



Homewise

Pollution Prevention for Consumers

A Guide to Household Hazardous Substances and
Non-Hazardous Alternatives



Here's the Facts

About Household Hazardous Substances

The average American household contains fifteen pounds of hazardous substances such as paint, toilet bowl cleaners, used motor oil and pesticides. Many of these substances are potentially harmful to human health and the environment.

Improper use of household hazardous substances, by using too much or not following written precautions, can have minor effects ranging from eye and throat irritations, to headaches, dizziness and nausea, or more serious effects such as skin rashes, burns, liver or kidney damage, cancer or birth defects. In extreme instances they may lead to death. Improper disposal of these substances through household drains or storm drains can result in costly disruptions of wastewater systems, serious injury to waste handlers and the contamination of local air and water resources. Used motor oil, antifreeze and other waste - even in small amounts - can have profound effects on the animals that live in and around water.

In many cases, the use of non-toxic alternatives or appropriate disposal methods will decrease many health and environmental threats created by household hazardous substances and wastes. Using nonhazardous alternatives will result in a safer home and environment at a fraction of the cost, since the alternatives are often less expensive. Proper use and disposal of household chemicals will protect the environment, and also save the cost of environmental clean-ups. For products where non-toxic alternatives are not available, read and follow the label. Choose products with a CAUTION label over those with WARNING or DANGER.

To decrease the need to dispose of unwanted or unused portions of a hazardous substance, **buy only as much as you need.**

This guide provides choices for the safe use and disposal of household hazardous substances. Non-toxic alternatives are suggested wherever possible.

Making the right choices will make a positive difference to our neighborhoods and the environment for generations to come.



Cleaners

Chemicals Contained

Cleaners are often a mixture of complex unnamed compounds, not just one easily identified chemical. Some cleaners contain strong acids such as sulfuric acid (drain cleaners) or bases such as potassium hydroxide (oven cleaners). Others may contain petroleum distillates as grease cutters.

Human Health Risks

Cleaners can cause severe eye, skin, lung and neural system damage. They may also be poisonous if ingested. Specific dangers are hard to define because each cleaner is different. For example, many furniture polishes contain petroleum distillates which can cause lung damage if inhaled. Chlorine bleaches are extremely reactive. They should never be mixed with ammonia or acidic products such as drain or toilet bowl cleaners because potentially lethal fumes will be released. Many drain and oven cleaners are extremely corrosive. They will cause skin damage if contact occurs.

Threat to The Environment

Cleaning products are more likely to enter the environment through everyday use via sewer and storm drains than as a result of improper disposal. Since the majority of ingredients in household cleaners break down rather quickly, most do not persist in the environment. However, some ingredients are slow to degrade. They are found on the Environmental Protection Agency's list of hazardous substances. Detergents with phosphates should be avoided. In addition, some powder detergents contain heavy metals such as arsenic and zinc.

Making your own cleaners from common kitchen supplies is one of the easiest ways to start practicing pollution prevention.



Cleaners

Product	Disposal	Non-Hazardous Alternative
Drain Openers/ Cleaners Corrosive. Toxic. Can cause blindness.	Use or give to someone who can use it. Do not use chlorine bleach, ammonia or drain cleaners together	Use 1/2 cup baking soda followed by 1/2 cup vinegar- let sit for 15 minutes, flush with boiling water. Pour boiling water directly down the drain, not into the basin, twice weekly to prevent clogs. Use a drain/trap strainer to catch food and hair. To clear a clogged drain use a metal snake or plunger.
Oven Cleaners Corrosive. Toxic. Irritating vapors. Can cause eye damage. Toxicity 2-4*.	Use or give to someone who can use it.	Clean oven with baking soda after each use: mix 3 tbsp. soda with 1 cup warm water. Rub gently with steel wool. Use oven liners (aluminum foil) to catch spills. A small dish of ammonia left in the oven overnight will soften burned-on spills. It can be reused. Sprinkle salt on an oven spill when warm and clean.
Chlorine Bleach Fumes irritate eyes. Corrosive. Poisonous if swallowed. Toxicity 3*.	Use or give to someone who can use it. Do not use chlorine bleach and ammonia together.	Use dry bleach, borax, or washing soda to whiten. Borax is a good grease cutter. Never mix with ammonia.
Window Cleaner Vapor may be irritating. Slightly poisonous. Toxicity 2*.	Use or give to someone who can use it.	For windows and mirrors, use 2 tsp. vinegar to 1 qt. water, or try 1/2 cup vinegar, 1 qt. water and 1 tbsp. rubbing alcohol, let dry and polish with newspaper.

*See toxicity levels under General Information.



Cleaners

Product

Disposal

Non-Hazardous Alternative

Toilet Bowl Cleaner

Corrosive. May be fatal if swallowed.

Use or give to someone who can use it. Do not use toilet bowl cleaners and chlorine bleach together.

Drop in 1 denture tablet, allow to foam for 5 minutes, brush then flush. Clean with baking soda or coat bowl with paste of lemon juice and borax; let stand, scrub.

Surface Cleaner

Corrosive. Eye irritant. Toxicity 3-4*.

Use or give to someone who can use it. Do not use chlorine bleach, drain cleaners or tile cleaners together.

Mix 1 tsp. liquid soap and 1 tsp. borax with 1 qt. water. For tile and bathroom fixtures- use baking soda dissolved in water or 1/2 lemon dipped in borax. Use toothpaste for light stains.

Upholstery/Rug Cleaner

Corrosive. Flammable. Toxic.

Use or give to someone who can use it.

Clean immediately with soda water or baking soda paste, then vacuum. Club soda will remove red wine stains. Sprinkle baking soda to remove odors, then vacuum.

Floor Cleaner/Wax

Toxic. Fumes irritating to eyes. Skin & eye irritant. Flammable.

Do not place in trash or rinse down the drain. Use or give to someone who can use it.

Mop linoleum or no wax floors with 1 cup white vinegar mixed with 2 gallons of water. For dull greasy film, use a mixture of 1/2 vinegar and 1/2 water. Polish with club soda. For wood floors, use 1 to 1 ratio vegetable oil and vinegar; apply thin coat, rub into floor.



Paints & Solvents

Chemicals Contained

A solvent is a substance that dissolves another substance. Organic solvents are found in enamel and paint primers, stains and varnishes. Paints may also contain heavy metals. Other products containing organic solvents include laundry degreaser and home and auto parts cleaners which may also contain perchloroethylene and trichloroethylene.

Human Health Risk

Most organic solvents are poisonous if swallowed or the vapors inhaled in sufficient quantities. Most solvents can be absorbed through the skin. Methylene chloride, used extensively in paint removers, can be particularly toxic to people with heart ailments. Other common toxics in solvents and paints include toluene, phenols, trichloroethane, perchloroethylene and petroleum distillates. These compounds can affect the respiratory and neural systems, as well as cause nausea, dizziness, cancer, birth defects or damage to internal organs. In addition to being toxic, oil-based paint products are combustible.

Threat to The Environment

Used or unwanted solvents dumped down the sink, poured down a storm drain, tossed in the trash or poured on the ground may enter surface or ground water supplies. Even at low concentrations they can be toxic to aquatic life.

Always check for environmentally friendly products first. If there are no alternatives, be sure to follow all directions precisely. Dispose of unused quantities responsibly and safely.



Paints & Solvents

Product	Disposal	Non-Hazardous Alternative
Furniture Polish Toxic. Flammable.	Do not place in trash or rinse down drain. Use or give to someone who can use it.	Polish with 1 tsp. lemon oil or almond oil dissolved into 1 pint mineral oil. Wash with oil soap or castille soap and water. Rub toothpaste on furniture to remove water marks. Use the oil from crushed walnuts to conceal nicks and scratches.
Shoe Polish Toxic. Flammable.	Do not place in trash or rinse down drain. Use or give to someone who can use it.	Avoid polishes which contain trichloroethylene, methylene chloride, or nitrobenzene. Rub with lemon juice and buff with soft cloth.
Metal Polish May be flammable. Toxicity 2-4*.	Do not place in trash or rinse down drain. Use or give to someone who can use it.	Soak silver in 1 quart boiling water with 1 tsp. baking soda (or cream of tartar), 1 tsp. salt and a piece of aluminum foil. Polish with tooth paste and rinse. Pour lemon juice or vinegar and salt over copper and rub. For brass, use 1/2 tsp. salt and 1/2 cup white vinegar with enough flour to make paste - let sit 25 minutes to 1 hour. Wipe clean. Soak aluminum in 1 quart boiling water with 2 tsp. cream of tartar.
Spot Removers Toxic. Flammable.	Do not place in trash or rinse down drain. Use or give to someone who can use it.	Use club soda for fruit juice, tea, gravy, ketchup, mud; immediate cold water for blood; lemon juice for ink or perspiration; beaten egg whites for leather. For grease stains apply a paste of cornstarch and water, let dry and brush or scrub with toothpaste. For chocolate or coffee, soak in cold water, rub with soap and mild borax solution, rinse and wash in warmest water allowable.



Paints & Solvents

Product	Disposal	Non-Hazardous Alternative
Paint Thinners Flammable. Skin & eye irritant. Toxicity 3-4*.	Do not place in trash or rinse down drain. Use or give to someone who can. Do not buy more than needed.	Let used turpentine or brush cleaner sit in a closed jar until paint particles settle, then pour off the clear liquid and reuse. Wrap the settled particles and discard in the trash.
Paint Remover Flammable. Skin & eye irritant. Toxicity 3-4*.	Do not place in trash or rinse down drain. Use or give to someone who can. Do not buy more than needed.	Use sparingly. Provide adequate ventilation. Keep container lids on tight. (Contains methylene chloride). Look for commercially produced nontoxic paint removers or use sandpaper, heat gun, or steel wool.
Wood Preservatives Toxic. Flammable.	Do not place in trash or rinse down drain. Use or give to someone who can. Do not buy more than needed.	No alternatives. Follow product instructions precisely. DO NOT use preservatives containing pentachlorophenol, creosote or arsenic.
Adhesives & Art Paints Toxic. Flammable.	Do not place in trash or rinse down drain. Use or give to someone who can. Buy only what you will use.	Use nontoxic glues. Use adequate ventilation and exercise caution. For booklet listing less hazardous products and ones to avoid write: Art and Craft Materials Institute, 100 Bouiston St., Suite 1050. Boston MA 02116.
Paints Toxic. Flammable.	Donate leftovers to others. For unused latex paint, remove lid and allow to solidify with proper ventilation. Replace lid and place in trash. For larger quantities pour in tray and allow to dry in layers, then place in trash.	Use latex or water-based paints.



Automotive

Chemicals Contained

Automotive products often contain hazardous organic compounds. Used motor oil and antifreeze also contain heavy metals such as lead and cadmium that are picked up during use.

Human Health Risks

Ingestion of gasoline, antifreeze, motor oil or kerosene is very dangerous. Antifreeze is a poison which attracts children and animals because of its sweet taste. Many pets have died after ingesting as little as 2 tps. of antifreeze from puddles on the ground. A small splash of battery acid can burn through skin or, if splashed into the eye, cause irritation or blindness. Depending on the concentrations inhaled and the length of exposure, inhalation of gasoline can cause injury ranging from minor nose and throat irritations to neural system disorders and even death.

Threat to The Environment

Americans improperly dispose of 385 million gallons of used oil each year. This equals 35 times more oil than was spilled in the entire Valdez oil spill. Over half of the total is thrown out by do it yourself oil changers. Much of it ends up being poured on the ground, dumped down a sewer or storm drain or tossed in the trash. Used motor oil contains petroleum hydrocarbons and heavy metals which can not be broken down. They may contaminate drinking water supplies and food chains and cause physical damage to aquatic life. Used motor oil that is poured into a sewer can also limit the ability to use sludge as fertilizer. Improperly discarded automotive batteries release tons of lead and sulfuric acid into the environment each year.

Only 10% of motor oil used in the U.S. is recycled. The rest goes somewhere. 1 gallon of oil can contaminate 1 million gallons of drinking water.



Automotive

Product	Disposal	Non-Hazardous Alternative
Cleaning Products		No alternative. Follow product instructions precisely.
Car Batteries Corrosive. Danger to eyes and skin.	Recycle. Trade in.	No alternative. Follow product instructions precisely.
Motor Oil Toxic. Flammable.	Recycle. Some gas stations and stores will accept used oil. Call the municipal public works director for your city, or call the SD Department of Environment and Natural Resources at 773-3153 to locate the nearest oil recycling center.	No alternative. Follow product instructions precisely. Never mix with other fluids. Buy rerefined oil.
Gasoline/Diesel Fuel Toxic. Flammable.	Storing at home is extremely dangerous. Use only containers designed for the purpose.	No alternatives. Follow product instructions precisely.
Antifreeze Has sweet taste- attractive to children & pets. Very poisonous.	Some shops recycle antifreeze for reuse. Contact local service stations.	Use non-toxic, propylene antifreeze.
Other Auto Fluids Poisonous. Skin and eye irritant. Flammable.		No alternative. Follow product instructions precisely.



Pesticides

Chemicals Contained

Pesticides contain chemicals that are designed to kill. In most cases, the actual pesticide is less than 10% of the product's contents. The rest are inactive ingredients, some of which are more toxic than the active ingredients. Federal law allows manufacturers to keep the identity of inert ingredients hidden as trade secrets.

Human Health Risk

Pesticides are poisons. They may cause serious damage to skin, eyes, the neural and respiratory systems and internal organs. Some pesticides are more hazardous than others. Severe illness or death may result when only a small amount of pesticide has been ingested. When applying pesticides, always read and follow label directions and wear appropriate protective clothing. Contact the SD Department of Agriculture at 773-3724 or county extension agent for questions about pesticide use.

Threat to The Environment

Pesticides from home use can enter the environment through direct disposal in trash or sewers, runoff from the land into storm drains or nearby streams, drifting of spray mists, evaporation into the atmosphere or accidental spills. Pesticides seldom kill or repel only the intended species, and often resist decomposition. They can build up in plants and soil and the organisms that eat those plants. Some pesticides work their way up the food chain, becoming more concentrated each step of the way. This process, known as "bio-magnification", causes the highest concentrations of contaminants to occur in organisms at the top of the food chain.

Over 67 million lbs. of pesticides are applied to American lawns yearly. Users tend to overapply at rates as high as 20 times those employed in agriculture.



Pesticides

Product	Disposal	Non-Hazardous Alternative
Ant Control Toxic.	See "Disposal Options for All Pesticides" at the end of this section.	Sprinkle cinnamon, cream of tarter, red chili powder, paprika, salt, or dried peppermint leaves at point of entry.
Roach Control Toxic.	See "Disposal Options for All Pesticides" at the end of this section.	Sprinkle technical grade boric acid or borax in cracks and dark places. Keep out of reach of children. Place bay leaves around cracks in the room. Set out a dish of equal parts baking soda and powdered sugar or equal parts of oatmeal flour and plaster of paris, or chopped bay leaves and cucumber skins, or crushed tobacco and water.
Garden Insect Control Toxic.	See "Disposal Options for All Pesticides" at the end of this section.	Use organic gardening techniques, such as netting or companion planting to keep insects from plants. (Standing water allows insects to breed.)
Herbicides/ Fungicides Can cause damage to central neural system, kidney, liver, internal bleeding, birth defects, eye injury. Toxicity 3-6*.	See "Disposal Options for All Pesticides" at the end of this section.	Pull or hoe weeds; keep grass short. Cover garden with plastic in the fall to prevent weed germination. Plant disease resistant seeds. Mulch. For fungi, aerate soil, remove thatch.
Insecticides Toxic.	See "Disposal Options for All Pesticides" at the end of this section.	Blend 6 cloves of crushed garlic, 1 minced onion, 1 tbsp. dried hot pepper and 1 tsp. pure soap in 4 qts. hot water. Let sit 1-2 days. Strain before using. Or place 1 cigarette in 1 quart water overnight. Strain and spray.



Pesticides

Product	Disposal	Non-Hazardous Alternative
Snail & Slug Killer Can cause damage to central neural system, kidney, liver. Birth defects. Internal bleeding. Eye injury. Toxicity 3-6*.	See "Disposal Options for All Pesticides" at the end of this section.	Lay broken sea shells around plants to keep slugs away. Fill a shallow pan with stale beer and place in the infested area. Overturn clay pots. Snails will enter to seek shelter from the heat; collect and destroy them. Lay boards between rows of planted vegetables; snails will often attach themselves to the underside; collect and destroy.
Houseplant Insecticides Toxic.	See "Disposal Options for All Pesticides" at the end of this section.	Mix 2 tbsp. dishwashing liquid with 2 cups water, wash leaves then rinse.
Flea Products Toxicity 2-4*.	See "Disposal Options for All Pesticides" at the end of this section.	Give pets brewers yeast, garlic tablets or vitamin B as preventatives. Herbal baths prepared with fennel, rue or rosemary repel fleas. Put eucalyptus leaves near pet's bed.
Moth Balls Flammable. Skin & eye irritant, poisonous, may cause anemia.	See "Disposal Options for All Pesticides" at the end of this section.	Use cedar chips, newspaper, or dried lavender.



Pesticides

Disposal Options for all Pesticides

Never pour unused pesticides down the drain or throw them in the trash. Never remove labels or transfer the substance to another container.

Store unused portions in original containers. Save for a collection day.

If all the pesticide in a container has been used, triple rinse the container and use the rinse water as a pesticide. Do not pour down the drain. Follow label directions for disposal of aerosol cans.

Several pesticides sold in the past have since been banned for your protection. If you have old chemicals on hand, or if you have questions concerning disposal call the South Dakota Department of Agriculture at 605-773-3724 or county extension agent.

When non-hazardous alternatives are not available, proper disposal practices are vital to ensure the health and safety of human life and the environment in the generations to come.



Miscellaneous

Chemicals Contained

The miscellaneous items listed are a variety of different chemicals that perform different functions. Air fresheners may contain formaldehyde. Aerosol sprays produce mist particles containing a high proportion of organic solvents. Pool acids are corrosive. Photographic chemicals may contain hydroquinone which is corrosive and silver which is toxic to aquatic organisms.

Human Health Risks

Organic solvents in aerosol sprays can be inhaled, enter the lungs and from there the bloodstream. Because aerosols are under pressure in cans, the cans will explode if punctured or exposed to extreme heat. The corrosive element of pool chemicals may cause burns, can irritate skin, eyes and respiratory tract, and may cause vomiting if ingested. Air fresheners work by deadening the nerves in your nose. They can cause irritation of the eyes, nose, throat and skin.

Threat to The Environment

Solvents can be toxic to aquatic life even at low concentrations. Propellants used in some aerosols damage the earth's ozone layer.

Most commercial air fresheners do not freshen the air at all. Instead, they mask one odor with another, coat nasal passages with an undetectable oily film, or diminish the sense of smell with a nerve deadening agent.



Miscellaneous

Product

Disposal

Non-Hazardous Alternative

Aerosol Sprays

Sprayed particles are small enough to be inhaled. Cans may explode. Flammable.

Only empty cans should be placed in the trash. Never place them in a trash compactor or the fireplace.

No alternative. Follow product instructions precisely. Look for non-aerosol substitutes, such as pump sprays.

Air Fresheners

May contain nerve deadening agent.

Do not place in trash or rinse down drain.

Set out vinegar in an open dish. Use an open box of baking soda in enclosed areas such as refrigerators or closets. Add cloves and cinnamon to boiling water and let simmer. Potpourri (a mixture of dried flowers treated with scented oils) is available at many bath shops, and works well in a sachet or simmered on the stove. Scented candles also do the trick, but beware of fire hazards.

Photographic Chemicals

Toxic. Caustic. Irritant. Flammable.

Give unused chemicals in original containers to an institution that can use them. For information get "Disposal of Small Volumes of Photographic Processing Solutions." (Pub. J-52 and Pub. J-10, "Recovering Silver from Photographic Materials," Eastman Kodak, 343 State St., Rochester, NY 14650 800-233-1650).

No alternative known. Provide adequate ventilation when mixing chemicals. Buy only the amount needed. Date mixed solutions and use until end of useful life. Follow product recommendations for proper storage to prolong useful life.



Miscellaneous

Product	Disposal	Non-Hazardous Alternative
Smoke Detectors Often contain radioactive materials.	Return to manufacturer. Most collection programs will not accept them.	Follow product instructions precisely. An alternative type of detector is the photoelectric type.
Asbestos Can cause cancer.	Disposal must be done professionally. Call DENR, Waste Management Program for assistance, Monday - Friday at (605) 773-3153.	Do not attempt to remove building materials containing asbestos yourself. Waste asbestos cannot be swept up or vacuumed up by home equipment, trying to do so only raises clouds of invisible asbestos dust. The fibers must never be breathed.
Pool Acids & Chlorine Toxic. Corrosive.	Donate leftover chemicals to others. NEVER pour down the drain.	No alternative. Follow product instructions precisely.
Household Batteries Toxic. Mercury or button type have toxicity 5*.	Read the label for disposal instructions.	Use rechargeable batteries, AC wall outlet power adapters, and solar powered products.
Chemical Fertilizers Toxic.	Buy only what you need. Use or give to some one who can use it.	Use peat moss, compost or blood and fish meal or composted manure. Never use fertilizers near a well or body of water. Some locations in South Dakota are within wellhead protection areas and fertilizer application may be restricted.

General Information

Toxicity Levels

Product formulations vary over time. Check the label of each product to determine if it is a hazard. Look for the signal words caution, danger or warning and any health, safety or disposal information which may be added. Look for these signal words:

Caution Moderately toxic. Lethal Dose: an ounce to a pint.
(example: ammonia, most paints, floor polishes)

Warning Very toxic. Lethal dose: a teaspoon to a tablespoon.
(example: antifreeze, bleach, some fertilizers, most pesticides.)

Danger Extremely toxic. Lethal dose: a taste to a teaspoon.
(example: Rat poison, mercury batteries, some pesticides, paint thinner, drain opener, some oven cleaners.)

General Toxicity Rating	1	2	3	4	5	6
	almost non-toxic	slightly toxic	moderately toxic	very toxic	extremely toxic	super toxic
Lethal Dose for 150 lb. person	more than 1qt.	1pint to 1qt.	1oz. to 1pt.	1tsp. to 1oz.	7drops to 1tsp.	less than 7drops

Don't forget

- Do not mix different household chemicals. Some mixtures produce highly toxic or explosive fumes.
Examples: chlorine bleach, ammonia, drain cleaners, toilet cleaners or vinegar.
- Good ventilation is needed when working with volatile (easily evaporating) hazardous household products.
- Don't smoke when working with flammable substances or pesticides.

Basic Ingredients

Common household substances needed to make alternative cleaners that will protect your family's health, save money, and prevent pollution:

- white vinegar or lemon juice
- baking soda
- salt
- washing soda*
- vegetable oil
- lemons
- corn meal
- toothpaste
- trisodium phosphate (TSP)*
- liquid soap
- soap flakes

** Replaces more hazardous items but use with caution.*

Notes:

Important Numbers

South Dakota Poison Control

1-800-952-0123

Family Physician

Hospital



**South Dakota Department of
Environment and Natural Resources**
605-773-3153

Information in this booklet is based in part on:

A Healthy Environment Starts At Home; Massachusetts Water Resources Authority
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