

The Healthy Artist Guide to a Less Toxic Studio

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5 Tips for Using Less Toxic Art Materials

1. Know the relative hazards of your materials.
2. Use water-based materials where possible.
3. Avoid powders and dusts.
4. Choose the safest process.
5. Be patient as you learn how to use safer substitutes.

Item		Hazards	Less Toxic Alternatives
Paint and Drawing Materials	<i>Examples:</i> Oil, acrylic and watercolour paints, markers, pens, varnishes, inks and thinners.	<p>These materials contain solvents that may contain chemicals such as toluene and xylene.</p> <p>Some may irritate the skin, eyes and respiratory system, and damage the nervous system, liver and kidneys. Turpentine causes allergies to itself.</p> <p>Pigments in paints may contain heavy metals, e.g., lead. Some pigments may be contaminated with PCBs and dioxins.</p>	<p>Mineral Spirits - for thinning oil based paints and varnishes or for general cleaning purposes.</p> <p>Water-based markers.</p> <p>Water-based and acrylic paints.</p> <p><small>*Note: Water-based paints may contain formaldehyde, acrylics may contain ammonia - but they are still considered safer than oil-based paints.</small></p>
Dusts and powders	<i>Sources:</i> pigments, dyes, clay, plaster, cement, talc, soapstone, asbestos, woods	<p>Varied hazards, e.g., pigments can contain heavy metals; clays contain silica.</p> <p>When particles of dust and powders become air-borne they can be inhaled and cause respiratory problems.</p>	<p>Products that don't create dusts and mists. Avoid materials in powdered forms.</p> <p>Use: paints and clays that are pre-mixed; dyes in liquid form.</p> <p>For plaster casting body parts use a plaster impregnated bandage along with Vaseline for protection.</p>

Item		Hazards	Less Toxic Alternatives
Dyes	Used to dye fabric, e.g., whole cloth dyeing, tie dyeing, batik, silkscreening.	<p>Long-term (chronic) hazards unknown.</p> <p>Acute hazards vary by class of dye (e.g., acid, azoic, basic, direct, disperse, fibre-reactive, vat, all-purpose, and food).</p> <p>Dyes may cause: allergic reactions, asthma, cancer, dermatitis; some may be mutagenic (fibre-reactive dyes) or caustic.</p> <p>Benzidine dyes (mostly belong to the 'direct dyes' class) are cancer-causing.</p>	<p>Buy dyes in liquid form or paste, avoid powdered dyes.</p> <p>Avoid benzidine dyes.</p>
Ceramic Glazes	Used on pottery.	<p>Some glazes contain lead, cadmium, chromium, nickel and other heavy metals which are highly toxic.</p> <p>Ceramic lustre glazes contain solvents that irritate the skin and respiratory system.</p>	<p>Lead-free glazes.</p> <p>! Never use lead glaze on pottery meant to hold food or beverages.</p>
Glues and Adhesives	Used in a variety of art practices.	<p>Solvent-based glues (e.g., rubber cement, model cement glue, contact cement) can irritate the skin and respiratory system.</p> <p>Wheat pastes (e.g., wallpaper pastes) can contain arsenic compounds and pentachlorophenol.</p>	<p>Water-based glues and adhesives: library paste, mucilages, polyvinyl acetate emulsions (white glue), homemade glue (flour and water).</p>

Item	Hazards	Less Toxic Alternatives
<p>Plastic Resins</p> <p><i>Examples:</i> acrylic resins, epoxy resins, amino and phenolic resins Polyester resins Polyurethane resins</p>	<p>Highly toxic: Amino and phenolic resins (formaldehyde); polyurethane resins (isocyanates, organotin compounds)</p> <p>Moderately toxic: acrylic resins (contain methyl methacrylate and benzoyl peroxide); epoxy resins contain solvents (avoid ones with diglycidyl ether); polyester resins (contain styrene; avoid use of dimethylaniline as accelerator)</p>	<p>See 'Moderately Toxic' resin list in the previous column.</p> <p>Finished plastics are safer to work with than resin systems, although they have their own hazards as well. Example: acrylic (Lucite, Plexiglas). Avoid polyvinyl chloride (PVC) and polyurethane, melamine resins, urea formaldehyde and nylon.</p>
<p>Acids</p> <p>Used for many purposes, including: etches in printmaking, metal cleaning and pickling, etching glass, etc.</p>	<p>Highly Toxic: Sodium bisulfate, oxalic acid, phosphoric acid, hydrochloric acid, acetic acid, sulphuric acid, nitric acid, phenol. Hydrofluoric acid and chromic acid are extremely toxic, do not use.</p> <p>Slightly-Moderately Toxic: Tannic acid, ferric chloride (substitute for Dutch mordant in copper etching), ammonium bifluoride, boric acid</p>	<p>See 'Slight-Moderately Toxic' acids in previous columns.</p> <p>Diluted acids are less hazardous than concentrated acids.</p>

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<p>Alkalis</p> <p>Used in: cleaning solutions, paint removers, dye baths, ceramic glazes and photographic developing baths.</p> <p>Most are dissolved in water.</p>	<p>Most are highly corrosive to the skin and eyes. Ingestion can cause severe damage to the digestive system. Inhalation may cause chemical pneumonia.</p> <p>Highly toxic: ammonium hydroxide</p> <p>Slightly-moderately toxic: calcium hydroxide (slaked lime), sodium silicate</p> <p>Others: calcium oxide (lime), lithium oxide, potassium hydroxide (potash lye), sodium hydroxide (lye), sodium oxide, trisodium phosphate</p>	<p>See previous column for 'slightly-moderately toxic' alkalis.</p>
<p>Sprays</p> <p><i>Examples:</i> aerosol sprays, spray guns.</p> <p>Used in spray painting, retouching photos, fixing drawings, application of glazes, enamels and adhesives.</p>	<p>Contain solvents: hexane, petroleum distillates, toluene, chlorinated hydrocarbons and ketones.</p> <p>May irritate the skin, eyes and respiratory system, and damage the nervous system, liver and kidneys.</p> <p>Sprays are particularly hazardous because solvent mist droplets can be inhaled deeply into the lungs.</p> <p>Sprays that use a mouth atomizer can lead to ingestion of solvents.</p>	<p>Avoid spraying; opt for other techniques such as brushing or dipping.</p> <p>Opt for water-based materials.</p> <p>Instead of a mouth atomizer try squeeze-bulb-type-atomizers or plunger-type spray bottles.</p>

Item	Hazards	Less Toxic Alternatives
<p>Photo-chemicals</p> <p>Used in photography, and other photoprint-making, e.g., photolithography, photosilkscreen, photoetching.</p> <p><i>Examples:</i> developers, fixers, dyes, toners.</p> <p>Available in liquid and powder form.</p>	<p>Chemicals used photography range from moderately toxic to highly toxic.</p> <p><i>Effects of chronic photochemical exposure include:</i></p> <ul style="list-style-type: none"> • Skin diseases: dermatitis • Respiratory diseases: minor damage to respiratory system, acute bronchitis, chemical pneumonia; chronic bronchitis, emphysema. • Allergic diseases: asthma, alveolitis • Methemoglobinemia (acute anemia) • Reproductive system damage <p><i>Extremely toxic chemicals to avoid:</i> chromic acid bleaches, lead toners, mercury vapour (daguerreotype), mercury intensifiers and preservatives, uranium nitrate toners, and cyanide reducers and intensifiers.</p>	<p>Use liquids rather than powdered chemicals.</p> <p>Do not use or store glacial acetic acid; purchase acetic acid diluted to concentrations of 50 per cent or less.</p> <p>Avoid carbon arc light sources. Use instead: halide bulbs, quartz lamps, sunlight.</p> <p>Ensure good darkroom ventilation (at minimum 6 complete air changes per hour)</p>

*The Healthy Artist Guide to a Less Toxic Studio is adapted from information provided in: Rossol, Monona. (2001). The Artist's Complete Health and Safety Guide. 3rd Ed. Allworth Press. New York. McCann, Michael. (1992). Artist Beware: Fully Revised and Augmented Edition. Lyons and Burford. New York.

This Guide is not meant to provide all the information an artist needs to protect themselves from the many hazards they may encounter in their work; entire books have been written on the hazards of artist materials and processes. For more information and a list of resources please visit www.toxicnation.ca/artist



ENVIRONMENTAL | DEFENCE

317 Adelaide Street West, Suite 705
 Toronto, Ontario, M5V 1P9
 Tel: (416) 323-9521
 Fax: (416) 323-9301
 Web: www.environmentaldefence.ca
www.toxicnation.ca



440-401 Richmond Street West
 Toronto, Ontario M5V 3A8
 Tel: (416) 340-8850 / 1-877-890-8850
 Email: carfacontario@carfacontario
 Web: www.carfacontario.ca