



CANADIAN ARTISTS REPRESENTATION /
LE FRONT DES ARTISTES CANADIENS

ADVISORY NOTE

Health Hazards and Safety Tips for Artists

By Susanne Hamilton for CARFAC SASK © 2000

Are Your Art Materials Safe?

Artists use many of the same hazardous chemicals found in industry, but unlike industrial workers, artists use these chemicals in their studios without adequate precautions and ventilation. In addition, many artists are not aware that some of these materials contain dangerous chemicals. Because labeling laws differ in the US and Canada, not all manufacturing companies are required to put chronic hazard warning labels on their products. It is still the responsibility of consumers to be aware of the potential hazards of the products they buy. Just because a product is on the market does not make it safe. Labels that say “nontoxic” can be misleading in that this applies only to severe hazards. Most products that are labeled carry only the minimum safety warnings.

To find out if your art materials contain hazardous chemicals you can write to the product manufacturer to obtain a Material Safety Data Sheet (MSDS). An MSDS is a detailed specification sheet listing the products, contents, dangers the product may present, how to protect yourself, and what to do if you inhale, drink, or splash the product in your eyes or on your skin. To obtain the MSDS sheet, phone or write the manufacturer or Canadian supplier of your product. While the law does not require manufacturer to release an MSDS to consumers, most do so in the interest of customer relations.

The following information looks at the health risks and safety measure associated with various media. (For detailed, material on health hazards, safety tips, and product materials and processes not listed here, please consult the resources listed at the end of this Advisory Note).



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Painting and Drawing

Artists working with paints and drawing media need to exercise caution with various materials including pigments, binders, varnishes, and fixatives. The danger of inhaling the dust from powdered pigments make them more dangerous than mixed pigments in tubes. Inorganic pigments made of toxic compounds that are known to cause cancer and other health problems include: flake white, Naples yellow, vermilion and mercury based pigments, cobalt violet, and manganese pigments including raw and burnt umber. Inhalation of powdered pigments, or airbrush spray, accidental ingestion of pigments from pointing the brush with your mouth, eating, drinking, or smoking while working, can result in chronic poisoning.

Many water-based acrylic emulsion paints contain a small amount of ammonia and formaldehyde, which may cause eye, nose and throat irritation, or allergic reactions in some people if used in an unventilated area. Formaldehyde is also a preservative in water-based mediums such as inks and watercolours.

Paint binders such as mineral spirits and turpentine are hazardous by skin contact, inhalation, and ingestion, and therefore require good ventilation and skin protection when used. Solvents used in varnishes are a major hazard. Commonly used solvents are methyl alcohol and ethanol (shellac varnish), turpentine (damar, mastic, and oil resin varnishes), and lacquer solvents used with synthetic resins. Lacquer thinner contains dangerous solvents like toluene. In addition to being harmful through skin contact and inhalation, many of these solvents are highly flammable and should be stored in a fireproof or safe area. Spray varnishes and fixatives should always be used in a spray booth or outside.

Drawing materials such as solvent-based inks and markers should be used in ventilated areas, as there have been instances of liver damage caused by long term use of xylene-based inks and markers.

SAFETY TIP:

As a rule, work in a well ventilated area, wear protective gloves when working with paints, varnishes and binders, and always wash you hands before you eat, drink, smoke, or touch your face.

Printmaking

Printmaking methods use a variety of hazardous solvents, acids, pigments and processes. Common toxic pigments found in inks are the same as those found in paints. Lead pigments found in chromate and molybdate-based inks are common. Water-based inks should be used where possible as cleanup does not require solvents. Wear protective gloves when handling inks and solvents to avoid skin irritation, and use only small amounts of solvent when cleaning plates and stones. Benzene, an extremely harmful solvent, should NEVER be used!

Acids used in etching can cause severe skin burns, and dangerous eye damage from splashes. Remember to always add acid to water, never water to acid. Overexposure to nitric and hydrochloric acid can cause lung problems such as chemical pneumonia and repeated exposure can cause emphysema and chronic bronchitis. Etching grounds contain asphaltum, which is a skin irritant, and rosin, which can cause hayfever-like symptoms and possible asthma. Liquid grounds can contain solvents like benzene and methyl chloroform, to which overexposure is dangerous.

SAFETY TIP:

Always wear eye protection or a face shield, acid/solvent resistant gloves, and protective clothing when working with acids.

A safe printmaking studio should have an eyewash station, and a shower as a safety precaution, should an acid accident occur.

In all printmaking processes, local exhaust ventilation (**Figure 1.**) of work areas is required to prevent the dangerous build up of chemical vapours in the air. “A local exhaust system consists of a hood enclosing or positioned very close to the source of contamination to draw in the air, ductwork to carry the contaminated air away, possibly an air cleaner or filter to purify the air before it is released outside, and a fan to pull air through the system,” stated by Monona Rossol in *The Artists Complete Health and Safety Guide*.

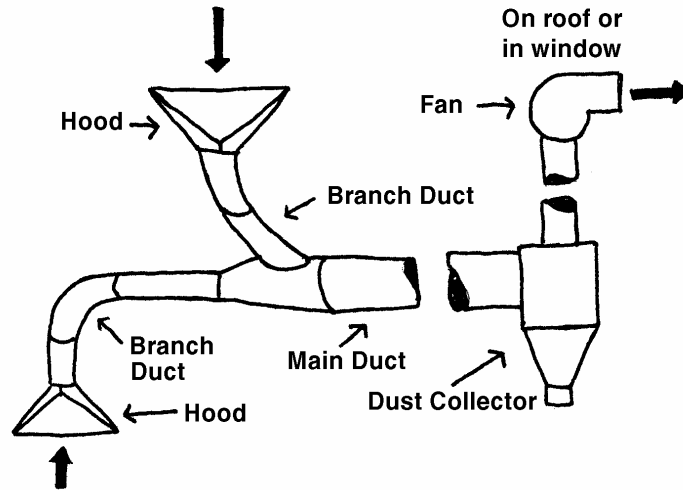


Figure 1: Local Exhaust Ventilation System:
hood, collector and fan

Photo printmaking techniques such as photo litho, photo etching and photo silkscreen present the hazard of unvented carbon arcs for exposure. When carbon arcs are lit they produce toxic carbon monoxide, nitrogen oxides, ozone, and toxic metal fumes. These gases and fumes can cause severe chronic lung problems. A dangerous amount of fumes can be inhaled without noticeable discomfort.

SAFETY TIP:

Carbon arcs must be directly vented outside by a canopy hood (Figure 2.) Always wear UV-absorbing eye goggles when working with carbon arcs, as these arcs can cause severe eye damage. Hand shields should also be used when working with carbon arcs. It is safer to use light sources other than carbon arcs.

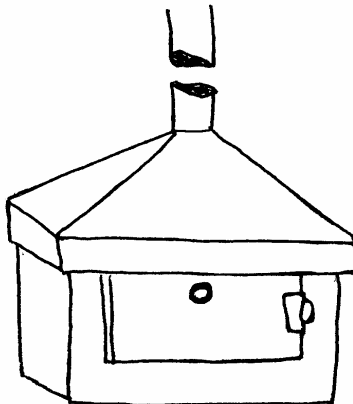


Figure 2: Canopy Hood System

Photography

Many of the chemicals used in photographic processing can cause severe skin problems, and in some cases lung damage from the inhalation of dusts and vapours. Preparing and handling concentrated stock solutions of various chemicals presents the greatest hazard. Photographers should wear protective gloves and goggles to protect against splashes, and special care should be taken to avoid skin contact with powders. A glove box (**Figure 3.**) should be used when working with powdered chemicals to avoid inhalation from the stirring of dusts.

Good ventilation is important to get rid of vapours and gases, especially from the



Figure 3: Glove Box for Mixing Powders

fixer. Developers can cause skin irritations, and tongs should always be used instead of your hands. Stop baths have acetic acid that can cause burns and irritate the breathing passages and throat. Asthmatic persons can be very sensitive to the sulphur dioxide in fixers. Vapours from intensifiers can be very corrosive to skin and lungs. Hardeners and stabilizers often contain formaldehyde, which is poisonous and irritates the eyes, throat, and breathing passages, and can cause skin dermatitis. “Kodak recommends at least 170 cubic feet/minute of dilution ventilation (**Figure 4.**) for standard processing. The exhaust opening should be located just above and behind the fixer and stop bath tray. For darkrooms with several work stations, multiply 170 times the number of fixer trays to get the total amount of ventilation recommended. Toning and colour processing should have local exhaust ventilation”, according to Michael McCann.

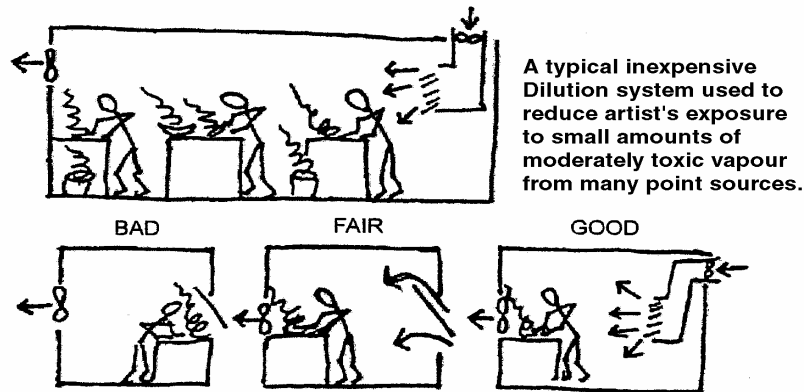


Figure 4: Dilution Ventilation

SAFETY TIP:

Always work in a properly ventilated area, and wear protective gloves during the development process and when mixing solutions. If your darkroom or studio is in your home, ensure your living space is well separated from this area. Do not use closets, bathrooms or kitchen areas as a darkroom area! Home darkrooms are generally not advised due to poor ventilation possibilities.

Ceramics

The three basic areas of concern for health hazards in ceramics are: silicates in clay; the silica and other toxic substances in glazes and colourants; and toxic fumes and gases from the firing process.

Clays contain silicates and varying amounts of crystalline free silica. Inhalation of silica dust from handling clay can lead to silicosis or “potter’s rot”. Symptoms take years to develop and include shortness of breath, decreased chest expansion, increased susceptibility to infections, and scarring of the lungs. Many low-fire clays and slip casting clays contain talc, which may be contaminated with asbestos. Inhalation of asbestos over years can cause lung cancer. Asbestos-free talcs and talc-free clays are now available on the market. The major hazard is the mixing of

clay and breaking up dry grog. To avoid contamination use wet clay, install a local exhaust ventilation system for mixing clay, and wear a toxic dust respirator.

“Keep your studio clear of clay dust buildup by wet mopping, and/or using a vacuum with high efficiency HEPA filters,” according to Michael McCann in *Health Hazards Manual for Artists*.

Glazes also contain silica, along with asbestos, alkali oxides and toxic metals such as lead, barium and lithium. Never use lead glazes on food or drink containers as these may leach into foods or drinks. Mixing glazes and colorants from powders and spraying glazes are the most hazardous procedures.

SAFETY TIP:

When working with these materials spraying should be done in a spray booth and toxic dust respirators worn when mixing glazes.

During the firing process toxic fumes and gases are produced, including carbon monoxide, sulphur dioxide and formaldehyde. Fluorine and chlorine gases are poisonous vapours from metals that are emitted when raw glazes break down into oxides. All kilns, whether gas or electric, should be ventilated with overhead canopy hoods for maximum safety.

SAFETY TIP:

Wearing infrared goggles when looking into the peephole can prevent the development of cataracts.

Sculpture: Stone, Plaster, Wood, Plastics, Metal

Like ceramic artists, stone workers are also susceptible to silicosis. Granite, quartz, sandstone, slate, and soapstone all contain free silica. Soapstone, serpentine, and green stone also contain asbestos as a contaminant.

SAFETY TIP:

When working with stone, wear appropriate dust respirators, along with eye/face protection to protect yourself from flying stone chips, and ear protection if using pneumatic tools.

The excessive vibration of pneumatic tools present hazards such as “dead fingers”, a circulatory system disease known as Raynaud’s phenomenon. This is

common if the hands are chilled, so keep them warm, and take frequent work breaks. Make sure the handles on your tools are well padded. Noise is another hazard of pneumatic tools, so always wear hearing protection, to avoid hearing loss.

Dust from Plaster of Paris can cause eye and respiratory irritation. Plaster casting of body parts can cause minor to severe burns from the heat generated in the setting process.

Woodworkers are also prone to a large number of occupational health problems resulting from exposure to woods, solvents, adhesives, noise, and vibration. Chronic inhalation of sawdust can cause many types of respiratory diseases. Workers using hardwood are at a higher risk for developing nasal cancer than the rest of the population. Paint strippers and wood finishes contain many toxic solvents such as toluene, methyl alcohol, and benzene, which can cause leukemia. Toxic preservatives and adhesives in woods present another hazard.

SAFETY TIP:

Basic safety precautions for woodworkers include: dust collectors for woodworking machines, ventilation for solvents, regular clean-up of sawdust and protection against noise and vibration from pneumatic tools, and against eye injury from wood chips and saw dust.

Artists working with plastics such as acrylics, polyester resins, epoxy resins, polyurethane, polystyrene, and fiberglass need to be aware of the hazards arising from casting, laminating, and foam processes, and from overheating or burning plastics that can occur while sawing and machining. Toxic gases can be released during the formation process of plastics and from overheating finished plastics. Polyurethane is one of the more hazardous plastics to work with, where a few minutes of exposure to a high concentration during the formation process can cause severe lung irritation and coughing spasms.

Plastic dusts from sawing, grinding or polishing can also create lung problems. These processes can cause eye, skin and lung irritation. Uncured epoxy resin is a skin irritant and suspected cancer causing agent. Respiratory protection such as appropriate dust masks and self-contained breathing apparatus should always be worn when working with plastics. Good ventilation is required and open flames should be avoided as many plastics release flammable gases when heated.

Welding can cause physical hazards such as electric shock from arc-welding equipment, burns from molten metal sparks, and burns from excessive exposure to Infrared, visible and UV radiation. Infrared radiation generates large amounts of heat that can cause burns, headaches, and eye damage. UV radiation can also cause eye damage and severe sunburn.

There are also chemical hazards associated with welding. Oxyacetylene torches produce carbon monoxide, which binds the blood's hemoglobin, cutting off oxygen supply to the blood. Metal welding produces enough energy to convert the air's oxygen to nitrogen oxides, which are highly irritating to eyes, nose and respiratory tract. In addition, metal fumes generated in arc welding can cause fever, lead poisoning, and skin irritations.

SAFETY TIP:

Always wear protective clothing that is non-flammable and face shields or eye protection to ensure safety when welding. Keep fire extinguishers close at hand in the work area, and welding must always be done in a space that is properly ventilated and adequately equipped for this activity (fire proof).

Making Art Safely?

Taking the precautionary measures to protect yourself and to ensure a safe work space may sound like an arduous and grueling task at times, but well worth the effort when compared to living with lifelong and sometimes terminal health problems. For those sharing a studio or work space with other artists: be informed and realize that your quality of life and that of those around you may depend on how serious you take health and safety issues. Knowing that you are working in a safe environment and getting into the habit of taking the necessary safety precautions, should ultimately make the process of creating art all the more enjoyable!

General Studio safety tips!

If animals and small children live with you - consider having a studio separate from your home for the safety of those living with you, and for your increased safety. If you must have a studio in your home try to have sufficient distance between living quarters, for example using your garage as a studio rather than a room in your home. Keep your studio clean, to avoid contamination from spills, dust build-up, dangerous fumes, and potential fire hazards. There are many less toxic substitutes

for the materials artists use, especially in the cases of photography, printmaking, and solvents and varnishes for painters. Consult the resources listed in this advisory note for more information on safer products to use.

Below are listed studio safety essentials, but the better ventilation systems, spray booths, fume hoods, dust collectors, etc. you have in your work space, the less you will need to worry about occupational health hazards!

Studio essentials:

1. Have an emergency phone number list by your phone - a phone in your studio could save your life!
2. Fire detector(s) and a fire extinguisher.
3. A first aid kit.
4. A medium to large size window or windows that allow for ample fresh air and/or easy access to outside air for ventilation.
5. An emergency exit - to the building your studio is in.
6. Running water - in your studio or close by with easy access to.
7. Electrical outlets that are not near running water sources.

Darkrooms and Printmaking Studios:

In addition to the above essentials these studios also should have:

1. Eye wash stations and emergency shower.
2. Running water source in the work space.
3. Access to appropriate waste disposal for toxic substances, and leak/fire proof storage area for toxic materials.
4. Fire blankets.
5. Local exhaust ventilation system.

NEW BRUNSWICK

Occupational Health and Safety Commission

General Inquires	(506) 453-2467
Toll-free in NB	1-800-442-9776

NEWFOUNDLAND

Department of Employment and Labour Relations, Occupational Health and Safety

General Inquires	(709) 729-2721
FAX	(709) 729-6639
Toll-free in NFLD	1-800-563-5471

NOVA SCOTIA

Department of Labour, Occupational Health and Safety Division

General Inquires	(902) 424-8603
FAX	(902) 424-3239
Toll-free in NS	1-800 424-8603

ONTARIO

Minister of labour Occupational Health and Safety Branch

General Inquiries	(416) 326-7770
FAX	(416) 326-7761

PRINCE EDWARD ISLAND

Department of Labour Occupational Health and Safety Division

General Inquiries	(902) 368-5470
FAX	(902) 368-5526

QUEBEC

CSST

General Inquiries	(514) 873-7183
Telecopieur	(514) 873-7007

SASKATCHEWAN

Department of Labour Occupational Health and Safety Division

General Inquires (306) 787-4496
Toll-free in Saskatchewan 1-800-567-7233

NORTHWEST TERRITORIES

Department of Safety and Public Services

General Inquiries (403) 873-7468
Telecopieur (403) 873-0117

YUKON

Workers' Compensation, Health and Safety Board

General Inquiries (403) 667-5450
Fax (403) 667-2079

Bibliography

Health Hazard Manual for Artists, 4rth Edition, Michael McCann, Lyons & Burford Publishers: New York, 1994

The Artists Complete Health and Safety Guide, Monona Rossol, Allworth Press: New York, 1990.

Doing Homework, Educating Yourself as a Warehouse Tenant, by Toronto Artscape and Canadian Artists' Representation Ontario, 1996.

For further information on health and safety for artists, the CARFAC SASK resource centres in the Regina and Saskatoon offices have the following books and videos available, which cover in detail a variety of health and safety topics of concern to visual artists.

RELATED CARFAC ADVISORY NOTES:

Warehouse Studio Health and Safety, by CARO (Canadian Artists Representation Ontario) and, Toronto Artscape.

OTHER RESOURCE BOOKS:

Overexposure, Health Hazards in Photography, Monona Rossol, and Susan D. Shaw, Allworth Press: New York, 1991.

Health Hazards for Photographers, by Siegfried and Wolfgang Rempel.

Ventilation, A Practical Guide for Artists, Craftspeople, and Others in the Arts, by Nancy Clarke, Thomas Cutter, and Jean-Anne McGrane, Nick Lyons Books: New York, 1984.

Non-Toxic Intaglio Printmaking, by Keith Howard.

Saskatchewan Visual Artists Handbook, 6th Edition, by CARFAC SASK, 1999.

VIDEO:

Art Safety: Hazards & Precautions. Produced by the Center for Safety in the Arts.

OTHER HEALTH AND SAFETY RESOURCES & WEB SITES:

Saskatchewan Safety Council (306) 721-0688. This non-profit organization offers professional training and educational information on occupational health and safety.

Saskatchewan Labour, Occupational Health and Safety Division, www.labour.gov.sk.ca Free brochures and pamphlets on a variety of topics related to safe handling and use of hazardous materials. Phone: 1-800-567-7233.

The Center for Safety in the Arts, <http://artswire.org:70/1/csa> Order books and information brochures on art materials and handling safety for almost every discipline and media. Address: Center for Safety in the Arts, Mail Box 310, 2124 Broadway, New York, NY 10023.

Ontario Workers Health and Safety Centre, www.hsc.on.ca

Health Canada, www.hc-sc.gc.ca

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