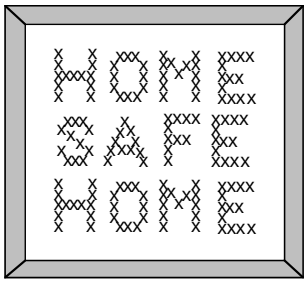
Alternatives
A Washington Toxics Coalition Fact Sheet



Art and Hobby Supplies

by Jennie Goldberg

Paints, glues, and felt tip markers are so familiar that we don't think of them as hazardous. Yet the ingredients in many art and hobby supplies include harmful chemicals. You can reduce the risks to your health and the environment if you choose safer alternatives whenever possible. Buy only the amount of materials you need, take precautions when using them, and dispose of them properly. Pay special attention to the type of arts and craft supplies your child uses. Less-hazardous glues, paints, and markers are available, and they're just as much fun to use!

Risks and Exposure

Exposure to hazardous substances in art and hobby supplies can occur from ingestion, inhalation, or absorption through the skin. Accidental ingestion is especially likely in the case of children, who may not understand or follow safety instructions correctly. When they play with paints and markers, children are likely to put them in their mouths or decorate their hands and faces. Play it safe, and make sure children use only products which are non-toxic, such as those suggested in the chart in the center of this fact sheet. And be sure that they wash their hands carefully after playing with any art materials.

Vapors from solvents, mists from sprays, and dusts from mixing dry paints and clays can all be inhaled into the lungs, usually without your even being aware of it. Your sense of smell is a poor gauge of exposure to a solvent. Some highly toxic solvents have pleasant odors, some are toxic at levels where little or no odor is noticeable, and after a long exposure your sensitivity to the odor may decrease. The risk varies with the toxicity of the materials, the amount of exposure, and the individual's susceptibility. Older persons, those with existing health problems, and children are most sensitive.

Art Material Labels

Recognizing the safest products doesn't require a Ph.D. in chemistry, but it does take some effort. Once you've learned to spot key words and recognize some chemicals to avoid, reading labels carefully will help you make smart purchasing choices.

Most hazardous consumer products must display what is called a signal word. POISON indicates the product is extremely toxic—as little as a taste could be fatal. DANGER means the product is either very toxic, highly flammable, or corrosive—it burns the skin or eyes on contact. WARNING or CAUTION signal lesser but still significant hazards. The type of hazard is explained by a cautionary phrase such as "harmful if swallowed," "avoid skin contact," or "flammable." These signal words indicate only acute, or short-term, hazards.

Federal regulations also require identification of products that may cause long-term health effects, such as birth defects or cancer. Rubber cement containing hexane, for example, now carries the warning "Prolonged exposure can result in permanent damage to the nervous system." Older products, which are likely to be even more hazardous, will not have such warnings. Most products carry the minimum warnings required by law, so it makes sense to take these warnings seriously.

"But the Label says it's Non-Toxic."

Products with no label warnings are considered non-hazardous by federal law. Yet as little as 1/4 cup of a "non-toxic" product could be fatal to a small child, and much less than the lethal amount can still cause serious or unpleasant symptoms. In addition, surveys have shown that some products labeled as non-toxic may not meet appropriate standards.

For many years, the Art and Craft Materials Institute (ACMI) has maintained a voluntary, manufacturer-funded labeling program. A product certified "non-toxic" in this program has been reviewed by a toxicologist and certified to "contain no materials in sufficient quantities to be toxic or injurious to humans or to cause acute or chronic health problems." Products with a "Health Label," on the other hand, do pose clear risks. The Center for Safety in the Arts, however, has questioned some of the products certified as non-toxic by ACMI. Certainly children should not be given materials bearing health warnings.

What the Label Doesn't Tell You

The federal government requires that the label list the ingredients in hazardous products which pose the major risk. You may find the names of some chemicals on the package, but few labels list all ingredients. It may even be impossible to get a complete list directly from the manufacturer. Schools should have Material Safety Data Sheets (MSDSs) for all art materials. You can reject the most hazardous products by screening out those that describe serious health effects from the product or its ingredients.

Labels often do not explain safety precautions well. Does opening a window provide enough protection from a product labeled "use with adequate ventilation?" No, you should use a fan or work outdoors—or avoid the product entirely.

Be wary of products labeled or intended for professional use. They tend to contain more toxic ingredients and may be less carefully labeled than regular consumer products.

Specific Art and Hobby Materials

■ Adhesives

There are nearly as many kinds of glue as there are surfaces to stick together—paper, wood, plastic, metal, pottery, cloth, and rubber—and many contain hazardous ingredients. Some of the most toxic adhesives include contact cement, rubber cement, epoxy, instant glues, plastic adhesives, and model glues.

The primary hazardous ingredients in adhesives are the solvents. Solvents keep the adhesive chemicals liquid and help them to penetrate or bind to surfaces. Usually they evaporate very quickly into the air. Solvent-based glues give off toxic vapors which can have a narcotic effect or cause illness when inhaled in sufficient quantity. Many are extremely flammable.

Rubber cement, a popular glue for bonding paper, is particularly nasty because it contains hexane or heptane, nervous system depressants which can cause permanent nerve damage. Rubber cement is also extremely flammable. A glue stick is a safer choice. One of the advantages of rubber cement, of course, is that you can move items you have attached. If you absolutely must use rubber cement, use one based on heptane rather than hexane, because it is somewhat less toxic. Children should not use any type of rubber cement.

White and yellow wood glues, such as Elmer's,™ have very low acute toxicity. White glue works well for bonding paper, cloth, wood, pottery, and other porous and semi-porous materials. Other low toxicity glues include white "library" paste and mucilage. Glue sticks are available in both permanent and temporary bonding types. The temporary bond allows any piece of paper to function like a Post-It™ note.

Many of the spray adhesives used to mount photographs contain hazardous solvents. It is better to use a dry mounting tissue if you possibly can.

There may not be alternatives for some special purpose adhesives. Contact cement often contains toluene, a solvent that is both toxic and flammable. Model cements or

Seals of the Art and Craft Materials Institute

These seals indicate products certified by the manufacturers association to be non-toxic.

This seal indicates a product that poses health hazards

Not for Children's Use

rubber cement
model glues
spray adhesives
contact cement
"super glue"
epoxy
spray paints
paint thinner
nail polish
nail polish remover
photographic chemicals
permanent markers
white board markers

Some Safer Alternatives for Children's Art Supplies

crayons
glue stick, paste, or white glue
ahdesive tape
odorless, water-based markers
paint brush/water-based paints
pre-mixed clay
vegetable and plant dyes
homemade paper mache
cellophane and colored paper
children's paints
digital camera

airplane glues may contain acetone or toluene. Super-strong or instant glues are especially dangerous to the eyes—even a minute amount of vapor is intensely irritating. An additional hazard of instant bonding glues is their potential to stick a finger to an eye or bind two fingers together. Epoxies cause skin irritation or sensitization in some individuals. If you do need to use a solvent-based glue, take the steps listed in the box entitled "If you cannot avoid a hazardous product" on the next page. These adhesives should not be used by young children.

■ Paints and Solvents

Solvents are also found in paints, where they dissolve pigment and allow paint to spread. In oil-based paint, volatile solvents are used. In water-based paint, plain water does the job. Virtually all solvents are toxic, and many are extremely flammable as well. Turpentine can cause skin, eye, and respiratory irritation, headaches, central nervous system depression, and kidney damage. Methyl (wood) alcohol may cause blindness if swallowed, inhaled, or absorbed through the skin.

Reduce your exposure to the solvents in paints by choosing watercolors or other water-based paints. You will avoid inhaling the solvents in the paint, and you won't need to use additional solvent for thinning or for cleaning up. If you must use a solvent-based paint, choose one with the least toxic solvents. Ethyl or isopropyl alcohol, acetone, or odorless mineral spirits are less toxic than methyl alcohol, toluene, and turpentine. All of these solvents are extremely flammable.

The pigment in paint can be hazardous, whether the paint is water-based or solvent-based. Some pigments contain highly toxic metals such as arsenic, cadmium or lead. Generally the most toxic pigments are used in artists' paints. Artists' paints are exempt from the hazard labeling law. Children should be given only water-based children's paints with non-toxic pigments.

Acrylic paints, though water-based, may contain small amounts of ammonia, formaldehyde, and acrylonitrile plastic. These materials may cause problems for some people, but generally they are safer than oil based paints.

Applying paint with brushes is safer than using sprays. Buy your paints in a solid or liquid form so that you avoid exposure to dusts when mixing paints. Never dispose of leftover thinner or solvent-based paint in the sink or the trash. Take these hazardous wastes to a household hazardous waste collection facility.

■ Pens and Markers

Pens and markers are found in every home and office. They include "highliters," ballpoint and fountain pens, felt-tip markers, stamping inks, india ink, and dry-erase markers. Fine-point pens are less hazardous than wide-point markers because they do not put as much ink on the paper or as much solvent into the air.

There are basically three kinds of markers: water-based, alcohol-based, or aromatic solvent-based. Aromatic solvent-based are the most hazardous—many use xylene. Alcohols are also volatile solvents, but they are generally not as toxic as xylene.

Here are a few tips for finding safer alternatives. If the pen is labeled "permanent" it is likely to be xylene or alcohol-based. Solvents have distinct odors, so sometimes a sniff will tell you if the solvent is alcohol or xylene. If the ink has no odor at all or smells slightly like vinegar, it is likely to be water-based ink. Most water-based markers will say so on the barrel or package. Markers for highlighting are usually water-based. Dry erase markers for whiteboards come in two types: alcohol or ketone-based. The alcohol-based kind are less-toxic and are usually marked as "low odor." Expo2™ is a common brand.

For many purposes such as children's projects, flip charts, or general office use, permanent or waterproof ink is not necessary. Water-based markers will work just fine. An extra benefit of water-based markers is that they are much easier than solvent based markers to clean up from walls or woodwork. To mark packages for freezer storage, use grease pencils. Some felt tip markers are scented with fruit flavors. While these markers are not toxic, children who use them may develop the dangerous habit of sniffing

If You Cannot Avoid a Hazardous Product

- ❖ Read the label and follow all directions carefully. Look for ingredient information on labels and material safety data sheets.
- ❖ Use product in its safest form: choose liquid instead of a powder and brush-on rather than spray.
- ❖ Work in a well ventilated area with an exhaust fan. If that is impossible, wear a respirator with the cartridge appropriate for the specific toxic substance. Use a dust mask only for dust, not toxic fumes or vapors.
- ❖ Wear gloves to prevent skin contact. Special glove materials are necessary for some solvents.
- ❖ Remove soft contact lenses.
- ❖ Keep containers sealed, with different classes of products separated. Label secondary containers. Keep the lid tightly closed when not in use.
- ❖ Be sure to extinguish all sources of flames if you are working with flammable materials.
- ❖ Don't eat or drink in the work area.
- ❖ Never use toxic products on items which may contact food such as cutting boards, bowls, or kitchen counters.

Disposal

Do not put toxic art products in the trash or flush them down the drain. For information on proper disposal of household hazardous waste in King County, call the Hazards Line at 206-296-4692. Statewide in Washington, call 1-800-RECYCLE. If you are a professional artist, even if you work at home, you are considered a small business and are not eligible to use household hazardous waste disposal. In King County, call the Business Waste Line at 206-296-3976 for disposal information. Statewide, call 1-800-RECYCLE.

markers or puting them in their mouths.

Most children's crayons are made from paraffin wax or beeswax and are considered non-toxic. Avoid crayons marked as industrial—these may contain toxic pigments. A few years ago some imported crayons were found to contain lead. More recently, asbestos was detected in some brands of crayons. Since children do frequently chew on crayons, lead contamination is very serious. Asbestos probably presents a much lower risk because it is by inhaling that the fibers are dangerous. Still, neither material belongs in children's art materials. Your best bet may to to stick with well-known brands.

■ Photography Chemicals

So many different chemicals are used in developing and printing photographs that we don't have room to discuss them here individually. Generally, developers and toners tend to be most toxic. Although the solutions in the trays are usually fairly weak, the undiluted chemicals in the bottles can be quite toxic. In addition, the poor ventilation in most home darkrooms can lead to significant inhalation exposure. Experts recommend ventilation which changes the room air at least 10 or 20 times an hour. To avoid skin irritation, it is a good idea to use tongs to handle photographs, instead of placing your hands directly in the chemical baths.

■ Commercial Dyes or Fiber-Reactive Dyes

The ingredients for fiber dyes vary, but many do contain corrosives or toxic materials that cause acute and chronic health effects. Substitute natural dyes such as those made from vegetables, onion skins, flowers, tea, and other food dyes. Mordants are the materials which bind the dye into the cloth fibers. Some typical mordants include ammonia (an irritant), oxalic acid (corrosive), and potassium dichromate (toxic). A less toxic alternative suitable for some dyes is potassium alum.

■ Other Art and Hobby Materials

Many other arts and crafts involve using hazardous materials. Lead in stained-glass work, lead-based solder, and pottery glazes are examples. If you use these or other toxic materials, you should do some research to identify the hazards and appropriate safety precautions. Your local library has books that discuss specific hazards and precautions appropriate to many activities we don't have room to cover. Or check out the the websites of the Center for Safety in the Arts and Arts, Crafts, and Theater Safety. ■

Illustrations by Liz Hoenig

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Center for Safety in the Arts. Internet Web site at http://artswire.org:70/1/csa.

Arts, Crafts, and Theater Safety. Internet Web site at http://www.caseweb.com/acts/index.html.

The Washington Toxics Coalition is a non-profit organization dedicated to protecting public health and the environment by identifying and promoting alternatives to toxic chemicals. Please write or phone for information: WTC, 4649 Sunnyside Ave N, Suite 540, Seattle, WA 98103. (206) 632-1545. Visit our Internet Web site at www.watoxics.org..