

Painting and Drawing Safety Manual



Poison Control: 1-800-222-1222

HACC Security/Emergency number: 780-2568

HACC Department of Environmental Health and Safety 221.1300

x:1567

If the emergency is life threatening call 911, or ask a professor or secretary to call.

Chemicals enter the body through **absorption, inhalation and ingestion**. Smoking increases the hazards of respiratory reactions.

Art materials may be:

Toxic, cause physical injury via breathing (inhalation), eating (ingestion), or by skin contact & absorption

Caustic, may burn you on contact

Irritant, cause skin, eye, mucous membrane inflammation or pain

Flammable, can ignite or be set on fire

Explosive, may explode when exposed to heat, pressure or shock

GENERAL PRECAUTIONS:

Do not eat or drink close to work area (to prevent accidental ingestion).

Familiarize yourself with which substances that are hazardous.

Clean hands thoroughly after working using baby oil, soap and water, or a non-toxic hand cleaner such as GoJo.

Keep work area cleaned up and organized.

Ask your doctor if you are taking medication or are pregnant about what precautions you should be taking.

Identify location of fire extinguishers, first aid box and eye wash stations (ask your professor if need be).

Notify your professor about any health condition or medication that may affect you in the classroom.

Introduction

Working safely can involve changes in how you select your art materials, and how you handle them. Refer to *Artist Beware* for lists of hazardous materials.

Material Safety Data Sheets (MSDS) are available at <https://myhacc.hacc.edu/cp/home/displaylogin> or contact the Department of Environmental Health and Safety at 221.1300 x:1567.

Most information contained in this booklet will be helpful at HACC. Some chemicals and processes not used at HACC may be mentioned to strengthen your awareness of possible hazards in the art studio.

PLEASE NOTE: Do not dispose of turpentine, thinners or other chemicals down the drain. Contact your professor or the Department of Environmental Health and Safety at 221.1300 x:1567 for proper disposal and storage methods. Oily or greasy rags are to be stored in the pre-labeled containers supplied by the Art Department. Keep small solvent containers sealed or covered with foil when not in use, to prevent evaporation. Do not use food or beverage containers, to prevent accidental ingestion.

Commonly used materials at HACC and Quick Overview of Hazards:

Drawing I

Graphite- no significant hazards

Charcoal and conte crayon- no significant hazards, avoid breathing charcoal dust

Pastel- may contain toxic pigments

Watercolor- generally not hazardous, refer to pigment list

Ink wash- water based inks are not hazardous

Acrylic medium - may contain small amounts of ammonia which can irritate eyes, nose and throat

Spray fixatives- hazardous, only use in a spray booth or outside **away from building**, contains hazardous chemicals

Hand cleaners (typically GoJo) - generally non-toxic, may irritate eyes

Drawing II & Painting I and II

Oil paint (tubes and sticks)- safer without use of solvents, use baby oil to clean hands followed by soap and water or GoJo.

Turpentine-lethal if ingested, may be absorbed by skin, fumes may cause dizziness and loss of coordination, also causes kidney damage, highly toxic. Wood turpentine is more toxic than gum turpentine. Flammable.

Mineral Spirits (paint thinner) - moderately toxic, flammable

Damar Varnish- natural resin, may cause skin reaction

Linseed oil and stand oil- not considered hazardous, may de-fat skin

Liquin- hazardous, may be fatal if swallowed, flammable

Hand cleaners such as GoJo- generally non-toxic

Rubber cement- potentially fatal if swallowed, hazardous fumes, flammable

Wax- highly flammable, fumes may cause respiratory irritation

Pigments

Painters use pigments in oil paints, acrylics, watercolor paints, gouache, encaustic, poster paints, casein paints and tempera. Paints are pigments mixed with a vehicle or binder, such mixtures may also contain preservatives. Both inorganic and organic pigments are used as colorants.

Most paints used at HACC do not contain metal pigments and are considered non-toxic. These are most easily identified by the product name. If the paint is described as hue, such as "chromium yellow hue", there is no (or too little to be concerned about) toxic metal contained in the product.

PRECAUTIONS

Use the least toxic pigments possible. Do not use lead or carcinogenic pigments. See list of highly toxic pigments below.

Avoid mixing dry pigments whenever possible. If dry pigments are mixed, do it inside fume hood, available in the ceramics lab. Wet mop and wipe all surfaces when using dry pigments.

Avoid using dishes, containers or utensils from the kitchen to mix and store paints and pigments. Do not eat or drink in proximity to the work area.

HAZARDS

Poisoning can occur if toxic pigments are inhaled or ingested. The main hazard in standard painting techniques is accidental ingestion of pigments due to eating, drinking or smoking while working, inadvertent hand to mouth contact, or pointing the paint brush with the lips. If methods such as spraying, heating, or sanding are employed then there is an opportunity for inhalation of toxic pigments.

List of Highly Toxic Pigments

- antimony white (antimony trioxide)
- barium yellow (barium chromate)
- burnt or raw umber (iron oxides, manganese silicates or dioxide)
- cadmium red, orange or yellow (cadmium sulfide, cadmium selenide)
- chrome green (Prussian blue, lead chromate)
- chrome orange (lead carbonate)
- chrome yellow (lead chromate)
- cobalt violet (cobalt arsenate or cobalt phosphate)
- cobalt yellow (potassium cobalt nitrate)
- lead or flake white (lead carbonate)
- lithol red (sodium, barium and calcium salts of azo pigments)
- manganese violet (manganese ammonium pyrophosphate)
- molybdate orange (lead chromate, lead molybdate, lead sulfate)
- naples yellow (lead antimonate)
- strontium yellow (strontium chromate)
- vermilion (mercuric sulfide)
- zinc sulfide
- zinc yellow (zinc chromate)

List of Moderately Toxic Pigments

- alizarin crimson
- carbon black
- cerulean blue (cobalt stannate)
- cobalt blue (cobalt stannate)
- cobalt green (calcined cobalt, zinc and aluminum oxides)
- chromium oxide green (chromic oxide)
- Phthalo blue and greens (copper phthalocyanine)
- manganese blue (barium manganate, barium sulfate)
- Prussian blue (ferric ferrocyanide)
- toluidine red and yellow (insoluble azo pigment)
- viridian (hydrated chromic oxide)

zinc white (zinc oxide)

Water-based Paints

Water-based paints include water color, acrylic, gouache, tempera, and casein. Water is used for thinning and cleanup.

PRECAUTIONS

Adequate ventilation.

HAZARDS

See section above for pigment hazards.

Acrylic paints contain a small amount of ammonia. Some sensitive people may experience eye, nose and throat irritation from the ammonia. Acrylics and some gouaches contain a very small amount of formaldehyde as a preservative. Only people already sensitized to formaldehyde would experience allergic reactions from the trace amount of formaldehyde found in acrylics. The amounts can vary from manufacturer to manufacturer.

Oil Paints and Solvents

Oil paints, oil sticks, and encaustic use linseed oil, wax and egg respectively as vehicles, and solvents are often used as a thinner and for cleanup. Turpentine and mineral spirits (paint thinner), for example, are used in oil painting mediums, for thinning, and for cleaning brushes. Alkyd paints use solvents as their vehicle. In addition many commercial paints used by artists also contain solvents. In general, organic solvents are one of the most underrated hazards in art materials.

PRECAUTIONS

No eating or drinking near paint and solvents; ingestion of turpentine can be fatal.

During pregnancy and nursing, switch to water-based paints to avoid exposure to solvents.

Careful handling of solvents: avoid skin contact and inhalation of fumes; use certified containers for storage and disposable.

Adequate ventilation.

Odorless solvents are also toxic, though they may be less toxic than solvents with a strong odor (odorless paint thinner may be the least toxic). Techniques such as turpentine washes will require a lot of ventilation because they result in the evaporation of large amounts of solvents in a short period of time. Acrylic paint can be substituted for under painting. Mineral spirits is also less flammable than turpentine, since its flash point is over 100 F (38 C), while turpentine has a flash point of 95 F, (35 C).

Apply the same health and safety considerations for the use of "citrus" or "pine" solvents. These have been found to be quite irritating to the skin and eyes.

Ventilation only needs to be provided while the solvent is evaporating from the canvas, not during the time while the oil paint film is drying.

Wear neoprene gloves while cleaning brushes with mineral spirits or turpentine, which can be absorbed through the skin.

Used solvent can be reclaimed by allowing the paint to settle and then pouring off the clear solvent.

Paint can be removed from your hands with baby or vegetable oil, and then soap and water or GoJo.

Wax should be only heated to the minimum temperature needed for proper flow of the paint. Do not heat with open flame or hot plate with exposed element.

HAZARDS

See section above for pigment hazards.

All solvents can cause defatting of the skin and dermatitis from prolonged or repeated exposure. Turpentine can also cause skin allergies and be absorbed through the skin.

Acute inhalation of high concentrations of mineral spirits, turpentine vapors, and other solvents can cause narcosis, which can include symptoms of dizziness, headaches, drowsiness, nausea, fatigue, loss of coordination, coma, as well as respiratory irritation. **Reactions to vapors may be more sensitive when you are taking certain medications or if you are pregnant.**

Chronic inhalation of large amounts of solvents could result in decreased coordination, behavioral changes and brain damage. Chronic inhalation of turpentine can cause kidney damage and respiratory irritation and allergies. Odorless mineral spirits and turpenoid, in which the aromatic hydrocarbons have been removed, while still hazardous are less hazardous.

Ingestion of either turpentine or mineral spirits can be fatal. In the case of mineral spirits, this is usually due to chemical pneumonia caused by aspiration (breathing in) of the mineral spirits into the lungs after vomiting.

Natural resins (copal, damar, rosin, Japanese Lacquer) may cause skin irritation or allergies. Rosin dust can cause asthma.

Encaustic involves suspending pigments in molten wax. If the wax is overheated, flammable wax vapors and wax decomposition fumes are produced, which are strong respiratory irritants.

Epoxy paints consist of an epoxy resin component containing the pigment, and a hardener component. The epoxy resin may contain diglycidyl ethers which are irritants, may cause bone marrow damage, and are suspect carcinogens. Epoxy hardeners may cause skin and respiratory allergies and irritation. Epoxy is generally not used in the HACC Painting and Drawing classes.

Airbrush, Spray Cans, and Spray Guns

Artists use many products in spray form, including fixatives, retouching sprays, paint sprays, varnishes, and adhesive sprays. Airbrush, aerosol spray can and spray guns are used.

PRECAUTIONS

See section above for precautions with pigments.

Use fixative outdoors only, at a distance from doors and windows or in a spray booth.

Use water-based airbrushing paints and inks rather than solvent-based paints.

Use spray cans or an airbrush in a spray booth.

If ventilation is not adequate, then a respirator should be worn.

Never try to spray paint by blowing air from your mouth through a tube. This can lead to accidental ingestion of the paint.

HAZARDS

Spray mists are particularly hazardous because they are easily inhaled. If the paint being sprayed contains solvents, then you can be inhaling liquid droplets of the solvents. In addition the pigments are also easily inhaled, creating a much more dangerous situation than applying paint by brush.

Aerosol spray paints have an additional hazard besides pigments and solvents. They contain propellants, usually isobutanes and propane, which are extremely flammable and have been the cause of many fires. Other aerosol spray products such as retouching sprays, spray varnishes, etc. also contain solvents, propellants and particulates being sprayed.

Airbrushing produces a fine mist which is a serious inhalation hazard because artists work so close to their art work. Airbrushing solvent-containing paints is especially dangerous.

Liquid Drawing Media

This includes India ink and both water-based and solvent-based pen and ink and felt tip markers.

PRECAUTIONS

Use water-based markers and drawing inks if possible. Alcohol-based markers are less toxic than aromatic solvent-based markers.

Solvent-based drawing inks and permanent markers should be used with good dilution ventilation (e.g. window exhaust fan).

Never paint on the body with markers or drawing inks. Body painting should be done with cosmetic colors.

HAZARDS

Drawing inks are usually water-based, but there are some solvent-based drawing inks. These usually contain toxic solvents like xylene.

Permanent felt tip markers used in design or graphic arts contain solvents. Xylene, which is a highly toxic aromatic hydrocarbon, is the most common ingredient; newer brands often contain the less toxic propyl alcohol (although it is an eye, nose and throat irritant). The major hazard from using permanent markers results from using a number of them at the same time at close range.

Other Resources

The Artist's Complete Health and Safety Guide, Monona Rossol, Allworth Press, NY (available in the studio and the McCormick Library)

Artist Beware, Michael McCann, The Lyons Press, NY (Available in the studio and the McCormick Library)

Health Hazards Manual for Artists, Michael McCann, The Lyons Press, NY

(available in McCormick Library) and online at http://www.uic.edu/sph/glakes/harts/HARTS_library/index.htm

Making Art Safely, Merle Sanforfer, Deborah Curtiss and Jack Snyder, Van Nostrand Reinhold, NY (available in McCormick Library)

New Jersey Department of Health website provides organized lists on hazardous substances, similar to MSDS, possibly easier to understand - <http://nj.gov/health/eoh/rtkweb/index.shtml>