The Fine Arts Center
Greenville County Schools
102 Pine Knoll Drive
Greenville, SC 29609

Health and Safety Area Specific Information: Drawing Mediums

The hazards of each type of painting, printmaking, or drawing will depend on the toxicity of the ingredients of the materials and how much exposure occurs during use. Most of what is used at the fine arts center is non-toxic.

- When drawing materials are airborne, they are more dangerous to your system, while many materials cause skin irritation.
- See the MSDS forms for each toxic material you work with to determine precautions, risks and treatment plan for inhalation, contact or ingestion.
- The hazards of traditional drawing materials arise from exposure to their pigments, vehicles and solvents. Today, as the definition of drawing changes, students should cross reference as needed based on materials they choose to work with.
- Drawing materials are pigments suspended in vehicles. Drawing vehicles include wax (crayons) inert materials (pastels, conte crayons, chalks), and liquids (solvent and water-based inks and marking pens). Pencils contain graphite and clay or pigmented clay/binder mixtures.

Hazards of equipment and tools

Easels

When using an easel, be sure to securely tighten all moving parts to prevent them from moving or dropping suddenly, or falling on you or your neighbor. The easels are heavy and could easily hurt someone if it were to fall over. Do not trust that the last person that used it set it up properly; always check that it is securely set up before using it.

Hazards of Drawing Mediums

Fixatives, Mists, Adhesives, Spray Paint

Both permanent and workable spray fixatives used to fix drawings contain toxic solvents. There is high exposure by inhalation to these solvents because the products are sprayed in the air. In addition you can be inhaling the plastic particles that comprise the fixative itself. 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 isobutane 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. Always spray outside.

Pencils

Pencils are made with graphite, and are not considered a hazard. Colored pencils have pigments added to the graphite, but the amounts are small so that there is no significant risk of exposure.

Charcoal

Charcoal is usually made from willow or vine sticks, where wood cellulose has been heated without moisture to create the black color. Compressed charcoal sticks use various resins in a binder to create the color. Although charcoal is just considered a nuisance dust, inhalation of large amounts of charcoal dust can create chronic lung problems through a mechanical irritation and clogging effect. A major source of charcoal inhalation is from the habit of blowing excess charcoal dust off the drawing.

Chalks

Colored chalks are also considered nuisance dusts. Some chalks are dustier than others. Individuals who have asthma sometimes have problems with dusty chalks, but this is a nonspecific dust reaction, not a toxic reaction.

Pastel

Pastel sticks and pencils consist of pigments bound into solid form by a resin. Inhalation of pastel dusts is the major hazard.
Some pastels are dustier than others. Pastels can contain toxic pigments such as chrome yellow (lead chromate), which can cause lung cancer, and cadmium pigments (which can cause kidney and lung damage and are suspected human carcinogens).
Blowing excess pastel dust off the drawing is one major source of inhalation of pastel pigments. Pastel artists have often complained of blowing their nose different colors for days after using pastels, a clear indication of inhalation.

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Crayons and Oil Pastels
Crayons and oil pastels do not present an inhalation hazard, and thus are much safer than pastels. Some oil pastels can contain toxic pigments, but this is only a hazard by accidental ingestion.
Liquid Drawing Material
Drawing inks are usually water-based, but there are some solvent-based drawing inks. These usually contain toxic solvents like xylene.
Many 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.
Water-based markers do not have an inhalation hazard although there is concern about the dyes used in these (and the permanent markers).

Safety Guidelines for Drawing Mediums

Working safely means becoming more knowledgeable about the hazards of the media that you work with, making changes in how you select and handle your art materials, and creating a healthier environment to work in. Good hygiene, reviewing MSDS forms and working safely can prevent many problems caused by pigments and exposure or accidental ingestion. Wear gloves, wash hands regularly, and avoid any over exposure to toxic materials.
Spray Materials (fixatives, spray paint, spray adhesives)
-Try to brush items rather than spraying if possible.
-Use water-based airbrushing paints and inks rather than solvent-based paints, if possible.
-Never try to spray paint by blowing air from your mouth through a tube. This can lead to accidental ingestion of the paint.
See GENERAL SAFETY INFORMATION - Spray Paint and Aerosol Safety
Pastels, Chalks, etc…
-Use the least dusty types of pastels, chalks, etc. Asthmatics in particular might want to switch to oil pastels or similar non-dusty media.
-Don't blow off excess pastel dust with your mouth. Instead, tap off the built up dust so it falls to the floor (or paper on floor).
-Wet-mop, vacuum and wet-wipe all surfaces clean of dust, do not sweep.
-Wear dust mask if needed
- Use exhaust fan if needed

Liquid Drawing Material
-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 not be used in the classroom.

Health & Safety Area Specific Information: Painting
The hazards of each type of painting, printmaking, or drawing will depend on the toxicity of the ingredients of the materials and how much exposure occurs during use. Most of what the fine arts center uses is non-toxic.

Hazards of equipment and tools
Easels
When using an easel, be sure to securely tighten all moving parts to prevent them from moving or dropping suddenly, or falling on you or your neighbor. The easels are heavy and could easily hurt someone if it were to fall over. Do not trust that the last person that used it set it up properly; always check that it is securely set up before using it.

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Health and Safety Area Specific Information: Painting Mediums

Hazards of Painting Mediums

Acrylic Paints
May contain ammonia which may cause eye, nose, throat irritation, especially if large amounts are used or come in contact with the body; may contain preservatives, such as formaldehyde.

Watercolors and Gouache
Gum arabic and gum tragacanth cause skin allergies; gum arabic can cause asthma; may contain preservatives, such as formaldehyde.

Latex
May contain glycols, mercury.

Pigments
Many pigments are toxic, including those based on lead, cadmium, mercury, chromates, manganese, and cobalt. The main risk is from accidental ingestion of the pigments due to eating while working, nail-biting, pointing your brush with your lips, and similar means of hand-to-mouth contact. Using dry pigments can allow the pigments to be breathed in through the air (this also occurs when using encaustics in an unventilated space.)

Special or Advance projects hazards

Oil Paints
Turpentine, mineral spirits are moderately toxic by all routes of entry; they're irritants and narcotics; wood/steam-distilled turpentine is more toxic than gum turpentine; turpentine washes are very hazardous. Oil painting can involve hazards from accidental ingestion of pigments, and from inhalation or skin contact with solvents such as turpentine, turpenoid, or mineral spirits. At the Fine Arts Center, only advanced students can use oil paint and they replace turpentine with safer alternatives, either turpenoid natural or soysolv.

Solvents
The use of solvents is a more serious hazard. Commonly, a student might have a half cup of solvent in a container, which is normally left uncovered. Over a three-hour period, about one quarter to half of this might evaporate from the container or by use. All solvents can cause defatting of the skin and dermatitis from prolonged or repeated exposure. Turpentine can also cause skin allergies and can be absorbed through the skin. Acute inhalation of high concentrations of turpentine or mineral spirits can cause narcosis (dizziness, nausea, fatigue, loss of coordination, coma, etc.) and respiratory irritation. Chronic inhalation of turpentine can cause kidney damage and possible respiratory allergies. Chronic inhalation of large amounts of mineral spirits could cause brain damage. Odorless mineral spirits or turpenoid, which have had the aromatic hydrocarbons removed, 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 of the mineral spirits into the lungs after vomiting. In many colleges, traditional underpainting techniques using turpentine washes are taught. This is very hazardous since it involves brushing onto the canvas as much as a cup or more of turpentine in a short period. Although this is hazardous enough when one individual does turpentine wash, it becomes extremely hazardous when a whole class does it due to the enormous amounts of solvent evaporation. At the Fine Arts Center, only advance students can use oil paint and they replace turpentine with safer alternatives, either turpenoid natural or soysolv.

Guidelines for Painting
- Don't eat, drink, or chew gum in the studio
- Wash hands, including under fingernails (good hygiene)
- Avoid inhaling pigment powder
- Use least toxic preservatives possible
- Replace turpentine with safer alternatives - turpenoid natural or soysolv
- Use exhaust fan if needed
- Don't do solvent washes

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(continued) Guidelines for Painting

- Wear nitrile gloves
- Reuse solvent, if possible Switch to formaldehyde-free painting medium
- Remove oil paint from hands with baby oil, vegetable oil, or soy solvent.
- Work in a well-ventilated area
- No open flames in the classroom

Health & Safety Area Specific Information: Printmaking

The hazards of each type of painting, printmaking or drawing will depend on the toxicity of the ingredients of the materials and how much exposure occurs during use. Most of the processes done at the fine arts center are non-toxic, but some advanced processes need hazardous materials.
Printmaking refers to lithography, screen-printing, intaglio printing (i.e. etching), engraving and dry-point, relief printing (i.e. woodcuts), linoleum cuts, collagraphs, and letterpress printing.

Hazards of equipment and tools

Printing Press

Do not try to press non-printing items through the press.

Health and Safety Area Specific Information: Printmaking Mediums

The main hazards are inhalation of vapors and fumes associated with solvents in inks, thinners, lacquers, wash-ups, film adhesives and blockouts, aerosol fixatives and glues, vapors given off during the drying process of toxic pigments and fire -associated with the use of solvents and other substances with low flashpoints. At the Fine Arts Center, we use mostly water based inks and only advanced students can use oil based inks and we have replaced turpentine with safer alternatives, either turpenoid natural or soysolv.

Risk Levels:

Low risk: Includes screen printing and relief printing (i.e. linocuts, woodcuts, letterpress, monoprints, collagraphs). These processes involve the use of cutting tools and, in some instances, hazard solvents (Advance projects only). At the Fine Arts Center, we use mostly water based inks.

Medium risk: Includes photographic screen-printing, lithography, and intaglio printing (i.e. lino etching, aquatinting, etching, engraving, dry point). These processes involve the use of cutting tools and, in some instances, hazard solvents (Advance projects only). At the Fine Arts Center, we use mostly water based inks, but some advanced projects may use oil based inks and stronger solvents.

Guidelines for Printmaking

- Don't eat, drink, or chew gum in the studio
- Wash hands, including under fingernails (good hygiene)
- Switch to toxic-free printmaking media
- Use least toxic preservatives possible
- Replace turpentine with safer alternatives - turpenoid natural or soysolv
- Wear nitrile gloves
- Remove ink from hands and printing plates with baby oil, vegetable oil, or soy solvent.
- Work in a well-ventilated area.
- No open flames in the classroom

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