Health & Safety -The Use of MSDS Sheets For Artists' Paints

This document covers health and safety issues that only apply to our professional artists' paints. Our student's and children's paints are all AP approved non toxic. For more information refer to the msds section of our website. http://www.chromaonline.com/chroma/health_safety

MSDS sheets tend to be technical documents, which are placed on file in art schools and offered for downloading on the internet, but artists are not health specialists and we would like to make health and safety information accessible and understandable to the artists and students who use art materials.

Most of the materials we use in paints and mediums are rated non-toxic and their MSDS sheets can be filed without further explanation – however the very term "non-toxic" means "edible" to most people and the health regulators in the State of California have commented to the effect that artists paints in general contain a large number of chemical ingredients which may be regarded as relatively benign but which have not been fully tested for possible long term harmful effects (they could be carcinogenic for example).

These comments are not intended to induce fear and hysteria: if you are sensible and use your painting materials for painting, keep them away from children, and out of your own body, no harm should befall you!

The main ingredients in paints are pigments and binders and the solvents used in oil paint mediums, and we draw your attention here to the ones which are known to be toxic, or are under suspicion, where different health authorities may hold different views.

CADMIUM PIGMENTS

- The most important of these is the range of yellow, orange and red pigments based on cadmium, which is a toxic heavy metal and is regarded by the California regulators as a possible carcinogen.
- Modern cadmium pigments use a coating technology which "locks in" the harmful pigment particles, and renders them relatively inert and harmless.

ACMI, the regulator which sets the rules for warning labels on artists paint has rated cadmium colours "AP non-toxic" because of the coating.

Atelier Interactive paint MSDS

Cadmium Pigment MSDS (The pure pigment, not paint)

A sensible person might decide to use cadmium colours a bit more carefully than the other colours marked "non-toxic". How would you keep them out of your body, just to be on the safe side?

Cadmium is a cumulative poison which cannot penetrate the skin, is probably not absorbed by eating it, because of the coating as it passes through, but in the lungs it would remain for a long time, and the coating could break down, so if you really want to spray it, why not wear the recommended mask?

While it does not penetrate the skin, painty fingers on cigarettes can transfer pigment to the cigarette, which explodes the cadmium as you smoke: this is the most obviously dangerous entry point to your body.

LEAD PIGMENTS

- Flake White oil paint, based on a lead pigment which did penetrate the skin and was very soluble generally, is no longer available.
- The other class of toxic lead based pigments is the yellows, oranges and reds based on lead chromate and molybdate. These pigments are now made using the same coating technology to "lock in" the lead as is used in the production of "non-toxic" cadmium pigments, but ACMI does not seem to be aware of this, or may not have tested them, and they still carry the daunting warnings which used to apply to cadmiums as well.

If you look at the MSDS sheets which the pigment manufacturers supply for coated cadmium and coated chrome pigments, they are almost identical. Both recommended caution when using pigment powders to manufacture paints, mainly because the powders can float in the air and must in both cases be processed carefully.

Archival Superchrome Yellow MSDS

Chrome Pigment MSDS (The pure pigment to paint)

Chroma has been making limited batches of these colours in Archival Oils for many years now and they are "respectfully" used by artists who use large volumes of paint, because they are excellent cadmium "look alikes".

TOXIC SOLVENTS USED IN OIL PAINTING MEDIUMS AND AS SOLVENTS TO DILUTE PAINT, OR CLEAN BRUSHES, ETC.

Oil paints themselves do not give off toxic fumes, and it is the solvents associated with oil painting which need to be chosen carefully to reduce health hazards to a minimum. All solvents give off fumes as they evaporate into the surrounding air, and while there are some hyper allergenic persons who cannot tolerate any solvents, healthy persons are not harmed by solvents and mediums which are chosen for their low toxicity, and Chroma has been producing odourless mediums since 1990.

The best way to understand this situation is as follows:

The oil in oil paints, and the alkyd and stand oil resins used in Archival Oils mediums do not produce fumes and are not toxic, in fact linseed oil is offered in health food shops as a food supplement called "flaxseed oil."

It is only the solvents used in the mediums which need to be considered, and very full information is given by Esso, who produce the Isopar solvents we use in Archival Mediums

There is a practical layman's connection between smell and toxicity because it is the "aromatic" or smelly factor in any solvent which is undesirable.

If you look at mineral turpentine: the aromatic content is around 50%. Gum turpentine is not made by Esso but is just as bad for you. If you look at Isopar M.L. & G. the aromatic content is very low, > 0.01%.

The other important part of the spec. is the evaporation rate: mineral turpentine evaporates quickly and has a rate (n-Bu Acetate=100) of 16.

Isopar M has a rate > 1.0, Isopar L 6 and Isopar G 21 which is a little faster even than turpentine.

We use Isopar M wherever possible in mediums because hardly any fumes are generated during the time you are using them, yet in a 24 hour period the fumes do dissipate, so you need to consider where paintings are stored when you are not working on them.

In artificially sealed "air conditioned" environments presumably filters could be installed. Note that in spite of the horrifying Material Safety Data Sheet for mineral turpentine, we do use it in our Chroma solvent based acrylic varnishes, because it is needed to dissolve the acrylic resin. Varnishing should be done outdoors, or with good ventilation. The health hazard is not "occupational" but occasional.

Isopar M

Isopar L

Isopar G

Mineral Turpentine

http://www.septone.com.au/msds/AUFO20.htm (Shows evaporation rate of turps)

VENTILATION

Fans can be used to gradually draw fresh air into the workroom, or "used" air out, without stirring up the air in the room itself, because Isopar fumes are heavy and drift towards floor level.

We use Isopar M wherever possible in mediums because hardly any fumes are generated during the time you are using them, yet in a 24 hour period the fumes will gradually build up, so you need to consider where paintings are stored when you are not working on them. In artificially sealed "air conditioned" environments presumably filters could be installed.

SUMMARY

OSHA rates the tolerable level of vapour in a workplace according to the toxicity of the solvent, and the amount of vapour present in a room, and it is easy to see that Isopar solvents are the best to use from a health point of view, and that mediums made with them allow real oil paints to be used in art schools where, hopefully, the 600 year old tradition of oil painting will be encouraged to continue.

A CAUTIONARY NOTE

There are several "low odour" solvents being offered on the market and it may be prudent to check for specifications.

FURTHER READING

Archival health and safety information for art schools A4 flyer.

Archival website: www.archivaloils.com

Chroma MSDS forms online: www.chromaonline.com/chroma/health_safety

State of California OEHHA - Office of Environmental Health Hazard Assessment website.

The state of California has some of the strictest and most comprehensive health and safety regulations in the world. http://www.oehha.ca.gov/prop65/background/p65plain.html