

# Stormwater Management

Stormwater runoff is the greatest threat to water quality today. According to the U.S. Environmental Protection Agency (EPA), 40% of U.S. waterbodies do not meet water quality standards, and the leading source of water quality impairment is polluted stormwater runoff.

**Definition:** Stormwater runoff is rainwater and snowmelt that does not infiltrate into the ground (because it lands on built or paved surfaces), but rather moves over the ground toward a lower elevation and into streams or other receiving waters.

Under natural conditions, most rainwater seeps into the ground and is naturally filtered as it recharges ground water supplies. Impervious surfaces, such as roads, parking lots and rooftops, prevent natural infiltration and thereby increase stormwater flow over land.

Sprawling construction of buildings, roads, parking lots and other impervious surfaces generate increased stormwater runoff. As runoff volumes and velocities increase from new construction, water quality problems such as habitat alteration, damage to aquatic plant and animal populations, sedimentation and increased water temperatures become more pronounced.

According to the EPA, the leading source of pollution in surface drinking water supplies is polluted rainwater runoff. Many pollutants are found in legal, commonly used household products – cleaning chemicals for our homes, oil and gasoline for our vehicles, pesticides and fertilizers for our lawns, and pharmaceuticals for ourselves.

Please help protect our water supplies by making sure these potentially harmful products are used only in limited quantities when necessary, and that they are disposed of properly.

## Simple Household Tips to Reduce Stormwater Pollution

### Use organic lawn and gardening practices

Landscaping and gardening practices can harm water quality. Pesticides, herbicides and fungicides are chemicals that pose risks to human health and the environment. Overuse of fertilizers containing phosphorous and nitrogen can impair waterbodies by causing “eutrophication,” a condition where high levels of nutrients cause algae blooms, which in turn reduce the level of dissolved oxygen available in the water supply and can cause wildlife to die. Vegetation removal and the preference for lawns increases stormwater runoff and can lead to the loss of important wetlands and riparian buffer areas, expose soils, and cause erosion and sedimentation.

Fortunately, there are simple things you can do to reduce the use of potentially harmful chemicals. Go organic! You can also use landscaping and gardening techniques to control stormwater runoff, capture and infiltrate other pollutants washing off impervious surfaces.

### Reduce use of Pesticides, Fertilizers and Herbicides

- Plant pest-resistant, native species.
- Rotate garden crops to reduce infestation.
- Use mulch and time plantings to avoid peak infestation periods.
- Hand pull weeds.
- Use biological, mechanical or botanical controls as needed for particular pest problems.

### **Follow these Least Toxic Methods of Pest Control**

- Home remedy: 1 teaspoon dish liquid to 16 oz. of water.
- Spot treat affected plant or plant parts.
- Integrated Pest Management (IMP) is not necessarily organic and allows use of chemicals as a last resort. While Riverkeeper discourages the use of chemicals, IMP programs can provide a wealth of information on organic options.
- If you decide to use pesticides, choose those that pose the least threat to water quality and public health (e.g. insecticidal soaps, horticultural oils, boric acid and *Bacillus thuringiensis* (BT)).
- READ AND CAREFULLY FOLLOW THE DIRECTIONS, USAGE RESTRICTIONS AND HEALTH AND ENVIRONMENTAL PRECAUTIONS!

### **Limit Use of Fertilizers**

- Test soils before applying fertilizers.
- Use compost (grasscycle) to reduce garden waste and reuse available nutrients.
- Apply sparingly (no more than 1 lb. of N/1,000 sf./year).
- Use P-free or low-P fertilizers.
- Use slow-release, organic fertilizers.
- Limit application on areas where the potential for water contamination is high (e.g. sandy soils, steep slopes, compacted soils).
- Never apply fertilizers when the ground is frozen or when there is a likelihood of rain.
- Don't over water lawns (nutrients wash out of soils).

### **Maintain Vegetated Buffers**

- Establish "no mow" buffer zones around wetlands and waterbodies.
- Minimize lawn/turf areas and use native, low-maintenance plantings.
- Cut lawns no shorter than 3" to establish deep roots.

### **Control and Treat Stormwater Pollution**

- Rain barrels irrigate gardens while capturing pollutants that wash off roofs.
- Use mulch instead of impervious plastic coverings to increase absorption in bare areas.
- Plant terraced or sloped rain gardens to directly capture roof runoff.
- Plant vegetated swales capture and treat stormwater along curbs and roads.
- Green roofs have numerous benefits for homeowners and the environment.

### **Reduce the use of and properly dispose of household chemicals**

The chemical compounds contained in everyday household products – old electronics and appliances, cleaning products, paints and solvents, used motor oil and antifreeze, batteries, pesticides, and medicines – are hazardous to human health and the environment. The US Environmental Protection Agency (EPA) reports that Americans generate 1.6 million tons of hazardous household waste each year. Exposure risks arise when products are not used and disposed of properly. Too frequently, liquid products are washed down sinks and toilets, poured into storm drains, or even dumped on the ground and pollute our environment. Solid wastes that are thrown in household garbage are transferred to landfills where toxins become concentrated and leach into our environment. These practices pose risks to human health by contaminating drinking water supplies, and damage both land and aquatic environments for all life.

- Use non-hazardous alternatives for plant sprays, cleaners, polishes, preservatives, and pet products.
- EPA provides simple recipes for homemade alternatives involving common products like lemon juice, vinegar, baking soda, and plant oils.
- Limit product application and use chemical products only when absolutely necessary.
- Reuse and recycle hazardous household products when practicable.

### **Properly Dispose of Pharmaceuticals**

Pharmaceuticals including prescription and non-prescription drugs, steroids and hormones – are also household pollutants that are released into the environment through wastewater treatment plants and household septic systems, contaminating drinking water wells and stream base flows. A recent study of organic wastewater contaminants in U.S. streams included 11 sampling sites in the Croton watershed. All 11 sampled streams contained detectable levels of human pharmaceutical compounds. Improper disposal of household hazardous wastes includes pouring them down the drain or on the ground, into storm sewers, or in some cases putting them out with the trash.

- There are many take-back drug programs being implemented across the country. Look for one in your area. Call your local stormwater officials or Riverkeeper to learn more.
- The other option for discarding medications is to take them to your local hazardous waste facility or hazardous waste clean up day location.

Source: <http://www.riverkeeper.org/get-involved/minimize-your-impact/watershed-pollutants/>