Signs of these problems include:
- poor concentration
- short-term memory loss
- slower reaction time
- anxiety, depression and being irritable

Parkinson’s disease and Lewy Body disease have been linked to pesticides. One study found that people with Parkinson’s were 3 to 4 times more likely to have past contact with pesticides.

PESTICIDES AND CANCER

The US EPA has named about 100 pesticides as “probable” or “likely” to cause cancer in humans. They have named about 90 as “possible” causes of cancer. Maryland now has the sixth highest cancer death rate in the country. It is wise to keep away from all possible causes of cancer. This includes pesticides. Some pesticides are linked to cancers even at low-doses.

Studies link some pesticides to:
- non-Hodgkin’s lymphoma
- soft tissue sarcomas
- lung cancer
- childhood leukemia
- brain and nervous system tumors

One study showed that children exposed to flea and tick control products before birth have a higher risk of getting brain tumors by age 5.

Research shows that people who work with or around pesticides have higher rates of brain tumors and prostate cancer.

PESTICIDES AND THE IMMUNE SYSTEM

A strong immune system is needed for good health. It is the body’s defense system. Certain pesticides may weaken the immune system and make it hard for the body to guard against viruses, bacteria, parasites and tumors. This means a person with a weakened immune system is more likely to get an infection. It can also increase the risk of a person getting diseases that are linked to a weak immune system. Such diseases may include cancer.

Some immune system problems may be caused by contact with pesticides and other chemicals. Studies show that three of these problems are:
- Multiple Chemical Sensitivity
- Chronic Fatigue Syndrome and
- Gulf War Syndrome

*National Research Council report, “Pesticides in the Diets of Infants and Children”
WHAT MARYLAND POLICIES CAN HELP PROTECT ME AND MY FAMILY?

INTEGRATED PEST MANAGEMENT (IPM) IN SCHOOLS

This law limits the use of pesticides in and around public schools. It says that pesticides can be used only after all other non-chemical choices have been exhausted or are unreasonable. At the start of the school year all parents and school staff must be given the school’s pest control plan. They must also be given a list of pesticides that may be used during the school year.

Elementary schools

All parents and staff must be notified at least 24 hours in advance when pesticides are to be used. They must be notified within 24 hours after they were used, if it was an emergency situation. This does not include bait stations.

Public middle and high schools

All parents, guardians, students and staff have the right to sign up to be notified about the use of pesticides during the school year. If they sign up they must be notified 24 hours in advance of the use of pesticides. They must be told within 24 hours after they were used due to an emergency.

Notice about pesticide use must include some of the possible health effects of those pesticides.

Full text of law can be accessed online at www.mda.state.md.us. Type in “school pesticide.”

SIGNS FOR TREATED LANDSCAPING

Warning signs must be posted by lawn care companies for 48 hours on any turf, lawn, or landscape area treated with pesticides. This does not apply to individuals who apply their own lawn care pesticides.

Full text of law, under Title 15, Ch. 01, “Regulations Pertaining to the Pesticide Applicators’ Law,” p.102-2, .15. Posting of Signs, can be accessed online at www.mda.state.md.us/plant/regs.pdf.

PESTICIDE-SENSITIVE INDIVIDUALS REGISTRY

People who are sensitive to pesticides can register with the Maryland Department of Agriculture (MDA) for advance notice of lawn care pesticide use in their neighborhood. This includes professionally applied pesticides to a property next door, and across from or behind the person’s home.

MDA sometimes uses this list of pesticide sensitive residents to notify them when pesticides will be applied by the MDA.

INTEGRATED PEST MANAGEMENT (IPM) IN SCHOOLS
**How to Register to Get Notified**

To add your name to this list, you need a doctor’s letter stating that you are pesticide sensitive or have a condition that makes you sensitive to pesticides. (For example, if you have cancer or asthma.) Send the letter to MDA, 50 Harry S. Truman Pkwy, Annapolis, MD 21401. Call MDA at (410) 841-5710 for questions.

Full text of law, under Title 15, Ch. 01, “Regulations Pertaining to Pesticide Applicators’ Law,” p.102-6, .17 mda.state.md.us/plant/regs.pdf.

**To report noncompliance with these laws, call MDA’s, Pesticide Regulation Section, (410) 841-5710 and the Maryland Pesticide Network, (410) 849-3909. You can get more information at www.mdpestnet.org.**

**Appendix 1**

**Resources on Pesticides and Alternatives**

Maryland Pesticide Network
www.mdpestnet.org
(410) 849-3909

Beyond Pesticides
www.beyondpesticides.org
(See “Safety Source” link)
(202) 543-5450

Center for Children’s Health and the Environment, Mt. Sinai School of Medicine
www.childenvironment.org

Children’s Health Environmental Coalition
www.checnet.org/HealtheHouse
(also see the Safer Products Directory at www.checnet.org )

Environmental Working Group
(See “Shopper’s Guide to Pesticides in Produce”)
www.ewg.org

Kids for Saving Earth Worldwide
www.kidsforsavingearth.org

Pediatric Environmental Health Specialty Units
www.atsdr.cdc.gov/HEC/natorg/pehsu.html

Pesticide Action Network North America
www.panna.org

Physicians for Social Responsibility
www.psr.org

National Pediculosis Association
www.headlice.org

U.S. Environmental Protection Agency
www.epa.gov

Department of Interior (Cleaning Products for Janitors)
www.doi.gov/greening/sustain/trad.html

**Endnotes**

Complete endnotes can be found on the online version of this resource guide. Please go to www.mdpestnet.org/publications/gphandbook.html.
APPENDIX 2

CONTENTS AND TYPES OF PESTICIDES

WHAT IS A PESTICIDE MADE OF?
Pesticides contain both active and inert ingredients. “Inerts,” also listed as “other” on product labels, often make the active ingredient more effective. Some “inert” chemicals are often not listed on the product because they are considered trade secrets. These hidden chemicals may be equally or more toxic than the listed ingredients, and often make up the majority of a pesticide product. Many of these inert ingredients have not been tested for long term health effects.

COMMON TYPES OF PESTICIDES
Pesticides include insecticides, herbicides, fungicides, rodenticides and other products that kill or keep away pests, mold and weeds. Commonly used household pesticides include insect repellents, ant and cockroach sprays or baits, flea and tick sprays, pet collars, bleach, bathroom disinfectants, sanitizers, mothballs, and weed killers.

MOST COMMONLY USED INSECTICIDES
Organophosphates (OP’s) are currently the most common insecticides used in agriculture, mosquito control, homes, gardens, and in veterinary practices. OP’s include Naled, Malathion, (chlorpyrifos) Dursban, (diazinon) Spectracide and (acephate) Orthene. Developed as nerve agents in WWII, most OP’s are classified as highly or moderately toxic by U.S. EPA. Certain organophosphates have been phased out for most uses due to health concerns.

Carbamates which include (bendiocarb) Ficam, (carbaryl) Sevin and (propoxur) Baygon are widely used in homes, gardens, and in agriculture. Like OP’s, carbamates are designed to impact the nervous system of their target.

Synthetic Pyrethroids such as (permethrin) Permanone, (sumithrin) Anvil, (cypermethrin) Demon and (cyfluthrin) Tempo are a chemical version of pyrethrum, which is the extract of dried chrysanthemum flowers. Pyrethroids are widely used in agriculture, mosquito control, homes, gardens, and for treating lice. Pyrethroid use is becoming more common due to the phase out of several organophosphates.

Organochlorines: Most of these insecticides (e.g. DDT) have been taken off the market because of their adverse health effects, and their persistence in the environment, though some such as Lindane and Endosulfan are still being used.

MOST COMMONLY USED HERBICIDES
Herbicides are used in lawn care, agriculture and right-of-ways to kill weeds and unwanted plants.

Chlorophenoxy Herbicides include Dicamba, MCPP, MCPA, and 2,4-D, which is sold under a variety of brand names and is one of the most commonly used herbicides.

Roundup (contains Glyphosate) is the second most commonly used home and garden herbicide. Glyphosate is the top herbicide to cause pesticide-related illness in California, according to the California Department of Pesticide Regulations.

Paraquat and Diquat are other widely used herbicides.

Other Commonly Used Pesticides
Fumigants are used to sterilize soil and in structural pest control such as getting rid of termites.

Fungicides are widely used in agriculture and around homes and structures to control mold and mildew.

Rodenticides such as Warfarin, are widely used to kill mice and rats.
ACKNOWLEDGMENTS

The Maryland Pesticide Network (MPN) is grateful for the generous and vital support for this project from the Assateague Coastal Trust, Bancroft Foundation, Bauman Foundation, Beldon Fund, Jacob and Hilda Blaustein Foundation, Clayton Baker Trust, Educational Foundation of America, Zanvyl and Isabelle Kreiger Fund, Lucy R. Waletzky Fund and Wallace Genetic Foundation. We are also grateful to our fiscal sponsors, Beyond Pesticides and Physicians for Social Responsibility.

MPN would like to acknowledge MPN’s steering committee and everyone that provided valuable input for this guide, including the nurses, students, parents, seniors and teachers that volunteered their time for our focus groups. (See online version for detailed acknowledgement of focus groups.) We are especially thankful for the in-depth input and editorial contributions of Jay Charland, M.S., Alan Cohen, B.S., Shelley Davis, J.D., Jay Feldman, M.A., and Lucy R. Waletzky, M.D.

This guide was produced by Toni Nunes, M.A. and Ruth Berlin, LCSW-C. Designed by Peña Design, Inc.

ABOUT MARYLAND PESTICIDE NETWORK (MPN)

Maryland Pesticide Network (MPN) is a grassroots coalition of organizations in Maryland dedicated to protecting health and the environment from the hazards of pesticides and promoting safer solutions for healthy living. Founded in 1994, MPN’s diverse membership includes health care provider, consumer, environmental, parent, labor, agricultural and religious organizations.

The impact of pesticide use is a complex issue about which we will never have perfect knowledge. Therefore, the coalition’s work is based on the precautionary principle, that, “When an activity raises threats of harm to human health or their environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.”

MEMBER ORGANIZATIONS

American Academy of Pediatrics, MD Chapter; AFL-CIO, MD; American Lung Association, MD Chapter; Audubon Naturalist Society; Assateague Coastal Trust; Baltimore Physicians for Social Responsibility; Rachel Carson Council; Chemical Sensitivity Disorders Association; Chesapeake Bay Foundation; Clean Up Coalition; Clean Water Action-MD; Federated Garden Clubs of MD; Leukemia and Lymphoma Society-MD Chapter; MD Organic Food and Farmers Association; MCS Referral and Resources; MD Nurses Association; MD Assoc. of School Health Nurses; MD Interfaith Coalition for the Environment; MD League of Women Voters; MD League of Conservation Voters; MD Public Interest Research Group; MD State Teachers Association; MD PTA-Howard County Chapter; Beyond Pesticides/National Coalition Against Misuse of Pesticide; Sierra Club-MD Chapter.
“When an activity raises threats of harm to human health or their environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.”