

Safer Pest Control Indoors & Outdoors



Oregon
Environmental
Council
It's Your Oregon



**Eco-Healthy
Child Care**

75%

of U.S. households
use some form of
chemical pesticide.

20,000

children are reported victims
of household pesticide
poisonings each year.

1,000^s

of solutions exist to control
pests without using
chemical pesticides.

50%

of lifetime pesticide exposure
occurs during the first five
years of life.

On the cover:

Carina's mom applies
a soybean oil-based
insect repellent instead
of using DEET.

A Safe Pest Control Plan

Integrated Pest Management is an action plan to prevent pests before they become a problem and to treat pests in a way that's best for people, pets, property and the environment.

- Avoid attracting pests
- Spot pests before they become a problem
- Decide how much of a pest is too much (when health and safety are at stake)
- Treat pest problems with the safest methods

Pest Management Plans Include Five Steps:

- 1** Monitor pests
- 2** Identify (if, where and when) there are problems
- 3** Uncover root causes of pest problems
- 4** Decide what action to take
- 5** Review and evaluate the plan



About Pesticides

A pesticide is any substance used to prevent, control, repel, or kill living pests like insects, plants and rodents.

In the United States, 75% of households use chemical pesticides; and the highest levels of these chemicals are measured inside the home. Some applications are used inside; others may be tracked in on shoes, waft in on a breeze after application, or linger in the air when outdoor pesticides are stored inside. Rain can carry pesticides into local streams, harming fish and wildlife.

Exposure to chemical pesticides can cause immediate symptoms including breathing difficulties, vomiting, blurred vision, headaches and dizziness. Repeated exposures to pesticides over time can contribute to asthma, cancer, reproductive harm, birth defects and behavioral problems.

Children are especially vulnerable to such chemicals as they grow and develop. They may be exposed to pesticides by playing on floors, lawns and playgrounds, eating pesticide-treated foods or by handling treated pets. Household pets are also vulnerable to chemical pesticide exposure because of their small body size and behavior.

The overuse of chemical pesticides can create pests that are resistant to chemicals, and can kill beneficial insects that pollinate our crops and eat pests.



Children are exposed to pesticides on lawns, indoors, and in the food they eat.

1 Pest Monitoring

The number one rule of good pest management is to identify pests before they become a problem. As a part of regular maintenance of your home or facility, establish a routine that includes searching likely problem areas and recording what you see. Keep an eye out for:

- **Pests and signs of pests:** trails, dead insects, droppings, webs and nests
- **Damage caused by pests:** dying plants, holes in leaves, wood shavings, partially eaten food
- **Conditions pests are attracted to:** water sources, open food containers, crumbs, open garbage, pet food dishes, debris piles next to buildings

See the appendix for a sample form you can use for keeping records.

If you suspect that you may have a problem, sticky traps can help you determine the number and species of pests. Proper identification is important. It will help you decide how best to treat pests and prevent you from eliminating beneficial insects like ladybugs and lacewings.



flickr user Netream

Sticky traps can help you identify your pest and keep track of any problems.

2 Identify Problem Pests

Once you've started your monitoring routine, you can determine:

- A. If you have a problem
- B. When that problem is occurring
- C. Where action must take place to manage those pests

Do I have a problem?

Don't expect to be free of all bugs and weeds all of the time; instead, decide how much you can tolerate — and where — before it's time to act. A colony of ants in the kitchen may not be tolerable. But outdoors, ants may be good for your soil and garden. If your monitoring reveals more than you can tolerate, it may be time to take action.

Consider these measures of tolerance:

- **Aesthetics:** My garden is dead, my walls have mildew
- **Materials:** My clothes have holes, my food is infested
- **Injuries:** My kids have stings, bites or rashes

Is it the right time to take action?

A common overuse of pesticides is “revenge” treatment: applying pesticides after the pest has done damage and moved on. Don't treat pests that are naturally on their way out. Also, be sure to identify your pest correctly so that you can research: Is it the right time in the season to treat them? Is it the right time of day or night to be monitoring? Is it the most effective time in the pest's life cycle to treat them?

Is it the right place to take action?

Broad applications such as foggers or sprays are less effective than targeting the pest where it lives and travels. Targeted treatments where pests live and travel — such as in cracks or under cabinets — are more effective and cause less risk to the life around you.



3

Identify the Source

Pests need food, water and shelter to survive. Consider these changes to cut off the life support for pests:

Eliminate shelter

- Seal cracks in walls, trim and flooring
- Install screen doors or automatic door closers
- Install door sweeps and window weather stripping
- Install moving carts and shelving units for easy cleaning
- Choose area rugs instead of carpet where possible
- Install screens over eaves and dryer vents
- Seal holes around plumbing, electrical, phone and cable access to the home
- Fill nail holes and other openings in siding (1/4" to 3/8" in diameter)
- In the yard, eliminate debris piles and rotting wood
- Keep vines, mulch and shrubs several feet away from the walls
- Place bins and other outdoor containers on racks above the ground
- Cover trash bins to keep pests out
- Clean up diseased plants and compost dead plants to reduce shelter
- Pull weeds before they go to seed and spread

Eliminate food

- Clean pet food bowls after feeding
- Clean up crumbs and dishes promptly
- Keep dry food in sealed glass containers or the refrigerator; some pests can get through plastic bags, wax paper and cardboard
- Cover garbage indoors and out
- Choose native plant species in your garden that are pest-resistant
- Mulch once a year to reduce weeds in garden beds

Eliminate water

- Fix leaks and drips indoors and out
- Route air conditioner drips away from the side of the building
- Fill low-lying areas where water stagnates
- Don't allow water to accumulate in pots, cans or storage containers
- Keep gutters free of debris
- Turn wading pools over when not in use
- Aerate ornamental pools or stock them with fish

4 Decide What You Can Do

When you have a pest problem, choose the safest effective method to remove them. Many solutions do not require toxic chemicals.

Here are some safe methods you might consider:

Physical control: Vacuuming, trapping, applying heat or cold, using garden row covers or barriers, pulling weeds or removing pests by hand.

Biological control: Using a pest's natural enemies to control pests. In the garden, you might attract insects like ladybugs to feed on pests.

Least-toxic applications: Microbial herbicides kill very specific plants. Growth regulators stop pests from becoming adults. Non-toxic dusts, soaps and oils can be used, too.

If pests cause risk to health and safety and other control methods are not effective, practice safety when using chemicals.

Choose spot applications that work: Self-contained traps may contain poison, but limit human exposure. Gel and paste may be used in cracks. Spot applications for weeds are better than broad sprays.

Read the label: Choose the right chemical for the pest, follow all instructions, and take safety precautions to limit your exposure. Don't use outdoor chemicals indoors. Don't over-apply: more is never better!

Keep people informed: Keep track of what pesticides you use and in what amounts. Post warning signs before you apply the pesticide.

No kids allowed: Choose a time and day of application that allows the most time to pass before children (and pets) are exposed to the application area.

Dispose of leftover pesticides and containers properly: Look for advice on hazardous waste disposal in your area at www.earth911.org.



Lady beetles feed on aphids and other pests. Plant dill, fennel or Queen Anne's Lace to attract beneficial insects.

5

Review Your Plan

Maybe you discovered a pest, but decided it wasn't a problem that required treatment. Maybe you practiced physical controls, or placed gel pesticides in cracks. Whatever your action, follow it with careful monitoring to ensure its effectiveness. Record the action, place and time as part of your monitoring routine. Regular monitoring will help you maintain a pest-beating program that works.



Screens may be patched or sewn with wire. Repair tears using clear silicone caulk.



Tip: Fill Holes

Pests can sneak through holes as small as the thickness of a nickel. Use caulk to patch cracks around windows and to seal holes where cables, phone wires and pipes enter your home.

Web Resources for Safer Pest Control

Managing pests

- www.beyondpesticides.org/alternatives/factsheets/index.htm
- <http://pep.wsu.edu/oregonpestsense>
- <http://oregonipm.wsu.edu/homeipm.html>
- <http://ipmguidelines.org/Home/content/Book2/CH05/default.asp>
- www.pesticide.org/factsheets.html
- www.ourwaterourworld.org/FactSheets/tabid/66/Default.aspx

Short videos about pest control

- www.healthyhomestraining.org/ipm/videos.htm

Pest management tips for child cares

- www.spcpweb.org/childcare

Storage and disposal

- www.oregon.gov/ODA/PEST/disposal.shtml

What to ask before you hire a professional

- <http://oregonipm.wsu.edu/homepcp.html>

EPA pest control guidelines

- www.epa.gov/pesticides/controlling/dosanddents.htm

An online encyclopedia of pest management information

- www.toxipedia.org/wiki/display/ipmopedia

Reading pesticide labels, storing pesticides, reducing exposure

- www.oregon.gov/DHS/ph/pesticide/index.shtml

Home remedies for garden pests

- <http://extension.oregonstate.edu/catalog/pdf/ec/ec1586.pdf>

Low-maintenance landscape design

- www.ipmaccess.com/

Healthy lawn and garden care

- www.healthylawns.org/
- www.oregonmetro.gov/index.cfm/go/by.web/id=565

Household pests: identification and treatment

- www.ipmguidelines.org/Home/content/Book1/CH04.pdf
- www.ipm.ucdavis.edu/PMG/menu.house.html

Reducing Your Exposure

Buy organic or sustainably produced food. Organic diets quickly and significantly lower children's pesticide exposure levels. Talk to farmers at the market about methods; smaller growers may use fewer pesticides, but may not have obtained organic certification.

Eat a variety of fruits and vegetables. If your produce isn't organic, eating a mix of food can minimize risk of ingesting too much of any one pesticide.

Wash your produce. Running water and a soft scrub brush will remove pesticide residues, dirt and bacteria. Commercial produce washes are only slightly more effective than running water.

Know the risk. Foods likely to contain high levels of pesticide residues include peaches, apples, sweet bell pepper, celery, nectarines, strawberries, cherries, lettuce, imported grapes, pears, spinach and potatoes. Buy these organic when possible.

Grow your own fruits and vegetables. If you grow your own vegetables in a garden, community plot or windowsill container, you'll know they don't have pesticide residue!

Use safer repellants. Soybean oil-based products such as Bite Blocker are effective and safer insect repellants. Mesh clothing is also effective. If you must use repellant with the chemical DEET, choose a 10% concentration, limit application to once per day, and avoid hands and mouth. Avoid products that mix DEET with sunscreen.

Avoid using weed-and-feed or other lawn and garden chemicals.

Weed killers and insecticides should be used only as a last resort. Spot-treatments are better than broad applications. Keep humans and pets away from application areas for at least 24 hours or longer if directed. Storing pesticides can lead to exposure; dispose of leftover pesticides at a recycling site. Find a site near you at earth911.org.

Advocate for pesticide reduction in your neighborhood and at work.

Integrated Pest Management works for schools, parks, and buildings. Ask yours if they have a good plan.

Choose an Eco-Healthy Child Care. Eco-Healthy Child Care endorsed by the Oregon Environmental Council have committed to reducing potentially harmful toxics in their facilities. See a list of endorsed child cares at www.ecohealthychildcare.org.



**Eco-Healthy
Child Care**



Tip: Choose Pesticide-Free Food

Apples are high on the list of healthy foods in the diets of U.S. children — but are among the fruit that measure the highest levels of pesticide residues. If pesticide-free apples aren't available, peel apples or scrub them thoroughly to remove residue.

Pest Tool Kit

Spray bottle of soapy water

One tablespoon of dishwashing soap in a gallon of water can be used to control a wide range of pests. Ants follow scent trails; eliminate them by wiping up with soapy spray. Small, soft-bodied bugs such as aphids, mealybugs and spider mites can be killed with soap spray. The pesticide effect doesn't linger, so you must spray insects directly. Remember: More is not better! Higher concentrations of soap can damage plants.

Bowl of soapy water

Fruit flies are attracted to bright yellow; fill a yellow bowl with soapy water to attract and trap flies. Place pet food dishes in a larger bowl of soapy water; it will act as a moat to keep ants out. A bowl of soapy water can also be used to kill slugs and earwigs.

Boric acid (Borax)

Boric acid acts as a stomach poison for ants, cockroaches, silverfish and termites, and is abrasive to an insect's exoskeleton. Sprinkle the powder in places where insects travel: crevices, behind counters, and near baseboards. Boric acid adheres to insects and kills after three to ten days. Ant bait can be made from one tablespoon peanut butter, one teaspoon brown sugar and $\frac{1}{2}$ teaspoon boric acid. Spread bait on masking tape and place (away from children and pets) where ants have been spotted. Keep boric acid out of reach of children and use it only in locations where it will not come in contact with people or animals.

Diatomaceous earth

This fine powder causes insects to dehydrate in about 48 hours, and it works well on carpet beetles, bedbugs, fleas, cockroaches, ants, earwigs and more. Sprinkle the powder where pests frequent, including under stoves, garbage cans, window frames, entrance ways, drains and in cracks. Caution: Diatomaceous earth can be dangerous when inhaled — follow instructions carefully!

Neem Oil

This natural oil can be used as a pesticide for a variety of plant pests, from aphids to fungus. Diluted with water and sprayed, Neem oil is deemed safe for use on food and non-food plants.

Vacuum cleaner

Your household vacuum cleaner with a crevice attachment can be a great tool to control pests like ants, fleas, moths, spiders and more. Add corn starch to the bag to suffocate ants and fleas. Seal the vacuum bag and throw away, or freeze the bag overnight to kill pests.

Glass canning jars

Some pests can bore through plastic and wax bags and boxes, even when sealed, to get at your flour or cereal. Prevent pests by keeping your pantry items in glass jars with rubber sealing rings.

Caulk

Caulk is used to seal cracks $\frac{1}{16}$ inch to $\frac{1}{2}$ inch that might give shelter to insects or let them into your home. Caulk around fixtures, where the wall meets the floor, and where cabinets meet the wall. Acrylic latex caulk is easy to paint after sealing cracks around windows and doors. Silicon caulk can be used on metal and plastic, stands up to temperature differences, and will seal around bathtubs, showers and sinks. Buy caulk in either a squeeze tube or as a cartridge for use with a caulking gun.

Weather strip

Weather strips and door sweeps can be used to close gaps around and under doors. Self-adhesive foam strips close gaps around windows.

Screens

Screen doors and window screens in good repair are effective for keeping insects out while allowing for ventilation. Screens can also be installed on attic vents, kitchen and bathroom vents, dryer vents, and any vents from outside to inside the home.

Steel wool

To fill gaps larger than $\frac{1}{2}$ inch (such as around radiators and pipes), stuff gaps with soap-free steel wool. Follow up with joint compound or spackle.

Boiling water

Pour boiling water on ant hills to wipe out a colony. Boiling water will kill bacteria in sponges and on wooden cutting boards. To kill fruit flies and drain flies, pour $\frac{1}{2}$ cup of baking soda in the drain followed by a cup of vinegar. Let it fizz for five minutes and then chase it with boiling water.

Common Pests and Prevention

Wood pests

Example: Carpenter ants, damp wood termites and subterranean termites

Avoid dense shrubbery and debris near your home. Get rid of stumps and rotting logs. Keep an eye on places where there is wood-to-soil contact around your home: landscaping timbers, fence posts or wood siding. Keep gutters clean. Ensure good ventilation in your crawl space. Carefully inspect firewood before bringing in to your home.

Clothes eaters

Example: Clothes moths and carpet beetles

Clothes moths and beetles are attracted to places where hair, fur and lint accumulate, so vacuuming is key. Vacuum cracks in flooring, baseboards, shelves, drawers and closets, and behind furniture. Vacuum air ducts and vents, drapes and furniture. When battling infestation, discard or freeze the vacuum bag to kill pests. If you have items that you can't freeze, dry clean or launder, place the item in a heavy duty plastic bag with dry ice and let sit for four days to kill all life stages.

Pantry pests

Example: Meal moths, flour moths, sawtooth grain beetles and cupboard beetles

These species live on stored grain products or dry goods like powdered milk, candy, sugar and cereal. They can enter your home in dry food or pet food. To prevent infestation, you can store dry goods in the freezer for a week before placing in the pantry. Some pests are not deterred by bags and boxes, so storing dry goods in sealed glass containers can help. When you do have an infestation, remove the food source and vacuum thoroughly in cracks and crevices.

Wasps

Wasps aren't all bad — some will help you control pests by eating

plant-feeding insects and nuisance flies. But keeping your food and drinks covered, sealing garbage cans and disposing of ripe fruit will keep them away from humans when outdoors. Avoid wearing perfume or bright colors outdoors if wasps are a nuisance. Don't swat a wasp! They release a chemical that attracts nearby wasps. You can also make a simple trap from a 2-liter soda bottle. Cut off the top portion of the bottle, about $\frac{1}{4}$ of the way down. Fill the bottle with soapy water and turn the top portion upside down, like a funnel, into the water. Coat the entrance with sweet jam for bait. Non-toxic commercial traps and baits are also available.

Slugs & snails

Slugs are attracted to beer. Create a slug trap by burying a shallow, wide container such as a yogurt container so it is level with the soil. Fill it part-way with beer. Slugs will crawl in and drown. You can also place a ring of eggshells, sand, diatomaceous earth or other dry abrasive material around a plant to keep slugs away.

Lawn

Weeds occur in every lawn; they become a problem when turf is unhealthy. Most lawns are best mowed at $2\frac{1}{2}$ inches; mowing too short increases weed invasion. Leaving grass clippings on your lawn is good fertilizer. Lawns should be light green; a blue-green lawn is over-fertilized, leaving it vulnerable to pests. Control occasional weeds by hand-pulling before they go to seed and spread. If weeds have completely taken over a small area of your lawn, consider replacing with landscaping using native plants, or with grass alternatives such as an "eco-lawn."

Garden & landscape

Covering exposed soil with a layer of organic mulch reduces weeds and retains moisture. The mulch layer should be at least two inches thick. Wood chips or compost make effective and environmentally friendly mulches. Prune plants to remove diseased, damaged, or dead wood that encourages disease. Use landscape edging to help control undesired plant spreading.



Mulch around plants to protect soil, retain water and discourage weeds.

Pest Inspection Checklist

Take note of the number and extent of:

- Pests, trails, dead insects and droppings
- Holes in leaves, wood shavings and partially eaten food
- Wet areas, open food, open garbage and pet food dishes
- Mulch & debris, holes, cracks and shelter for pests

Kitchen	Pests	Signs & damage	Conditions for pests
Dishwashing area			
Garbage area			
Under counters			
Under appliances			
Pantry			
Counter tops			
Sink & drain			
Drawers			
Cabinets			

Bathroom	Pests	Signs & damage	Conditions for pests
Under sink			
In sink & drain			
In storage areas			
Corners			
Under counters			
Shower & tub			
Overhead lights			
Drawers			
Near toilet			

Play/Living/ Bedroom	Pests	Signs & damage	Conditions for pests
Cupboards			
Desks			
Overhead lights			
Corners			
Under & behind furniture & cushions			
Under rugs/carpet			
Overhead lights			
Drawers			
Closets			

Garden/Play- ground/Yard	Pests	Signs & damage	Conditions for pests
Windows & screens			
Trees & shrubs			
Lights			
Garbage & recycling bins			
Lawn			
Gutters			
Covered areas			
Garden			
Food areas			
Eaves & walls			
Play equipment			
Pool or pond			

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