

HOUSEHOLD HAZARDOUS MATERIALS

Household Hazardous Materials

Many people don't realize it but there are a lot of common household items that are considered to be hazardous materials. These include medications, paint, motor oil, antifreeze, auto batteries, lawn care products, pest control products, drain cleaners, pool care products such as chlorine and acids, and household cleaners. Some household cleaners may be harmful separately or when combined such as ammonia and bleach.

Arts and Crafts

Many people engage in some form of art or craft as a vocation or hobby. While art is a creative, individualistic pursuit, the materials used may pose a risk to individual health and the environment. Knowledge about the materials and processes is the best protection against the major and minor health effects of the art or craft.

A wide range of health effects are linked to materials used in the arts and crafts, depending on the substance, the dose, the duration of exposure, and the susceptibility of the person exposed. Many solvents affect the central nervous system and are skin and eye irritants. Most are flammable; many are linked to long-term adverse health effects such as liver damage. Several are known or suspected carcinogens such as benzene and toluene.

- Dusts/fibers are eye and respiratory irritants, and may aggravate asthma and provoke allergies. Specific hazards: silica in clay dust causes lung disease over years of exposure; talc (white clays) may be contaminated with asbestos, a known carcinogen; some hardwood dusts lead to nasal and sinus cancers in woodworkers.
- Heavy metals are hazardous both as dusts and as fumes. Lead affects the nerves, digestive system, muscles and joints. Arsenic, cadmium and chromium are known carcinogens. Mercury, copper, cobalt, silver, manganese, selenium and zinc are all acutely toxic.
- Acids are corrosive to skin and eyes. Acid vapors are irritating to the lungs and inhalation of small amounts may damage lung tissue. Concentrated acids can react

with many other materials. Gases generated from kilns, welding or sculpting with plastics are acutely toxic; some may lead to long-term lung damage with repeated exposure.

Basic Safety Rules

1. Know the hazards of the materials you're working with. Read the labels, request material safety data sheets (MSDS) on new products, know what precautions, safety gear and clean up procedures are advised. When buying arts and crafts materials look for these key words or symbols:
 - Non-toxic - item will not cause immediate poisoning.
 - AP - approved product; item does not contain sufficient quantities of a material to be toxic or harmful to the body, even if eaten or swallowed.
 - CP - certified product; meets AP standards as well as standards for product quality, color, etc. Be especially cautious using discarded materials such as wood (what chemicals might it be treated with?) or scrap metal (what alloy is it?).
2. Use the safest materials and procedures possible. Stay current on the new developments in your art or craft; safer, less-toxic alternatives are being devised for many activities.
3. Use good ventilation at all times. Local exhaust is the best, such as a hood or spray booth that vents to the outside. Next best is to use exhaust fans that pull the contaminated air away from you and exhaust it outside (an air-conditioning system is not adequate, since it re-circulates most of the air). An open window usually does not provide adequate ventilation; toxins may be blown back into your face.
4. Use good hygiene and housekeeping. Separate work and living areas; avoid eating, drinking or smoking in the work area; don't store materials in food containers; and wash and change clothes after working. Wet mop or vacuum for cleanup of dusts.
5. Special precautions are needed for children's art. In general, children over the age of 12 can understand and consistently follow safety instructions for the more toxic materials; younger children cannot and should use only the safest materials.

Pesticides / Herbicides

Pesticides are chemicals designed to kill rodents and insects. Herbicides are used to kill plants and micro-organisms. They can injure or potentially kill people by inhalation, ingestion and absorption through the skin. Exposure can affect the respiratory and nervous systems, and cause skin and organ damage. If improperly used, these chemicals also can injure or kill plants or animals that were not intended to be controlled. Certain pesticides that don't readily break down can accumulate in the food chain.

Unless otherwise directed, don't water an area immediately after applying these chemicals to it. This might cause them to run off with the extra water into a storm sewer or stream. Don't throw pesticides or herbicides in the trash, or pour them on the ground or down a drain. Don't burn or bury them either. These methods of disposal can pollute groundwater.

The best way to get rid of these chemicals is to use them up unless they are banned. When mixing these chemicals, follow the directions on the label. Read the label to determine if protective clothing such as wraparound goggles, gloves or a respirator are needed. When finished, wash protective clothing separately from other laundry in hot water.

If you can't use the chemicals, see if friends or neighbors need them. Don't give away pesticides or herbicides that are banned, damaged or unlabeled.

After using all the pesticide or herbicide from a container, wash it three times and use the rinse water as pesticides. Throw the rinsed-out container in the trash. Don't burn or reuse old containers.

Safely store pesticides in their original container. Protect the label and make sure the word DANGER appears on the container.

If the chemical is flammable, keep it away from heat, flames and spark sources. Also, store it where it won't freeze. Always store chemicals out of the reach of children.

Before purchasing a pesticide or herbicide, make sure you need one. Contact the Department of Agricultural extension service for information on when to use pesticides/herbicides. If you need to use these chemicals, buy only the amount you need. Try using up leftover pesticides/herbicides before purchasing more.

Automobiles

Automobiles consume vast quantities of gasoline, motor oil, antifreeze, car batteries, degreasing agents, windshield washing fluid, car waxes and cleaners. While most of these products are necessary for proper operation and maintenance, they are all toxic.

Any oil that has been refined from crude oil and has been used is "used oil." The term "used oil" also applies to any oil that is no longer useful to the original purchaser as a consequence of extended storage, spillage or contamination with non-hazardous impurities such as dirt and water. Used oil is a hazardous waste. The hazards associated with used oil result from the various additives used in its manufacture and from the heavy metal contaminants picked up from use in the internal combustion engine.

Oil poured down household drains or directly onto the ground can reach ground water. It can pollute the groundwater with contaminants such as lead, magnesium, copper, zinc, chromium, arsenic, chlorides, cadmium and polychlorinated byphenyls (PCBs). One quart of oil can pollute 250,000 gallons of drinking water.

Used oil is recyclable. Two and one half quarts of lubricating oil is gained by re-refining one gallon of used oil. You can participate in oil recycling by draining the used oil into a clean container with a tight fitting cap. Do not mix the recovered oil with any other liquid and make sure the oil is free from dirt, leaves and other debris. Many auto parts stores will accept your oil for recycling.

Automobiles use lead-acid batteries. Lead-acid batteries contain lead and sulfuric acid. The lead can contaminate water and the acid can burn skin. These batteries have approximately 18 pounds of toxic metals and a gallon of corrosive acids.

If lead-acid batteries are improperly disposed of, such as dumped in a non-hazardous landfill or an empty field, the lead and sulfuric acid can seep into the ground, contaminating the environment and ground-water supply. Damaged, leaking batteries improperly disposed of in the regular trash also pose a danger to refuse collectors who can come in direct contact with sulfuric acid. They are also a fire hazard.

Symptoms of severe lead poisoning include coma, convulsions, irreversible mental retardation, seizures and even death. Even low levels of lead exposure can result in fatigue, impaired central nervous system functions and impaired hearing.

Lead-acid batteries are recyclable. Many places that sell batteries will take the battery. Also some garages and scrap metal dealers will take the battery. If you have a used battery at home, store it safely until you can take it somewhere to recycle. For safe storage, keep the battery in a dry place inside or a lead-proof container outside. Store batteries out of the reach of children and pets.

Nationwide, 70 percent of spent lead-acid batteries are recycled. After the lead is separated from the non-metallic components of the battery, it then is smelted to produce soft lead and lead alloys. Most of these lead products are used to make new lead-acid batteries.

Antifreeze is made up mainly of water and ethylene glycol and added to the radiator water in a car to lower the freezing point and raise the boiling point of radiator fluid. In other words, it keeps the water from freezing on very cold days and boiling over on hot days.

Auto maintenance experts recommend that radiators should be flushed every one to two years. This presents a question of what to do with the radiator fluid. You have to be careful not only to store new antifreeze safely, but also to dispose of used antifreeze properly.

Because ethylene glycol is a clear, colorless and sweet-tasting liquid, it is very attractive to pets and small children. Pets will lap up an antifreeze puddle because it tastes sweet. Young children are also at risk. If swallowed, ethylene glycol may cause depression, followed by respiratory and cardiac failure, renal and brain damage. It is often fatal.

Antifreeze that is carelessly disposed of, such as poured into a storm drain or ditch, a river or stream, onto the ground or into the trash, presents a health threat to humans, animals and the environment.

Flush antifreeze down the toilet or sink with plenty of water if your house connects to a sanitary sewer system. The sewage treatment plant will break down hazardous chemicals in antifreeze. Used antifreeze can be recycled for use by the mining industry (sprayed on

coal to keep it from sticking together) and the glycol industry (used for airplane de-icing solution). It also is used in cement grinding and brake fluid.

Gasoline is toxic and extremely flammable, and never should be used as a cleanser. Always store gasoline in a cool, well-vented area away from electrical sources. Gasoline should be kept only in a metal, stopper-topped container.

Cleansers

Some chemicals in cleansers may be hazardous to your health during routine use even though exposure is only to small amounts in the air or on your skin. You can reduce the risk to your health by avoiding products containing toxic chemicals. Or, if you must use toxic chemicals, be sure to follow the manufacturers' directions.

Organic solvents affect the central nervous system, liver and kidneys. Many are flammable and a few are suspected carcinogens (cancer causing). Petroleum distillates in polishes and sprays, perchloroethylene in spot removers, mineral spirits in paint thinner and p-dichlorobenzene in mothballs are all examples of organic solvents.

Strong acids or bases are corrosive to skin, eyes and mucous membranes, and can react with other household chemicals. Acids are found in tub, tile and toilet cleaners and in rust removers. Lye in oven cleaners and hypochlorites in chlorine bleach are examples of high-pH corrosive substances.

Phenols and alcohols are poisonous and flammable chemicals and active ingredients in most disinfectant products.

Although not highly toxic, synthetic detergents are the household chemicals most frequently ingested by children. "Real" soaps made from animal fat or vegetable oil are less toxic.

Cleansers also may contain added dyes, perfumes, fillers, aerosol propellants, and traces of ammonia and formaldehyde. Keep in mind that hazardous wastes are produced in manufacturing all the different chemicals contained in these elaborate formulas. They generate waste problems even before you buy them.

Paint

Leftover oil or solvent-based paint is a hazardous waste. Toxic, dangerous chemicals used in the production of oil-based paint can pose serious threats to human health and the natural environment if handled or disposed of improperly.

A Johns Hopkins University study found 300 toxic chemicals and 150 carcinogens that may be present in paint. Hazardous chemicals can be found in each of the four basic components that make up oil-based paint: resins, solvents, pigments and additives.

Resins that cover the surface may contain ethylene, which may cause headaches, dizziness and loss of consciousness. Ethylene also is flammable and can be toxic to aquatic wildlife. Urethane alkyds, which cause nausea, vomiting, and drowsiness, also may be present.

Solvents that keep the resin liquefied contain aromatic hydrocarbons such as mineral spirits and toluene. Mineral spirits can be a skin, eye, nose, throat and lung irritant, as well as flammable. Very high air concentration may cause unconsciousness and death. Toluene may irritate the eyes, respiratory tract and skin. Acute exposure results in central nervous system depression.

Pigments that provide the color may contain heavy metals such as cadmium and chromium. Cadmium irritates the respiratory tract while chromium is an eye and skin irritant. Pigments also may be made with zinc oxide, which can cause flu-like symptoms.

Additives, such as thickeners and fungicides, may contain heavy metals such as mercury compounds, which can irritate the skin and mucous membranes.

If oil-based paint is thrown into the trash and ends up in a sanitary landfill, there is the potential health hazard of the chemicals seeping into the groundwater and possibly being consumed by animals or people. In addition, since oil-based paint is flammable, refuse workers may be injured and equipment may be damaged during trash collection.

If you must use oil-based paint, buy only the quantity needed. Measure the space you wish to paint and ask for help from the retailer to purchase the right amount.

Reuse or recycle leftover paint by giving it to someone who can use it, such as a neighbor or friend, theater group, school or other community organization.

If possible, use latex or water-based paint instead because they are made up of less hazardous ingredients. Latex paint is easy to apply and can be cleaned with soap and water. Latex paint also is less harmful to the environment than oil-based paint, which contains more hazardous ingredients.

Take leftover oil-based paint to a household hazardous waste collection facility or event.

Products, Their Effects and Safer Alternatives

Definitions:

Corrosive: A chemical, (solid, liquid or gas), that can cause destructive damage to body tissues at the site of contact. It can cause severe burns to the skin and can "eat through" clothing, metal and other materials.

Flammable: Can be ignited at almost any temperature. Spontaneously react with oxides.

Irritant: Causes soreness or inflammation of the skin, eyes, mucous membranes or respiratory system.

Oxidizer: An unstable chemical that can spontaneously react with flammables and releases oxygen.

Toxic: May cause injury or death upon ingestion (eating/drinking), absorption (touching) or inhalation (breathing into lungs).

Products	Hazardous Ingredients	Dangers	Alternatives
Aerosol sprays	butanol, butane, propanol	flammable, irritant, explosive	pump-type sprays, potpourri
Ammonia-based cleaners	ammonia, ethanol	irritant, toxic, corrosive (Forms poison gas when mixed with bleach.)	vinegar, salt and water for surfaces and baking soda and water for the bathroom.
Antifreeze	ethylene glycol	toxic (especially to pets)	unknown (use caution, take to a collection center)
Batteries	sulfuric acid, lead	corrosive, toxic	unknown (use caution, recycle)
Brake fluid	glycol ethers, heavy metals	flammable, toxic	unknown (take to a collection center)
Disinfectants	diethylene glycol, sodium, hypochlorite, phenols	corrosive, toxic	1/2 cup borax in 1 gallon of water
Drain opener	sodium hypochlorite, sodium/potassium hydroxide	corrosive, toxic	plunger, flush w/boiling water, 1/4 cup baking soda
Flea repellent	carbamates, organophosphate, pyrethrins	toxic	eucalyptus leaves where pet sleeps, brewer's yeast in diet
Floor/furniture	diethylene glycol,	flammable,	1 part lemon juice w/2

polishes	petroleum distillates, nitrobenzene	toxic	parts olive or vegetable oil
Furniture stripper	acetone, methyl ethyl ketone, toluene xylenes	flammable, toxic	sandpaper
Latex paint	resins, glycol, ethers, esters	flammable	lime stone based white wash or casein based paint
Oil based paints	ethylene, aliphathydro-carbons, petroleum distillates	flammable, toxic	latex or water based paints
Oven cleaner	potassium, sodium hydroxide, ammonia, lye	corrosive, toxic	baking soda and water, salt on spills that are still warm
Photographic chemicals	silver, acetic acid, ferrocyanide, hydro quinone	corrosive, toxic, irritant	unknown (use caution, take to collection center)
Pool chemicals	muriatic acid, sodium hypochlorite algicide	corrosive, toxic	unknown (use caution, use until gone take to a collection center)
Rat and mouse killer	lead arsenate, coumarins (warfarin) strychnine	toxic	remove food and water sources, clear harborage, cover holes and drains rats may enter, use mechanical traps. Get a cat.
Roach and ant killer	organo-phosphates, carbamates	toxic	roaches: traps, boric acid. Ants: chili pepper/cream of tartar in ants' path

Rug and upholstery cleaners	naphthalene, oxalic acid, diethylene glycol	irritant, toxic, corrosive	dry corn starch sprinkled on rug then vacuumed up
Toilet bowl cleaner	muriatic or oxalic paradi-chlorobenzene calcium hypochlorite	irritant, toxic, corrosive	toilet brush and baking soda; mild detergent
Thinners and turpentine	n-butyl alcohol, isobutyl keytone, petroleum distillates	flammable	use water with water based paints
Transmission fluid	hydrocarbons mineral spirits	flammable, toxic	unknown (take to a collection center)
Used oil	hydrocarbons, (e.g. benzene) heavy metals	flammable, toxic	unknown (recycle) NOTE: It is illegal to dispose of oil on/in the ground.