Groundwater Protection

GARAGE
Never pour gasoline or motor oil onto the ground, into a storm drain, or into your septic system. One gallon of oil can contaminate a million gallons of water. Also, motor oil picks up heavy metals, such as lead, as it circulates through a vehicle’s engine. If you change your vehicle’s oil yourself, store used oil in a sturdy, well-marked container. Take it to a gas station or a business that recycles motor oil.

Antifreeze contains ethylene glycol, a substance poisonous to humans and pets, or the less toxic propylene glycol. If you have a septic tank, do not pour antifreeze down the drain as it can kill the beneficial organisms in the system. Diluted antifreeze can be processed by some community sewage treatment plants, but check with your system operator first.

KITCHEN/BATH
Products, such as furniture polish, metal polish, and nail polish remover, should never be poured down the drain or placed in the garbage. It is safe to place empty oven cleaner containers in the garbage.

BATTERIES
Dry cell batteries for use in portable radios or remote controls often contain mercury or cadmium. Batteries should never be thrown in the trash. Use rechargeable batteries or electrical adapters when possible. Automobile and other wet cell batteries often contain lead and sulfuric acid. These batteries can be recycled.

PAINTS
Oil-based paint consists of pigment and solvents, such as petroleum distillates, that are hazardous substances. If paint has completely dried in its container, it may be put in the garbage. Don’t rinse paint brushes and containers where wastewater can run into a storm drain. Whenever possible, use latex paint that has a water-based solvent.

FERTILIZERS/PESTICIDES
Be very careful using, handling, storing, or disposing of pesticides and fertilizers. Most chemical pesticides contain toxic substances that can result in both immediate and long-term health effects. Whenever possible, use organic compost material.

SEPTIC TANK
Leaky or faulty septic tanks are one of the most common sources of groundwater contamination. Do not pour hazardous or toxic waste down drains or toilets. Even small amounts can destroy the biological system that breaks down waste, then drain out into the groundwater. Make sure your septic tank is routinely inspected and pumped out, if necessary. Do not drive over the tank or the adjacent absorption field.

When rain and snow fall, some water flows into streams, lakes, and oceans, and becomes surface water. Most precipitation, however, either evaporates or seeps deep into the soil, eventually becoming groundwater. Water is the universal solvent, picking up pollutants on its way to the aquifer from which we draw our drinking water.

Some contamination can be traced to hazardous substances we use around our homes. If dumped down the drain, flushed down the toilet, or poured on the ground, these substances can contaminate the groundwater supply, and once an aquifer is polluted, it is expensive and difficult to clean up.

If you purchase products containing hazardous substances, buy only as much as you need, and use it up completely, give it to someone else to use, or save it for hazardous waste collection.

A comprehensive story on household hazardous waste is on the back of this poster.
In your garage or basement right now, you probably have a few containers of paint, some old lawn fertilizer, and perhaps a bag of antifreeze. Elsewhere in your house, you may have used polish, a can of bug spray, and spent batteries.

Sooner or later, you need to dispose of these and other household products that may contain hazardous or toxic substances. In fact, the U.S. Environmental Protection Agency estimates that the average American disposes of approximately one pound of such waste each year.

If dumped down the drain, flushed down the toilet, or poured on the ground, these substances can contaminate the groundwater supply, as well as your drinking water or your neighbors’ drinking water.

What is groundwater?

Water that is deep and far below the earth’s surface is called groundwater. Aquifers are underground reservoirs of groundwater.

When buying a hazardous product, buy only as much as you need. This will eliminate the need to dispose of excess amounts. The consumer should also consider purchasing safer, alternative products whenever possible.

“Hazardous products are hazardous not only when you dispose of them, but in their production, use, and storage,” Dewey says. In addition, it is potentially harmful to the environment, as well as to your own indoor environment.

The remainder of this article deals with the types of hazardous materials used around the home, why they are dangerous, and how to dispose of unwanted amounts.

Information on this poster may not be applicable to every community as regulations and environmental conditions vary. Check with your local wastewater treatment plant or county solid waste official before disposing of any hazardous substance.

Protection

The aquifer is defined as the “water table.” Water resides within soil pores or in cracks between rock particles. The remainder seeps into the soil eventually becoming groundwater.

Many kitchen and bathroom cleaning products can be safely disposed of by pouring them down the drain with plenty of water or placing them in the garbage.

Window cleaners, drain cleaners, disinfectants, and nail bowl cleaners can be poured down the drain if diluted. Damply only in small amounts, especially if your house has a septic system. (Some products should be burned instead. For instance, never mix products containing bleach with those containing ammonia.)

Empty soup containers can be placed in the garbage, as can high-volume, large packages, such as fertilizer, polish, metal polish, and nail polish remover. Never pour it down the drain or placed in the garbage. They may contain petroleum distillates and other hazardous substances. These products are used specifically designed, given to someone who can use them, or saved for a community hazardous waste collection.

There are many alternatives to hazardous household products. A number of organizations provide lists of alternative, safer products. The Penn State University Cooperative Extension, for instance, recommends a mixture of baking soda and vinegar to clean silver.

Garage

Some of the household products that make the “tart” of the planet is in our own homes,” said Sarah Dewey of the Household Hazardous Waste Project, part of the University of Missouri Extension System. “Pay attention to the things you bring into the home.

When you dispose of a product, you should read product labels before buying to determine what substances they contain. When buying a hazardous product, buy only as much as you need. This will eliminate the need to dispose of excess amounts. The consumer should also consider purchasing safer, alternative products whenever possible.

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Community Groundwater Protection

The diagram depicts the zones beneath the earth’s surface. They are, in descending order: the “partially saturated” zone, the “saturated” zone, and the “bedrock” zone. The “unsaturated zone” is the layer of soil and rock through which water percolates.

Groundwater is drawn from the aquifer to a municipal treatment facility where it is treated, stored, and placed in a water tank above the town until needed.

Pollution entering the soil and the water that leaches from the sources, such as landfills, leachate systems, underground storage tanks, or home lawn care, can contaminate the aquifer and any associated community or individual wells.

Like surface water, groundwater is constantly on the move. Groundwater, however, moves very slowly—from feet per day up to a few miles per year depending on the type of soil and rock. What is poured on the ground today can end up in drinking water many years later.

Groundwater contamination depends on the surface in streams and springs, and a contaminated aquifer can pollute surface water supplies.

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Paint

Paint contains primarily pigment and solvent. While latex paints use a solvent, other types of paint may include solvents, mineral spirits, and xylene. Latex paints, however, may also contain other toxic substances, such as ethylene glycol or acetate. As with other potentially hazardous household products, paint can be neutralized or completely given or to someone who can use it. If the paint has completely dried or is in its container, may be in the garbage. (Drill paint can be handled as a solid waste instead of as a liquid waste. The only safe disposal of unsalvageable paint is to a community hazardous waste collection or paint recycling facility. It is also important to not use paint brushes and containers where the wastewater can drain into a storm drain. Using latex paint eliminates the need for harsh chemicals to clean brushes and work areas.

Pesticides and Fertilizers

Extra care should be taken when handling, storing or disposing of pesticides and fertilizers. Follow product directions carefully or consult your county extension agent for advice.

Many pesticides contain chemicals—methoxychlor, diazinon, carbaryl, and rotenone—that are designed to kill pest insects and weeds. Some are also harmful to humans and pets. Avoid using all of the product properly or giving leftover products to children. In addition, the only safe disposal of pesticides is through a community hazardous waste collection program rather than putting pesticides into the trash.

In addition to the use of pesticide, some pesticide products include inert ingredients, which can also be hazardous. (See “U.S. EPA waste inert ingredient”) According to the Household Hazardous Waste Project, is lethal to birds, which can cause cancer in humans.

When possible, try a safer alternative. Bicarbonate of soda, for instance, is less toxic and can be used to kill ants and roaches; however, bicarbonate of soda was not be placed where children or pets might have contact with it.

Chemicals can contain large amounts of phosphorus and nitrogen that can enter into streams, lakes, or fish into the ground and enter the aquifer. Excessive nitrogen in drinking water can lead to methanothermobia (blue baby syndrome). Whenever possible, use organic compost material, natural pesticides, or integrated pest management instead of chemical fertilizers and pesticides.

Batteries and Other Products

Dry cell batteries, or cells for such products as flashlights and remote controls, may contain mercuric oxide, cadmium, or lead, which can be a hazard to pets or could be disposed of properly.

Chemical waste disposed of improperly can enter the septic system. Do not pour chemicals down drain or into storms. Using latex paint eliminates the need for harsh metals to clean brushes and work areas.

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Bacteria and other organic chemicals can destroy the biological system that breaks down waste. These products then seep out of the septic system, contaminating the groundwater.

Avoid septic tank cleaners, especially those with acids and solvents, and instead use a biological treatment (MBT) to prevent damage to the system, do not drive over the tank, and have the tanks pumped every five years or so.

You can help protect the groundwater

This current may not be as an alternative to products, such as motor oil, fuel, and can handle and dispose of these products safely and try alternatives for potentially hazardous household cleaning products and pesticides.

If you have questions about whether a substance is toxic or how to dispose of it, contact your county extension office, which is typically affiliated with the land grant university in your state. Help may also be found by calling your local health department, wastewater treatment plant, garbage collection service, or landfill.

Instead of using an oil-based product to clean your tires, rubber, or other car care products, you can help you identify ways to protect your groundwater supply.

Assisting Small Communities

The National Drinking Water Clearinghouse

Located at West Virginia University, the National Drinking Water Clearinghouse supports the U.S. Department of Agriculture’s Rural Utilities Service to assist communities of fewer than 10,000 people and those with whom they to provide safe drinking water. The NDWC serves these communities by collecting and developing timely information relevant to drinking water issues, then disseminating this information through its various services.

For more information about the National Drinking Water Clearinghouse, call (800) 624-8308 or visit www.ndwc.org and request a free information packet, or visit the NDWC’s Web site at http://www.ndwc.org.