

Painting

Health Hazards and Safe Work Practices

University of Calgary, Faculty of Arts, Department of Art

Prepared by:

Workshops Technicians, Department of Art

Revised June 2017

Health Hazards of Oil and Acrylic Paints

Paint consists of primarily four components:

1. Pigments
2. Vehicle: liquid medium acrylic solvent or linseed oil
3. Binders: binds the pigment particles together
4. Additives: consists of driers and stabilizers
5. Undercoats and primers
 - Exposure to cadmium pigments may cause lung cancer.

a) Pigments

Exposure may occur through:

- Inhalation of pigment containing dusts when mixing or grinding pigments.
- Inhalation of pigment particles generated by air brushing or spray painting.
- Ingestion of pigment containing particles while smoking, eating or drinking. By tipping brushes with tips or by holding the end of the brush in the mouth.
- Direct skin contact which may cause local skin irritation.

Toxicity depends upon the type of pigment. Chronic inhalation of many pigments may have serious long term health effects. Exposure to lead arsenic and chromate pigments may cause lung cancer. Direct contact with chromium containing pigments may result in skin irritation. Chronic inhalation to some pigments may result in systematic poisoning. Please refer to additional reference material for specific health hazard information for a given pigment of concern.

b) Vehicles

No significant hazards are associated with linseed oil, a commonly used vehicle in oil paints. Solvents commonly used as vehicles in acrylic paints include mineral spirits, turpentine, toluene and xylene.

Generally all organic solvents:

- Affect the central nervous system and act as depressants and anaesthetics.

- May cause dermatitis following direct contact with the skin, by weakening its natural fatty tissue.

Exposure may occur through:

- Inhalation of solvent vapours
- Inhalation of solvent vapours generated by air brushing or spray painting
- Direct skin contact
- Accidental ingestion through eating, drinking and smoking.

c) Additives

Driers:

- Cobalt linoleate – minimal toxicity
- Cobalt naphthenate – suspect carcinogenic
- Lead and manganese driers – highly toxic by inhalation

Stabilizers: minimal toxicity.

d) Binders

Oil paints:

- Glycerin – nuisance mist
- Anhydrides – wide variety and range of toxicities

Acrylic paints:

Binders may be irritating to the skin, eyes and/ or upper respiratory tract; severity varies with specific binder.

e) Undercoats and Primers

Rabbit Skin Glue: Animal protein glue.

Hazards: No significant harmful effects.

Chalk Gesso: Rabbit skin glue, calcium carbonate, calcium sulphate.

Hazards: Dust from sanding may be irritation to eyes and respiratory system.

Acrylic Gesso: An acrylic base, titanium white, and calcium carbonate.

Hazards: Formaldehyde and ammonia may be present as preservatives. Some people are highly sensitive to even small amounts of formaldehyde.

Underpainting Whites: Can be made with lead carbonate (Flake White), Zinc or titanium pigments.

Hazards: Lead highly toxic.

Safe Work Practices

- Do not eat, drink or smoke in the studio.

- Wear a NIOSH approved toxic dust and mist respirator when handling dry pigments considered to be toxic or when spray painting.
- Practice good personal hygiene. Clean hands, fingernails, arms and face with soap and water.
DO NOT USE SOLVENTS.
- Wet mop or wipe surfaces containing pigment dusts.
- Store raw pigments in closed containers.
- Practice good housekeeping, by regular cleaning of all work surfaces.
- Frequently wash clothes worn in the work area.
- Perform air brushing and spray painting in the provided locally ventilated spray booths.
- Use pure odourless mineral spirits as a general solvent where possible.
- Ensure proper storage and disposals of solvents.
- Wear rubber gloves and chemical splash goggles when handling solvents.
- Soak brushes in a container of solvent that has minimal surface area and can be covered with a lid or aluminum foil.
- Use paints containing the least toxic pigments where possible.
- Avoid handling highly toxic pigment powders.
- Do not point paint brush with your lips.