

# PESTICIDES

## AND WATER POLLUTION

**C**ommonly used pesticides can be harmful to people, pets, and the environment. Part of the problem is the toxicity of some pesticides, but even more important is the sheer volume of pesticides used in this country every year. Much of it finds its way to our water, air, and soil. **Studies show that the most commonly used pesticides are the ones most likely to cause water pollution.**

Who applies all these chemicals? You might think that farmers are mainly responsible for pesticide problems, but more than half of California pesticide use is in urban areas — by residents, home gardeners, and pest control professionals in and around schools, businesses, and homes.

The *Our Water, Our World* program was developed in 1997 by clean water agencies in response to pollution problems caused by two of the most commonly used residential pesticides at that time — chlorpyrifos (Dursban) and diazinon. Both stormwater runoff and wastewater treatment plant discharges contained levels of these two

pesticides that were high enough to kill aquatic organisms at the bottom of the food web. In fact, in 1998 the U.S. Environmental Protection Agency (EPA) listed 85 California waterbodies as “impaired” due to diazinon.

And in 2000, because of growing concerns about the effects these chemicals have on human health, EPA announced an agreement with pesticide manufacturers to remove most products containing chlorpyrifos and diazinon from retail store shelves and to end most residential and professional uses by the end of 2004. Generally, since January 2005 professionals have virtually stopped using these two pesticides in residential areas. In spite of sales of these products being discontinued, residents may still be using old supplies — potentially causing the same problems that led to their removal from the market.

**Water quality agencies urge the public not to use pesticides that contain chlorpyrifos (Dursban) or diazinon. Instead, dispose of them at a household hazardous waste facility (see below).**

### NEW THREATS TO WATER QUALITY

Chemical pesticides designed to replace these banned pesticides are available, but substituting another toxic chemical won't help the environment. With the phase-out of diazinon and chlorpyrifos, pesticide products have either been

replaced or reformulated using other chemicals (referred to as “active ingredients”), including:

- **Pyrethroids:** Many diazinon and chlorpyrifos products have been replaced with formulations using pyrethroids. As a result, the use of synthetic pyrethroids in pesticide products has nearly tripled in just the last few years. Pyrethroids are used in hundreds of products including pesticides used outdoors on lawns or for spraying the perimeters of houses.

Pyrethroids are broad-spectrum, long-lived *synthetic* chemicals that interfere with the function of the nervous system. Designed to kill a wide variety of insect pests, (such as ants, cockroaches, and lawn grubs) they are also highly toxic to fish, aquatic insects, crustaceans, and the beneficial insects (such as ladybugs, lacewings, and earthworms), that keep pest populations under control naturally. Beneficial insects are often far more sensitive to pesticides than the pests you might be trying to kill. Once pesticides eliminate the beneficial insects, pests are free to multiply without a natural check.

Products containing pyrethroids have ingredient names typically ending in “-thrin,” including: permethrin, bifenthrin, cyfluthrin (including beta-cyfluthrin), cypermethrin, deltamethrin, lambda-



Choose less toxic products for your home and garden. Look for this symbol before you buy.



cyhalothrin, and tralomethrin (one exception is esfenvalerate). The pyrethroids resmethrin and tetramethrin are used less widely outdoors so are not as big a threat to water quality; however, they are present in aerosol products, which disperse chemicals in a way that significantly increases the risk of exposure to unintentional targets — including people and pets.

- **Malathion and Carbaryl (Sevin):** Although these pesticides have been available for many years, with the discontinuation of diazinon, their use has increased. These chemicals, twice as toxic in salt water as in fresh water, are already detected frequently in urban and suburban waterways across the country. They are also water soluble — meaning rain and over-watering can easily cause them to wash off lawns and gardens and enter storm drains and local waterways.

#### PYRETHRINS VS. PYRETHROIDS

Unlike long-lived synthetic pyrethroids, natural pyrethrins are short-lived pesticides made from chrysanthemum flowers. Though natural pyrethrins are less persistent in the environment than the synthetic pyrethroids, they are still toxic to birds, fish, and beneficial insects until they break down after a few hours in sunlight. Take steps to prevent pyrethrins from running off to a street, gutter, or storm drain.

#### WHAT SHOULD YOU DO IF YOU HAVE UNWANTED PESTICIDE PRODUCTS AROUND THE HOUSE?

If you have unwanted or leftover pesticides, do not pour them in ANY drain inside or outside your house. Do not put pesticides in the trash. Instead, take them to a household hazardous waste collection facility or event. Call 1-800-CLEANUP or visit [\[waterourworld.org/disposal\\\_info.cfm\]\(http://waterourworld.org/disposal\_info.cfm\) for times and locations in your community. Empty five-gallon or smaller containers with no free-flowing liquid may be put in the trash.](http://www.our-</a></p></div><div data-bbox=)

#### HOW CAN YOU BOTH MANAGE PESTS AND HELP PROTECT THE HEALTH OF PEOPLE, PETS, AND OUR ENVIRONMENT?

- Follow the suggestions for less-toxic pest control and *pest prevention* in the *Our Water, Our World* fact sheet series that can be found online at [www.ourwaterourworld.org](http://www.ourwaterourworld.org) and in participating stores.
- Another source of information on pest control alternatives is the University of California Statewide IPM Program at <http://ucipm.ucdavis.edu>.
- Try to keep your garden healthy and your home pest-free without resorting to chemical pesticides. Remember that when you apply pesticides, you are treating the *symptom*, rather than the *cause* of pest problems. **Physical barriers** (window screens and caulking to keep pests out), **biological controls** (introducing beneficial insects), and **cultural controls** (keeping a clean house and a healthy garden that attracts beneficial insects) are always preferable to chemical pesticides. In situations where a pesticide is necessary, however, the best products for the environment are *less toxic, less persistent, and more targeted on pests and not on beneficial insects and plants*.
- Avoid wearing insect-repellent clothing. EPA recently found that wearing clothing treated with permethrin (a synthetic pyrethroid) more than once a year could increase cancer risks.

## PESTICIDES AND WATER POLLUTION

Common household pesticides show up in treated wastewater and in local waterways, sometimes at levels that can harm sensitive aquatic life. So, water pollution prevention agencies have teamed up with participating retail stores, pesticide distributors, and manufacturers to reduce the risks associated with pesticide use. This fact sheet is part of a series of fact sheets and store displays aimed at educating residents about less-toxic pest management. For the rest of the series of fact sheets, visit [www.ourwaterourworld.org](http://www.ourwaterourworld.org). Also, look for the “Our Water Our World” logo next to products in participating stores and nurseries. See the Pesticides and Water Pollution fact sheet for information on active ingredients in common pesticides that may cause water quality problems.

Pest control strategies and methods described in this publication are consistent with integrated pest management (IPM) concepts, and are based on scientific studies and tests in actual home and garden settings. **Use suggested products according to label directions and dispose of unwanted or leftover pesticides at a household hazardous waste collection facility or event.** For more information on pesticide disposal, call 1-800-CLEANUP or visit: [www.1800CLEANUP.org](http://www.1800CLEANUP.org). No endorsement of specific brand name products is intended, nor is criticism implied of similar products that are not mentioned.

#### ACKNOWLEDGMENT

The Central Contra Costa Sanitary District originally developed this IPM outreach program.

#### FOR MORE INFORMATION

For more information, contact:

**Bio-Integral Resource Center (BIRC)**  
(510) 524-2567; [www.birc.org](http://www.birc.org)

**University of California Cooperative Extension Master Gardeners** in your area (in the phone book)

**University of California IPM website**  
[www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu)

