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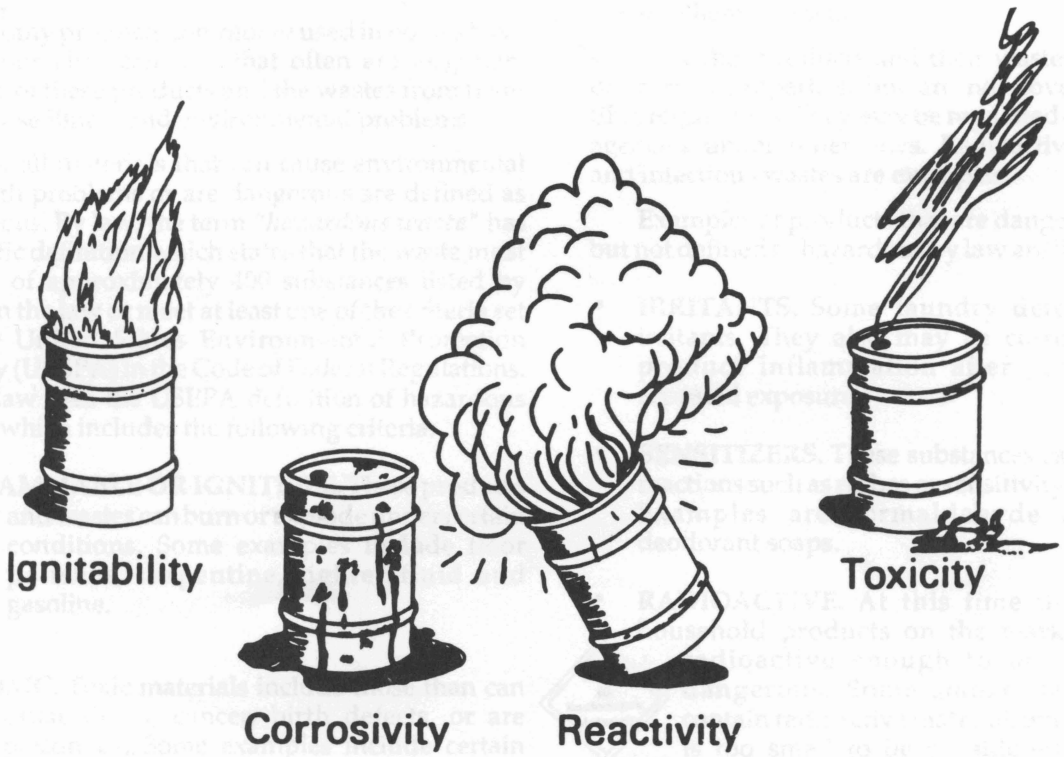
Texas Agricultural Extension Service

# Household Hazardous Products

## Identification
## Alternatives
## Disposal

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# Household Hazardous Products: Identification, Alternatives, Disposal

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## Definitions

Many products commonly used in homes have dangerous characteristics that often are forgotten. The use of these products and the wastes from them may cause illness and environmental problems.

Not all materials that can cause environmental or health problems or are dangerous are defined as hazardous. By law, the term *"hazardous waste"* has a specific definition which states that the waste must be one of approximately 400 substances listed by name in the law or meet at least one of the criteria set by the United States Environmental Protection Agency (USEPA) in the Code of Federal Regulations. Texas law uses the USEPA definition of hazardous waste, which includes the following criteria:


- **FLAMMABLE OR IGNITIBLE.** These products and wastes can burn or explode under certain conditions. Some examples include floor polishes, turpentine, lighter fluid and gasoline.

- **TOXIC.** Toxic materials include those than can cause death, cancer, birth defects, or are poisonous. Some examples include certain medicines, pesticides, antifreeze and heavy metals such as mercury and lead.


- **CORROSIVE.** These are strong acids and alkalies. Examples include auto batteries, bleaches, oven cleaners, drain cleaners and some rust removers.

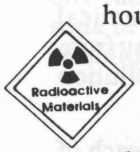

- **REACTIVE.** Reactive materials include those that react violently under normal conditions. Examples are ammunition and home chemistry sets.

Other products and their wastes may have dangerous properties, but are not covered by the EPA regulations. They may be regulated by different agencies under other laws. Radioactive materials and infectious wastes are examples.

Examples of products that are dangerous to use, but not defined as hazardous by law are listed below.

- **IRRITANTS.** Some laundry detergents are irritants. They also may be corrosive. They produce inflammation after prolonged or repeated exposure.

- **SENSITIZERS.** These substances cause allergic reactions such as rashes or sensitivity to sunlight. Examples are formaldehyde and some deodorant soaps.




- **RADIOACTIVE.** At this time there are no household products on the market that are radioactive enough to be considered dangerous. Some smoke detectors do contain radioactive material, but the amount is too small to be considered hazardous when used as recommended.

- **INFECTIOUS.** Only rarely will households produce infectious waste. If a family member becomes ill with a disease that can produce infectious waste, it is important that the family be instructed on how to dispose of it. Sewage may contain infectious waste but it is controlled safely through sewer or septic systems.

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In this leaflet, all products discussed will be considered hazardous. Although the use of household hazardous products is potentially harmful to human health and the environment, little action is needed unless there is evidence that damage is occurring.

Hazardous products can be identified by looking for the following words on labels:

- **CAUTION**
- **WARNING**
- **DANGER**

- **Caustic**
- **Corrosive**
- **Flammable**
- **Volatile**
- **Keep out of the reach of children**
- **Caution: eye irritant**
- **Poison: harmful if swallowed**
- **Skin irritant: wear rubber gloves**

There are different levels of danger involved with the use of hazardous materials. The ***danger*** label for gasoline means it is more hazardous than laundry detergents, which have the ***caution*** label.

The potential for environmental pollution also varies. For example, motor oil is not dangerous to the environment unless it enters groundwater.

Since many household products contain hazardous substances, it is important to consider the usage and disposal of these products. Always follow package label directions or state regulations for use, storage and disposal.

## Storage

Read product labels that list the chemical ingredients. Store all hazardous products away from water pumps and well heads to eliminate pollution of the water supply.

Store all hazardous products out of the reach of children. Avoid fruit or other food scented products, since children may think it is safe to eat or drink them. Keep all hazardous products in original containers with labels intact. *Material Safety Data Sheets* may be obtained for many hazardous products by writing to the manufacturer. Other sources of information about chemicals are the *Merck Index* and the *Signal Aldrich Library of Chemical Safety Data*. Either of these books can be found in libraries of large cities or universities.

## Types of household hazardous products

**Automotive Supplies**. Motor oil, lubricants, antifreeze, batteries, cleaners/polishes, brake fluid, transmission fluid, fuels.

**Alkalies (bases)**. Sodium hydroxide, ammonia. Found in drain cleaners, oven cleaners, many cleaning products and some cosmetics.

**Cleaners**. Oven, metal, drain, floor, carpet and upholstery, coffee maker, toilet bowl, septic tank, fiber glass, etc. These may contain toxic, caustic or flammable ingredients.

**Inorganic Materials**. Dichromate, ferricyanides, ferrocyanides, etc. Found in paints, dyes and some hobby materials.

**Acids**. Phosphoric acid, muriatic acid, hydrochloric acid, nitric acid, sulfuric acid, oxalic acid, sulfamic acid. Examples are some tub and tile cleaners, toilet bowl cleaners, mineral deposit removers, septic line cleaners, rust removers, automobile batteries and masonry etching compounds.

**Organic Solvents**. Acetone, naphtha, aromatic hydrocarbons, turpentine, alcohols, chlorinated hydrocarbons. Examples are nail polish remover, cleaning fluid, spot remover, metal polish, typing correction fluid, leather dye, vanilla extract, nail polish, contact cement, paint thinner, many glues and some paints.

**Paints and Solvents**. Water and oil-based paints, synthetic enamels, thinners, brush cleaners, strippers, removers.

**Pesticides**. Insecticides, wood preservatives, fungicides, herbicides, bactericides. Some pesticides are synthetic; others are natural ingredients. All are toxic or they would not be effective.

**Toxic metals**. Mercury, arsenic, lead, cadmium, silver, chromium. Found in thermometers, batteries, and paints. Zinc sandwich dimes and plant compost, if ingested, also release toxic metals.

**Miscellaneous**. Heating oil, infectious waste, smoke detectors, paradichlorobenzene and naphthalene (moth balls and crystals), some cosmetics and medicines.

## Uses and Alternatives

### Aerosol sprays

Besides the propellant, which is highly flammable and may cause an explosion, the product may contain alcohol, propane, or other flammable materials and corrosive ingredients. Aerosol sprays are used for grooming products, foods, fabric finishes, cleaning products, pesticides, automotive products, paints and many other household uses.

**Alternatives**. Use non-aerosol pump sprays, liquid or cream forms that are applied with a dauber or brush, or use paste forms of products. It is both safer and more economical to purchase non-aerosol products. Studies have shown that the non-aerosol cost per use is lower for every product tested.

### Detergents

Laundry and dishwasher detergents poison more children than any other household products. Fortunately, most detergent poisonings are not fatal. Detergents may contain many toxic and caustic ingredients as well as water pollutants. Shampoos and bar detergents used for bathing also contain water pollutants, although they are not caustic.

As with many environmental concerns, the solutions are as bad and often worse than the original problems. New detergent formulas promise to be less hazardous to the environment, but are toxic if ingested. Phosphate substitutes such as citrates and carbonates do not clean as well as other detergents.

One major cause of pollution is the daily amount of soap and detergent released into the environment. The current massive use of soaps and detergents harms the environment and is wasteful.

**Alternatives**. There are no suitable alternatives for automatic dishwasher detergents. For soft water cleaning needs, soap works as well as detergent and may be less damaging to the environment. Detergents are needed in hard water but should not exceed the recommended amounts. They can be supplemented with washing soda or borax. Avoid laundering clothing just to remove wrinkles. Proper daily care eliminates the need for frequent washing.

Although personal hygiene is necessary, some people carry it to an extreme. Bathe and shampoo hair when necessary, but not excessively. Never shower more than once a day and less often in winter or if surroundings are always air conditioned. Freshen up with a sponge bath instead of using a shower.

### Disinfectants and germicides

All true disinfectants are toxic to living things. In small amounts they can kill bacteria and viruses. In larger doses they can injure or kill animals and humans. Home bactericidal products that control odors, clean tile and disinfect hot tubs and swimming pools, such as chlorine bleach, are some of the most commonly used disinfectants.

An ingredient often used in disinfectants is cresol, which is toxic to both plant and animal life. Cresol also is used in some medicines, dyes, fungicides, antioxidants, herbicides, detergents, creams, lotions, perfumes and fragrances for soaps.

**Alternatives**. Wash articles in soap, borax or washing soda and water. Strong disinfectants should be used only when necessary and not routinely. Used properly, disinfectants can bring benefits such as slowing the spread of disease and relief from bronchial asthma and whooping cough.

For odor control, use exhaust fans, set a dish of vinegar out and place baking soda in the refrigerator and trash cans. Potpourri, fresh flowers and scented candles can freshen rooms without adding hazardous substances.

### Fabric and shoe care products

Dry-cleaning fluids and spot removers often contain toxic chemicals and flammable solvents that should not be disposed of by pouring down the drain. Shoe care products usually contain solvents that are hazardous until the product has dried.

**Alternatives**. Avoid the aerosol spray forms. There are no substitutes for some clothing and fabric care products, so follow label directions for safe use and safe disposal of the containers. Always use the mildest form of spot remover first; use the harsher forms only if necessary. For example, try removing oily stains with an absorbent such as talc or baking soda before using a solvent. Usually, the milder the cleaning product, the less likely it is to be hazardous.

### Furniture and floor polishes

Some of these products contain toxic solvents that cause acute poisoning if ingested, particularly by a child. Some natural ingredients, such as oil of cedar, are also toxic. Read labels for cautionary statements on these products.

**Alternatives**. Avoid aerosol forms of polishes. Avoid products containing the highly toxic ingredients nitrobenzene and dinitrobenzene. Instead of polish, wash wood with a cloth or mop dipped in soapy water and then wrung nearly dry.

Polish with a soft dry cloth. Lemon oil polish can be made by mixing one teaspoon of lemon oil with one pint of mineral oil.

## General household cleaners

Common household substances often are most chemically reactive and physically harmful. Included in this group are oven cleaners, drain cleaners, bleaches, coffee pot cleaners, dish washing detergents, toilet bowl cleaners, scouring powders, window cleaners, wax removers and floor cleaners. Many of them contain caustic alkalies or acids. Some of them will react with others to form toxic gases.

An example of a toxic gas is the dangerous combination of chlorine, bleach and ammonia.

***Some of these products have little information about their toxicity or if they do, users simply do not read and follow the instructions. Many poisonings occur because a child or a pet drinks or eats a toxic product.***

**Alternatives.** Many hazardous cleaning products contain the same active ingredients. Except for ammonia, ***which is toxic*** and the basic ingredient of most liquid cleaners, cleaning supplies do not need to contain toxic substances to work.

A few simple non-hazardous ingredients usually can replace most expensive cleaning products. Soaps, which are usually non-polluting, can replace detergents in soft water areas. Baking soda (a mild alkali) cleans chrome, copper, tile, stainless steel and many other surfaces. Vinegar (a dilute acid) can be used in water to wipe off surfaces where soap would leave spots. Scouring powders that do not contain chlorine bleach are available and baking soda works on many surfaces. Ammonia is a good grease solvent and oven cleaner. Although ammonia is toxic, it can be disposed of down the drain and flushed with water.

Keep drains free of grease, food scraps, and hair to prevent clogs. If drains run slowly, pour hot water, baking soda and vinegar in them, wait a few minutes and flush with hot water. Borax whitens clothes without the dangers of chlorine bleach.

## Heavy metals

Lead, cadmium, mercury, arsenic, silver, zinc and chromium are the heavy metals. Sources include lead solder and pipes for plumbing, some brass fixtures, paints, batteries, coins, thermometers and dyes. One major danger is to the hobbyist who uses pigments and solders containing heavy metals. Another is to children who may ingest lead or mercury from paints and zinc from dimes.

**Alternatives.** Heavy metals are safe unless ingested or they enter the sewer system eventually to enter groundwater. Older homes may have lead in paint and plumbing that can leach into drinking water or be chewed by children. Lead is no longer used in plumbing systems or paints.

To protect health, do not drink the first few ounces of water from the tap. Let the tap run several seconds to flush out standing water.

Some hobby supplies contain heavy metals as part of the pigment. Read labels and write for *Material Safety Data Sheets*. Proper use and disposal of these and other products containing heavy metals will keep the water supply safe and reduce hazards for users.

## Hobby, art and craft products

Many supplies used in metal work, pottery, photograph developing, plastic crafts, jewelry making, papier-mache, woodworking, and painting are hazardous. Many contain organic solvents, caustics, heavy metals, and other toxic substances.

**Alternatives.** There are no substitutes for many hobby products. Read labels, follow directions, and dispose of containers appropriately. Wear protective clothing and safety goggles or masks when needed. Keep food and beverages out of the work area. Consider changing to a safer hobby.

## Medicines and miscellaneous products

Many prescriptions and over-the-counter medicines as well as vitamins are toxic if misused. These include aspirin, antihistamines and other cold medicines, pain relievers, analgesics, antiseptics and hormones. Some cosmetics and perfumes are toxic if ingested and nail care products contain flammable and toxic ingredients. Children are usually victims of these hazards because they are inquisitive and taste almost anything they can reach.

**Alternatives.** Be cautious in the use and storage of prescription medicines and miscellaneous over-the-counter products. If necessary, keep medicines and vitamins in a locked cabinet to keep them away from children. Remember that many familiar products are hazardous to health and the environment. Treat them with respect and keep them away from the unsuspecting.

## Motor vehicle products

Gasoline is not only hazardous in its pure form, but most of the additives such as antiknock agents, detergents and deicers are toxic. Motor oil is also

toxic, as are most greases and liquids such as antifreeze and brake fluid. Engine starters, batteries, gasoline treatment products and some care products are also hazardous.

**Alternatives.** There are no substitutes for most motor vehicle products. The best protection is to become aware of the type of hazard associated with each product. Then store, use and dispose of these products safely. For example, never store gasoline or other flammable products in the same space with a water heater or clothes dryer since sparks from the appliance could ignite the fumes. Some products such as oil and antifreeze can be recycled; others are used up. Check with service stations, oil change and lubrication specialists and auto parts stores to see if they accept used automotive fluids and parts, especially batteries, for recycling. The amount of motor vehicle products needed can be reduced by car-pooling, bicycling and walking instead of driving.

### Pesticides

Pesticide strength and hazard potential varies, depending on use and length of storage time. Some pesticides remain in the environment for long periods of time; others disappear rapidly.

Read the label before buying. Follow instructions carefully. Use only currently registered products and dispose of outdated and banned products. Store in a locked cabinet in original containers with labels intact and readable. Try to use all of the pesticide product before disposing of the container.

If the container can be opened and triple rinsed, do so. Be sure to use the rinse water safely. Do not pour rinse water on a single limited location. Unless your community has a collection site, dispose of containers by wrapping in several layers of newspaper then tying securely or placing in a plastic bag. Place package in a covered trash can.

**Alternatives.** Do not overuse chemicals. When possible, use safe and economical control products. Biological products include natural predators such as lady beetles and spiders, and bacterial control agents specific to pests, such as Bacillus popilliae and Bacillus thuriengensis used in the control of specific insects. Other controls are physical and include diatomaceous earth, proper fencing or screens and properly sealed structures. To control fleas on pets, bathe them every 2 to 4 weeks with pet shampoos containing insect-repellent. Herbs such as rosemary, eucalyptus and citronella offer some protection. Commercial flea repellents also work well.

When biological and physical control need to be supplemented, first identify the pests that are causing problems, find suitable alternative control measures and then treat for the specific problem. The more specific the control measures chosen for the identified pest, the less probability that similar beneficial organisms will be harmed. Also, the more timely a pesticide application can be made, the less need for a persistent chemical. This means the pesticide will be less available to susceptible beneficial organisms and to the environment.

### Solvents

Solvents have been mentioned in other groups of products as the ingredients that make the product hazardous. Solvents are usually toxic and also may be flammable. Solvents are ingredients in many glues and paints and in products such as epoxy, enamel, stains, varnishes, shellacs, lacquers, thinners and paint removers. Turpentine, pine oil and similar products from natural resins are also toxic.

**Alternatives.** When possible, use water-based products, particularly paints. If products containing other solvents must be used, be sure to purchase only the amount needed and avoid prolonged breathing of fumes.

Keep product away from possible sources of ignition, and allow any leftovers that cannot be used to evaporate in the open air before discarding the container. All products containing non-aqueous (not water-based) solvents should be handled with care and all label instructions followed.

## Disposal of hazardous waste

If products contain warnings about environmental pollution or damage, be sure to dispose of the containers in a way that will minimize risk. Look for opportunities to recycle. For example, some stores will accept used flashlight and button batteries for recycling. If your area has amnesty days, store containers until collection day. Or, if there is a hazardous waste collection center nearby, take household hazardous waste to it. ***If you have no other alternatives or directions for disposal, follow these guidelines:***

1. Use it up or give it to someone who will. (**Not medicines.**)

2. Recycle or reprocess used motor oil, antifreeze and transmission fluid; batteries from autos, flashlights and watches; tires; paint thinner; and americium 241 in smoke detectors.

3. Solidify by evaporation before placing in the trash: solvents, cosmetics, gasoline, oil-based paints, latex paints, rug and upholstery cleaners.

4. Solidify by absorption with old newspapers or commercial absorptive material before placing in the trash: solvents, oils, kerosene, brake fluid, grease removers, oil-based paints.

5. Dilute and pour down the drain, but do not mix the following products: acids, bases, bleaches, antifreeze and drain cleaners. Rinse containers before disposal and rinse drain between products.

6. Flush medicines down the toilet.
Note: Medicines should not be put in the trash, even wrapped, because curious children or animals may retrieve them. Dispose of the container by taping it shut and wrapping in several layers of newspaper.

7. Wrap in several layers of newspaper and plastic and send to sanitary landfill: empty pesticide and fertilizer containers and aerosol cans.

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