

## Are you *polluting* without even knowing it?

**D**id you know that your gardening practices and pest control methods may be polluting our ocean, creeks, lagoons, and even the San Diego Bay? Pesticides are one of the leading contributors to water pollution in San Diego County. When it rains or when you water your garden or lawn, the runoff transports pollutants from your yard to the storm drain system. The storm drain system delivers the polluted water into creeks, lagoons, bays, and the ocean, where it can cause harm to fish and their habitats. Pollution can even enter our drinking water supply! It is important to realize that what you do at home CAN affect water quality downstream. Whether your home is two blocks or twenty miles from the bay, you may be a contributor to water pollution.



San Diego Bay is home to a variety of marine mammals, sea turtles and over 600 species of fish and birds—many of which are rare or endangered. It also contributes greatly to our local economy by helping sustain our

maritime and recreational industries. Using IPM strategies at home will help prevent polluted water from entering the bay and coastal waters.

**YOU** can make a positive difference by protecting our precious coastal waters for future generations to enjoy.



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# Preventing Stormwater Pollution

*A Guide to  
Integrated Pest  
Management*

## What is IPM?

**I**ntegrated Pest Management (IPM) is a strategy that focuses on long-term pest control using environmentally friendly techniques. The theory behind IPM is that utilizing the natural relationships between plants, insects, and other organisms is more effective than relying on traditional chemical pesticides.

IPM is successful because it helps to keep your garden in balance, similar to what occurs in nature. An important part of an IPM strategy is making sure your plants are healthy, because healthy plants resist pests and diseases.



IPM encourages the use of helpful insects and other less toxic pest control methods to eliminate pests naturally. Contrary to popular belief, a few pests are okay! Knowing how to control your garden area when there are too many pests is key to successful IPM.

## How can I use the IPM approach?

IPM begins before the first plant is planted. It is important to know your garden so that the plants you choose are right for your location. Research your garden soil conditions, watering and drainage needs, and the amount of sun and shade it gets. Spend time at your local nursery so you can make wise choices when shopping for plants or selecting pest control methods. With a little practice, you will be using IPM without even realizing it...



*Your plants and  
the environment  
will thank you!*

# How to use the IPM Approach

# Pest control and Elimination

# What's so bad about Pesticides?

# Who to Contact



The most useful IPM tip is to KEEP YOUR PLANTS HEALTHY. Healthy plants resist pests and diseases. Proper watering, soil, and sunlight all create the ideal environment for beautiful, healthy plants.

## Plant Selection

Selecting appropriate plants is a simple, cost-effective way to utilize IPM. Become familiar with the plants at local nurseries to determine which will work for you.

- Choose plants best suited for your soil and climate.
- When available, select plants with resistance to common pests.
- Buy drought tolerant or native plants when possible.
- Research plant companions—certain plants naturally repel pests.



**Our Friendly Companions**

- Marigolds repel whiteflies and cucumber beetles.
- Nasturtium repels squash bugs and whiteflies.
- Mint discourages the presence of ants.

## Plant Placement

Consider your garden layout before planting to maximize the benefits of your surroundings.

- Know the sunlight/shade requirements of your plants before planting and select appropriate locations.
- Encourage dense ground cover or use mulch for weed reduction.
- Don't plant in areas where pest problems are likely to develop.
- Space out plants for better air circulation.
- Plant a variety of plants in each area—it will be harder for pests to build up in one location.

## Irrigation Practices

Receiving the right amount of water is vital to the health of a plant. Incorporate IPM into your lifestyle by practicing efficient watering habits.

- Do not over water.
- Make sure your irrigation system is functioning properly.
- Use a "cycling pattern" to encourage deep watering with less runoff (see lawn care section of [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu).)
- Water during cooler times of the day, such as morning.

Several methods of pest control are currently available as alternatives to pesticides. They are easy to use, more effective, and usually cost less than sprays or repellents. Learn to recognize and use the methods available to you.

## Beneficial Organisms

Many organisms actually help control pest populations. Learn to identify the beneficial organisms living in your garden. Encourage them to stay around by choosing plants that provide them with pollen, nectar, and shelter.

- The bacteria, *Bacillus thuringiensis* (Bt), is useful for eliminating caterpillars from your garden. Check your local nursery for availability.
- A ladybug can consume over 5,000 aphids in its lifetime! Attract them by providing plants like goldenrod and morning glory vines.
- *Trichogramma* wasps are beneficial because they lay their parasitic eggs within the eggs of certain pests.
- Toads feed on slugs, cutworms, and many beetles. Create a toad house by propping a flat rock at an angle over some loose soil.



## Physical Removal

Some of the easiest ways to control insects are to use physical controls.

- Visually inspect plants and remove larger insects by hand.
- Spray infested plants with a strong stream of water to remove small insects.
- Use barriers such as fencing, screens and copper tubing (for snails and slugs) to deter pests.
- Don't let weeds go to seed—this creates more weeds later.

## Recipes for Success

Items commonly found in your kitchen also make effective natural pest deterrents. Check out these useful recipes to cook up a bug-free environment.

### Garlic/Pepper Spray

The taste and odor of this spray repels several common garden pests.

- 7 cloves garlic
- 1 Tbsp. powdered cayenne pepper
- 3 c. hot (not boiling) water

Crush garlic and place in a heat-proof container. Add cayenne and water. Mix well. Allow mixture to steep for 2-3 days. Strain and pour into a hand-held sprayer. Spray on infested plants once a week. (Use care—cayenne pepper can cause skin and eye irritation.)

### Baking soda spray

This spray effectively controls black spot and powdery mildew, both common plant diseases.

- 1 1/2 Tbsp. baking soda
- 1 Tbsp. vegetable oil
- 1 1/2 gallons plus 1 c. warm water

Combine baking soda and oil in 1 cup of warm water. Stir until dissolved. Add baking soda mixture to remaining water; stir until blended. Pour into sprayer and use immediately.

## Chemical Alternatives

There are several chemicals that are less toxic than your common chemical treatments. Natural oils and soaps can often be just as effective as traditional pesticides with less environmental impacts.



### Did You Know?

Diazinon has been proven to cause severe environmental impacts. Please discontinue use and properly dispose of unused portions at a household hazardous waste collection facility.

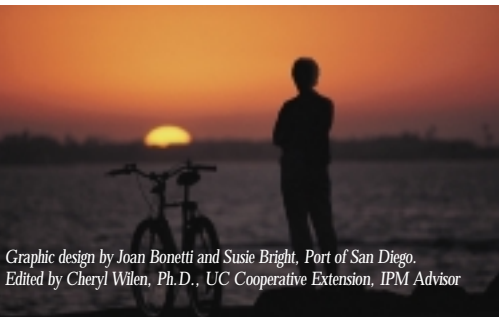
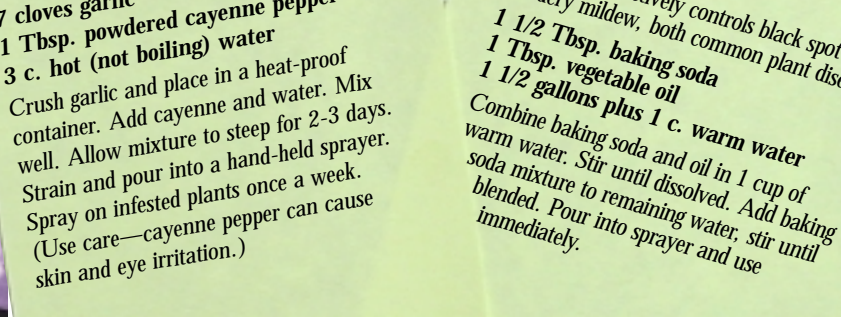
Pesticides are the leading cause of water pollution in San Diego County. It is important to realize that pesticides can have detrimental impacts on your health and the environment. Please avoid pesticides if possible!

- The chemicals in pesticides remain active long after they have done their job in your garden.
- When pesticides are applied, they infiltrate our soil, air and water reserves. Pesticides used near water sources can harm aquatic life and destroy natural ecosystems.
- Toxic substances in pesticide sprays cause health problems ranging from skin irritation to cancer.
- Pesticides not only kill pests, they may kill beneficial organisms too.
- Pests exposed to excessive pesticides can build up resistance over time, just as humans build up resistance to antibiotics.

## If you must use pesticides

- Use only recommended amounts. Over-application does not mean less pests.
- Don't apply pesticides if rain is in the forecast.

When good sprinklers go bad.



## Misuse of storm drains:

City of SD Stormwater Program . . . . .(619) 235-1000  
Port of San Diego . . . . .(619) 686-6254  
San Diego BayKeeper . . . . .(619) 758-7743

## Report a spill or discharge into San Diego Bay:

Coast Guard . . . . .(619) 295-3121  
Harbor Police . . . . .(619) 686-6272

## Hazardous waste disposal:

County Hazardous Materials Specialist . .(619) 338-2231  
For collection facility locations and operating hours:  
- County of San Diego toll-free hotline (877) 713-2784  
- Within the City of San Diego limits (858) 694-7000

## Pest and pesticide information:

U.C. Cooperative Extension . . . . .(858) 694-2845

## Landscaping assistance:

San Diego County Water Authority's  
FREE Professional Assistance for  
Landscape (PALM) Program . . . . .(800) 271-0800

## Information resources:

Pesticide Action Network . . . . .www.panna.org  
IPM Program . . . . .www.ipm.ucdavis.edu  
UC Cooperative Extension . . . . .http://cesandiego.ucdavis.edu  
General gardening info . . . . .www.mastergardenersandiego.org  
Hazardous waste disposal . . . . .www.sdcounty.ca.gov/deh/hmd

## Landscape calculator for water-wise irrigation:

[www.sandiego.gov/water/conservation](http://www.sandiego.gov/water/conservation)