Gamblin Studio Notes

Studio Safety and Solvents #07

Managing solvents is the key to studio safety. Oil painting studios are immediately safer when artists remove strong solvents, especially turpentine, from their painting processes. Painters have been using turpentine for hundreds of years because it has been commonly available. Pure 100% odorless mineral spirits (OMS) is an innovation of the late 20th century so it is no wonder that many painters do not know yet how safe and available OMS is.

At Gamblin Artists Colors Co., our goal is to advance oil painting by making artists' materials with no exposure to toxic solvents. Because artists must use turpentine or other strong solvents to dissolve dammar crystals, we decided not to base Gamblin painting mediums on natural resins.

Once we decided to formulate Gamblin Painting Mediums with 100% pure odorless mineral spirits, I chose to use alkyds for the resin component. Alkyd has a greater affinity for oil colors than dammar or other natural resins because it is produced from oil, not from an exotic tree. Alkyd is actually the third generation of polymerized oil used by artists. (In the 18th century—sun thickened oil. In the 19th century—stand oil. In the 20th century—alkyd.) So why is it called a resin? Because it is so highly polymerized that it dries like a resin. Alkyd resin dries by curing rather than oxidizing like linseed oil. Alkyds have been formulated for use in artists' materials, most successfully as an oil painting medium because alkyd resin as a binder cannot hold the high pigment load of linseed oil.

Galkyd painting mediums speed the drying time of oil colors and increase their flexibility. Galkyds will not yellow over time. I formulated Galkyd painting mediums to use with different painting techniques:

- Galkyd is like a medium made from stand oil so use Galkyd to level brush strokes and for enamel like glazes.
- Galkyd Lite is like a medium made from linseed oil so use Galkyd Lite for direct painting and techniques to leave brush marks.
- Galkyd Slow Dry gives painters time to work wet into wet (approximately one day).
- Galkyd Gel creates transparent impasto.

Galkyd painting mediums & Cold Wax Medium mix, thin and clean up with Gamsol or other high quality brand of OMS. I do not recommend painters use "alternative solvents" as ingredients in painting mediums. They are not 100% volatile so they leave residues that never dry inside paint layers.

Once painters remove turpentine from their studios, good ventilation is the next

issue. According to the recommendation of an environmental hygienist, studio air should be changed ten times per hour. A certain percentage of this change is attained by natural diffusion through the building. Generally the older the building the greater the diffusion. The rest of the air exchange can be attained by opening the windows to increase diffusion and by inserting a fan in one window to blow air out.

Recycling solvents: Gamsol can be re-used until the solvent will no longer clear. Set up a simple system. After a painting session, pour dirty solvent into the first can. Let the solvent settle then pour off the clear solvent into the second clean can. Repeat the process and add another settling can if needed. Keep all settling cans completely closed. Once Gamsol will no longer settle, dispose with motor oil at your local recycling center.

Please note that OMS is not strong enough to dissolve natural resins or to extend natural resin varnishes. Using OMS will cause the varnish to cloud. ("Turpenoid" is a brand of OMS.) Painters who choose to use natural resin varnish as a component of mediums must use turpentine.

Turpentine is toxic waste. Call your local recycling center for disposal instruction.

Sludge from recycling cans of OMS and artists' grade oil colors that do not have health warning labels on the packaging can be disposed of as normal household waste. Because linseed oil soaked rags can spontaneously combust, keep all rags, including paper towels, in closed metal containers.

To protect the watersheds, artists' materials, including acrylics, oil/water media and watercolors, should not be washed down the drain.

If you have any further questions about studio safety and solvents,
please feel free to contact us.

Sincerely,

Robert Gamblin

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Gamblin Studio Notes

Studio Safety and Artists' Pigments #13

Understanding proper use of painting solvents and contemporary painting mediums is the number one key to working in safe studios. While toxicity of solvents and mediums is critically important for oil painters, I would like to focus this issue of the "Gamblin Studio Notes" on artist's pigments.

After talking with painters for 25 years, I realized that artists can oversimplify "art hazards." Many believe that "oil paints are hazardous and acrylic paints are not hazardous." I always respond: **I would eat any color in oil before I would eat that same color in acrylic.**

Think about this: Ultramarine Blue oil color is made from ultramarine blue pigment (complex silicate of sodium & aluminum PB29) ground into vegetable oil (linseed oil, poppy oil or safflower oil). Ultramarine Blue acrylic color is made from the same ultramarine blue pigment ground into plastic. The linseed oil is a component in my dog's food; the plastic is what the dog dish is made from!

So color for color, the pigments used in artists' colors are not necessarily hazardous. Linseed oil is naturally occurring vegetable oil. Perhaps because acrylic paints can be diluted with water, artists think using them is safer (of course, not for the environment. I do not recommend artists wash any materials down the drain).

But no doubt, water is much safer than solvents. This is why my concerns for studio safety have always focused on solvents. By using Gamsol and other high quality brands of odorless mineral spirits, artists can reduce their exposure to solvent to levels that are permissible and still enjoy the pleasure and challenge of working with oil colors.

Historically, painters have been exposed to much higher levels of toxic pigments than painters today.

Lead based pigments:
The root of the simplistic notion that "oil paints are hazardous" comes from the use of lead based pigments. Until the 20th century, lead whites (Flake White, Cremnitz White) were the only white pigments available that were reasonably opaque and with which artists could create impasto. In the 1800's, Zinc oxide pigment was first ground into oil. But because of Zinc's transparency and tendency to dry slowly, it was not a good replacement for lead white. So lead white continued to dominate oil painting until the mid 1920's when non-toxic Titanium White (titanium dioxide

pigment) began to take over the palette. (Click here for a comparison chart of artists grade whites.)

Some artists continue to use lead white because of its interesting working properties. Lead whites, in general, are characterized by

- a heavy texture,
- slightly warm color,
- more opalescent than opaque in thin applications.

This last point is why lead white is most valuable in portrait painting. As the light on a figure slides off the highlight into the shadow, the opalescence of lead white paint allows the under painting to be skillfully revealed as a halftone.

Titanium (titanium dioxide) White is the most reflective pigment

- 97.5% of available light that reaches the pigment is reflected,
- most opaque white oil paint,
- a lighter more buttery paste than lead,
- the most brilliant of the white pigments.

Working with portrait painters, and a few others, who wanted a nontoxic option to lead white, I painted with lead white for a few years. I came to appreciate its unique working properties. Over the course of the next few years, I formulated Flake White Replacement

- a heavy dense paste,
- very lean—a good under painting color,
- slightly warm in color,
- nontoxic,
- less opaque and more opalescent than Titanium.

In addition to white lead, lead based compounds were the base of a number of warm colors on artists' palettes such as Lead Tin Yellow, Chrome Yellows and Red Lead.

Most of these colors were made obsolete by the creation of Cadmium Yellow in the latter part of the 19th century. Because Cadmium Yellow pigments were more expensive, they did not completely push lead based yellows off most palettes until mid 20th century. Today it is nearly impossible to find Chrome Yellow in any manufacturer's line of color. The Cadmiums are just as opaque, possess a much cleaner color, and have a much lower level of toxicity.

Cadmium pigments:
In the hundred years since their first manufacture, cadmium pigments now have a very low level of bio-available cadmium metal in their chemical composition. Unfortunately, many painters still consider Cadmium artists' colors highly toxic. If Cadmium pigments were made from cadmium metal they would indeed be highly toxic. Cadmium pigments are actually made from cadmium compounded with sulfur for the Cadmium yellows (sulfur and zinc for Cadmium Lemon and Cadmium Yellow Light). To make Cadmium reds and Cadmium oranges, cadmium is compounded with sulfur and selenium.

American manufacturers of cadmium pigments have developed production systems that yield cadmium pigments that are relatively insoluble in the human digestive

system. They have been so successful that Gamblin Cadmium oil colors DO NOT REQUIRE an ASTM health-warning label for ingestion. Over 25 years ago when I first started making oil colors, cadmium pigments were much more soluble in the human system than they are now. Cadmium pigments contained about 1000 parts per million (PPM) bio available cadmium. Now cadmium pigments that I choose to make Gamblin Artists Colors contain only about 5 PPM cadmium that can be absorbed through ingestion.

European brands sometimes carry health warning labels if the Cadmium pigments used come from a factory that cannot meet these standards.

Cadmium pigments remain hazardous if they are inhaled. I recommend you use NIOSH dust respirator if you sand surfaces made with a high percentage of Cadmium colors. Inhalation exposure can also occur while making paint by hand grinding cadmium colors. **But there is no dust or fumes that come off paints from the tube.**

Cobalt Pigments:
The only color in our line that carries a health-warning label is Cobalt Violet. The pigment is a compound of cobalt and phosphate. If you eat Cobalt Violet, you can expect cobalt to enter you body. It is safe to touch and to paint with, but not to eat.

Cobalt Blue is a compound of cobalt and aluminum. Cobalt Green is a compound of cobalt and zinc. Oil colors made from these compounds do not carry health-warning labels because the cobalt cannot be readily absorbed into the body. Just like when using Cadmiums, artists should not inhale the dust from cobalt pigments.

Arsenic Pigments:
Emerald Green was one of the few colors based on arsenic. Copper aceto-arsenite, known as Schweinfurt Green, Paris Green, or Emerald Green is highly toxic. It was used most commonly as a rat poison in city sewers.

Emerald Green, an important color for the Impressionists, was lost to artists solely because of its toxicity. Emerald Green was their truest cleanest green of the 19th

century. No other green lightfast pigments of high chroma were available to painters until Phthalo Green was first made before World War II. Emerald Green was brighter than most greens so the color was used in spite of its toxicity.

The Impressionists used three greens:

- Emerald Green,
- Viridian,
- Prussian Green (mix of Prussian Blue and chrome yellow).



The arsenic-based Emerald Green should not be confused with Viridian. In some painting books, Viridian is referred to as Emerald Green. Viridian is made from nontoxic hydrated chromium oxide.

Emerald Green was discontinued by World War I. As a contemporary landscape painter, I never knew about Emerald Green. So I never missed the color on my palette. When Ross Merrill and I recreated an Impressionists palette using contemporary oil colors for our "Lessons from the Impressionists" workshop, I realized the only color missing was Emerald Green. Most of the Impressionists' colors are still in use. For the few colors that have been discontinued, we have excellent substitutions. We absolutely had to have Emerald Green!

The Smithsonian Institution had sent me a pigment sample of Emerald Green to formulate into oil color in 1989. I had a draw down of the color plus a small sample of pigment. By playing with color, I recognized that I could make a close copy based on Titanium White and Phthalo Green. When I decided to add seven new colors to the Gamblin palette this year, I went to work to make an exact copy of Emerald Green. Gamblin Emerald Green matches qualities of the original without any toxicity.

Manganese Pigments:
The toxicity of manganese is much lower than the metals previously discussed in this newsletter. Still as paintmakers we handled Manganese Blue pigment with caution. One day in early 1990's, I ordered more manganese blue (barium magnate) pigment and found out that it was no longer available.

This color is no longer being manufactured because the art artists.grade.oils industry was the last consumer of the pigment. As an industry, our use of pigments is too small to keep a pigment alive. Because barium magnate had no industrial customers, they decided not to go to the expense of retrofitting their factory to eliminate the toxic waste bi-products from the manufacturing process.

Manganese Blue was unique. It was the coldest (shifted to green) cleanest blue. The color is like a breath of fresh air next to Ultramarine (which looks downright purple next to it.) It was transparent with a beautiful clean transparency.

Copying a color and getting all of the characteristics to match can be a long and difficult process. You might easily match the mass tone but the tint will be off or the tint is right but the transparency is wrong. Of the colors I have formulated to match historical colors, I am most proud of Gamblin Manganese Blue Hue.

The "Hue" designation can cause some confusion. "Hue" means the color has been recreated with different pigments. Gamblin Manganese Blue Hue or Naples Yellow Hue are called hues because the original pigment has limited availability. For some discontinued pigments such as Indian Yellow and Emerald Green, the original pigments used to make the colors are no longer available. So we can drop the "Hue" designation.

Gamblin Artists Colors' palette includes a few additional "hue" colors:

- Naples Yellow Hue and Flake White Replacement. We have decided that lead pigment is too toxic for Gamblin workers to handle safely.
- Cerulean Blue Hue. Cerulean Blue Hue has a mass tone only match as a lower cost option for those who want an opaque blue in a series 2 color. Cerulean Blue costs $22.63 per 37 ml tube. Cerulean Blue Hue costs $9.77 per 37 ml tube.

Last Notes:
Because the art artists.grade.oils industry is perhaps the second most regulated in America, you can easily know which artists.grade.oils are hazardous by their Federal health warning labels on the packaging. ASTM (American Society of Testing and artists.grade.oils) wrote the health labeling standard adopted into Federal Law based on toxicology reports so consumers can easily recognize artists.grade.oils that may put their health at risk.

Look for this language on the label:
"Health Label conforms to ASTM D-4236."

If there are any hazards associated with the material they will be stated. No warnings, no problem.

Artists no longer have to wonder or worry. They also do not have to rely on out of date or wrong information from others. All you need to know is printed on the label!

If you have any further questions about studio safety and artists' pigments, please feel free to contact us.

Sincerely,

Robert Gamblin

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Studio Safety

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Studio Safety



Managing solvents is the key to studio safety. Oil painting studios are immediately safer when artists remove strong solvents, especially turpentine, from their painting processes.

Our goal is to advance oil painting by making oil colors with no or very low toxicity. We do not make paints that contain lead, arsenic or mercury. Because there are complete arrays of lightfast pigments available, we have no reason for making toxic paints. When we started to make oil painting mediums, we extended our philosophy of protecting our workers' health and our customers' health to making mediums. Because artists must use turpentine or other strong solvents to dissolve damar crystals, we decided not to base Gamblin painting mediums on natural resins. Odorless mineral spirit is not strong enough to dissolve natural resins or to extend natural resin varnishes. Using OMS will cause the varnish to cloud. Painters who choose to use natural resin varnish as a component of mediums must use turpentine.

Solvents in history.
Painters have been using turpentine for hundreds of years because it was commonly available. Pure 100% odorless mineral spirits (OMS) is an innovation of the late 20th century so it is no wonder that many painters are just beginning to understand how safe and available OMS is.

Too bad artists of 50 years ago did not know that before they created huge canvases of oil colors that were diluted with turpentine. It is not surprising that these artists experimented with, then later switched to water based media. Turpentine, a known respiratory irritant, has a fast evaporation rate and a low permissible exposure level. It causes nausea and lightheadedness, dermatitis, kidney and bladder disease, and asthma. Turpentine is the only solvent commonly available to painters that is absorbed through healthy, unbroken skin. Turpentine is toxic.

Rembrandt used no painting mediums. He did not need mediums because hand made paints are thin and very fluid. Since the 19th century and the invention of the three roll mill, oil colors have been made into stiff pastes. Using these luscious pastes lead to the dominance of direct painting in the 20th century. Painting mediums are used only to increase fluidity of oil colors when using this technique. Extending oil colors with only solvent can lead to failure of the paint film. Adding more than a small amount of linseed oil can increase the tendency of oil paint films to wrinkle. Recently more painters are interested in creating unusual surfaces and optical effects so there is more interest in

different kinds of painting mediums.

Gamblin painting mediums are formulated for safety.
Once Robert Gamblin decided to formulate our painting mediums with 100% pure odorless mineral spirits, he chose alkyd resin to replace natural resins. First made in the early 1930's, alkyd resin is the polymerized oil of the 20th century. Like 19th century stand oil, alkyd resin is made by heating oil until it polymerizes. Alkyds have been formulated for use in artists' materials, most successfully as an oil painting medium because alkyd resin as a binder cannot hold the high pigment load of linseed oil.

Galkyd painting mediums speed the drying time of oil colors and increase their flexibility. Galkyds will not yellow over time. Galkyd painting mediums are formulated for different painting techniques. Galkyd is like a medium made from stand oil so use Galkyd to level brush strokes.

Galkyd Lite is like a linseed oil based medium so use Galkyd Lite for direct painting and techniques to leave brush marks.

Galkyd Slow Dry gives painters time to work wet into wet.

Galkyd Gel (G-Gel) creates transparent impasto. Most importantly using Galkyds means painters can remove turpentine entirely from their painting process.

Artists can now create huge canvases of oil colors diluted with Galkyds and Gamsol. Using Gamsol painters can work with pure odorless mineral spirits with a slow evaporation rate and a high permissible exposure level. See Gamsol MSDS.

Solvent alternatives.
We do not recommend painters use "alternative solvents" as ingredients in painting mediums. They are not 100% volatile and have not been tested by conservation scientists. Our Solvent Comparison Chart compares the properties and uses of several common solvents.

Once painters remove turpentine from their studios, good ventilation is the next issue. Good ventilation is essential for a safe studio. According to the recommendation of environmental hygienists, studio air should be changed ten times per hour. A certain percentage of this change is attained by natural diffusion through the building. Generally the older the building the greater the diffusion. The rest of the air exchange can be attained by opening the windows to increase diffusion and by inserting a fan in one window to blow air out. An excellent source of ventilation is a small box fan in a window. Robert Gamblin (in his studio) has blocked the window on both sides of the box fan so the air moves from his studio to the outside. The air moves between the painter and his painting table.

Painters who are using Gamsol and Galkyd do not need respirator masks or exhaust systems. Artists working in media requiring strong solvents or chemicals (printmaking or silk-screening for examples) or fixative sprays (pastels) should follow the recommendations of the manufacturers.

Recycling solvents
Gamsol can be reused until the solvent will not longer clear. Set up a simple system. After a painting session, pour dirty solvent into the first can. Let the solvent settle then pour off the clear solvent into the second clean can. Repeat the process and add another settling can if needed. Keep all settling cans completely closed. Once Gamsol will no longer settle, dispose with motor oil at a local recycling center.

Turpentine is toxic waste. Call the local recycling center for disposal instruction. Because Turpentine is a bio-hazard, **DO NOT DUMP TURPENTINE INTO THE SOIL**.

Sludge from recycling cans of OMS and artists' grade oil colors that do not have health warning labels on the packaging can be disposed of as normal household waste. Because linseed oil soaked rags can spontaneously combust, keep all rags, including paper towels, in closed metal containers.

To protect the watershed, no artists' materials, including acrylics, oil/water media and watercolors, should be washed down the drain.

Regarding toxic pigments, lead is the only toxic pigment still occasionally used in oil painting. As long as artists do not sand lead-based grounds or paints, the greatest risk to using lead-based paints (such as Flake White) or oil painting ground is quality. Lead pigments are no longer being made in Western Europe or North America. Currently, there are no reliable sources of pigment. Painters should not assume that they are buying genuine Flake White any more.

Do not sand lead-based paints because that releases the pigment from the binder. Dispose of solvent containing lead pigments with hazardous materials.

DO NOT DISPOSE OF LEAD-BASED PAINTS or SOLVENT CONTAINING LEAD PIGMENTS IN HOUSEHOLD TRASH.

Regarding other pigments and oil paints, the art materials' industry is the second most regulated industry in America. If you do not see caution labels, the materials are not toxic. For more information on health warning labels, contact the The Art & Creative Materials Institute, Inc. (ACMI)

Dedicated to oil painters.

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Safe Studio Tips

Adapted from "What Every Artist Needs to Know About Paints and Colors," by David Pyle, Krause Publications, ©2000, with permission from the author

Essential health and safety pointers:

• **Always read the product labels.** The labeling standard for Chronic Health Hazards in Art materials (ASTM D-4236) has been codified into US law as part of the Federal Hazardous Substances Act 15 USC S 1277. In cooperation with the Art & Creative Materials Institute (ACMI), all art and creative products marketed in the USA include labeling that details any currently identified precautions that should be taken. So, if there's a concern, you'll see it on the label.

In addition, the American Society for Testing and Materials (ASTM) has prepared standards for the safe use of artist's materials. These have been published as a booklet entitled, "ASTM Standards for the Performance, Quality, and Health Labeling of Artists' Paints and Related Materials" ISBN 0-8031-1838-4.

The address for ASTM is:
ASTM
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Visit the ASTM web site: http://www.astm.org

When working,
• **Always make sure that there's plenty of fresh air and ventilation**, particularly when working with solvents.
• **If spray applying any products, wear an approved mask.** A spray booth, or, even better, an extraction system, vented to the outside is recommended.
• **If working with powdered pigment, the above provisions for ventilation are equally important.**

• **Always keep all materials, especially solvents, tightly sealed.** This means keeping the threads on lids and jars wiped clean, to Health Safety & ensure a better seal when closed.
• **Art materials should never be exposed to heat sources or to naked flame.**
• **Do not eat, drink or smoke when working.** You never know what may end up on your fingers, your food, or your cigarette, and then get swallowed inadvertently.
• **Avoid skin contact, particularly with solvents.** Don't paint directly with your fingers.
• **Wherever and whenever possible, use a low-aromatic solvent, such as Sansodor** from Winsor & Newton.
• **Avoid Turpentine, wherever possible.** Turpentine is a proven health hazard for many, and it can be absorbed directly through the skin. This means that any pigment on your hands, if combined with turpentine, will be carried through your skin and into your system, as well.
• **Don't wash or rinse brushes in the palm of your hand.** Doing so, particularly if laden with solvent, is a particularly efficient method for driving pigment into and through your skin.
• **When washing brushes or palettes or other tools…**

> • First, wipe them free of color with a paper towel. If using stiff brushes with thick color, like oils or acrylics, an old toothbrush works well for scraping free excess color. Allow the product on the towel to dry completely before disposal.
> • Rinse the brush or tool free of color with a minimum amount of low-aromatic solvent. If working in watercolor or acrylic, rinse with water.
> •Wash the brush with a conditioning soap.
> •Never store brushes resting in a container, head, or tuft, down.

• **If looking to eliminate all solvents from your studio, consider using acrylic colors or water mixable oils.**
• **Do not point your brushes in your mouth.** Swirl the brush in a cup of water, or solvent, to check the point.
• **If using solvent, pour out only as much as needed for your current painting session.** Too much open solvent means too much vapor in your immediate environment.
• **SMALL AMOUNTS of LOW-AROMATIC solvent can be allowed to evaporate in a well-ventilated area** rather than being disposed of down the sink. NOTE: "low aromatic" means solvents with a high TLV (such as **Sansodor** from

Winsor & Newton (TLV at 300 ppm). This does NOT include more heavily aromatic solvents like Turpentine.
• **Excess solvents can be disposed of at your local recycling center.**
• **As a safeguard for groundwater, do not dispose of excess oil or acrylic color or solvent down the sink.** Instead, use the following guidelines:

> • **When finished painting with acrylic colors, allow waste paint and paper towels to fully dry before disposal.** Why? Because the dried polymer vehicle will provide some containment for the included pigment, minimizing the risk of solubility in landfills and wastewater.
> • **When finished painting with oil colors, gather up all solvent and paint-laden rags, as well as any discarded palettes. Allow the rags and waste material to dry in a well-ventilated area.** (Outdoors is a good place, if protected from excessive wind, or from children and pets). Dispose of them in an airtight, solventproof container.

• **Lead-based colors, or any solvents used with lead-based colors, should never be disposed of in household trash or down the drain.**
• **For disposal recommendations and regulations pertaining to all art materials, as well as more toxic solvents, aerosol cans, and highly toxic pigments (like leadbased colors)**, write the **Center for Safety in the Arts at NYFA**, at: 155 Avenue of the Americas, 14th Floor, New York, NY, 10013.
• **If paint or solvent is somehow splashed in your eyes, flush immediately and thoroughly with cold water.**
• **Clean up all spills immediately.**
• **Unless specifically labeled as safe for children's use, keep artists' materials**
away from children. Because of lesser size and body weight, youngsters are subject to greater risk with these products than adults. Better to limit their exposure altogether.
• **Give things away.** If left with products or paints that won't you be using any more, give them to a friend. Throw away as little as possible.
• **Spray cans should never be thrown away unless fully emptied.** Before disposing in the trash, spray adhesives, spray fixatives, spray paints, or spray varnishes should be emptied by spraying (outside or in a spray booth) until no

residue remains.
• **Wash your hands when you're done!** Again, don't use solvent. Wipe any color or excess materials from your hands with a paper towel. A good soap or hand cleaner should be perfectly adequate for a thorough cleansing.
• **A word about gloves.** There are times when impermeable gloves are clearly worth using. But, because of potential allergic reactions and other serious toxicity considerations, it's wise to eschew the use of gloves made from latex. In particular, latex gloves powdered for easy donning and removal should be avoided. Why? Because snapping those gloves off and on, as almost always happens, means that the latex-laden powder ends up in the air and is breathable. A better choice is a more inert nitrile glove, called "**Ambri-dex.**"

Notice that there are no special precautions listed for colors containing cadmium or chromium. That's because, if you follow the above procedures, you'll be insulating yourself and others from exposure to all potentially hazardous materials, not just the few that have been presently identified as being of concern. And, to be safe, all materials should be treated with the same degree of care. Prescribing different levels of precaution, for different colors, is a sure route to confusion and eventual exposure. It's better to establish safe practices with all materials!

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General Health & Safety

All Liquitex products have been submitted for toxicity assessment under the program administered by the Art and Craft Materials Institute Inc. of Boston, MA., and conform to the Federal Law governing the labeling of art materials. Packaging of products which have been assessed by the Institute's Toxicologist carries the symbol depicted below. These products are either CL or AP rated products.

CL Certified Product Seal:
The CL Seal identifies products that are certified to be properly labeled in a program of toxicological evaluation by a medical expert for any known health risks and with information on the safe and proper use of these materials. This seal is currently replacing the HL Health Label (Cautions Required) Seal (shown below) over a 5-year phase-in period. These two Seals appear on only 15% of the adult art materials in ACMI's certification program and on none of the children's materials. These products are also certified by ACMI to be labeled in accordance with the chronic hazard labeling standard, ASTM D 4236, and the U. S. Labeling of Hazardous Art Materials Act (LHAMA).

ACMI CL ART & CREATIVE MATERIALS INSTITUTE CERTIFIED TM
Conforms to ASTM D 4236

AP Approved Product Seal:
The AP (Approved Product) Seal, with or without Performance Certification, identifies art materials that are safe and that are certified in a toxicological evaluation by a medical expert to contain no materials in sufficient quantities to be toxic or injurious to humans, including children, or to cause acute or chronic health problems. This seal is currently replacing the previous non-toxic seals: CP (Certified

ACMI AP ART & CREATIVE MATERIALS INSTITUTE CERTIFIED

Product), AP (Approved Product), and HL Health Label (Non-Toxic) over a 10-year phase-in period. Such products are certified by ACMI to be labeled in accordance with the chronic hazard labeling standard, ASTM D 4236, and the U. S. Labeling of Hazardous Art Materials Act (LHAMA).

The HL Health Label Seal (Caution Required):
Being replaced by CL seal over a 5 year period. See above.

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Health And Safety Labeling

Printer Friendly Version

Are you a label reader? If so, you might notice that the Health and Safety information on our labels is different from that of other artist material manufacturers. Much of the industry uses the Art and Creative Materials Institute (ACMI) AP and CL Seals on their labels, and for many years we did as well. AP stands for APPROVED PRODUCT and is usually accompanied by the word "Nontoxic". CL is an abbreviation for Cautionary Label, and is used when risk and safety information is required on the label.

Several years ago, we introduced a new symbol for our products that do not pose significant health risks during use, formerly "AP Nontoxic" products. This symbol is an image of a playing marble. The marble symbolizes that although relatively safe, the products should still be kept out of ones mouth.

Our concern with the "nontoxic" message was for several reasons. First, potentially toxic chemicals are likely present at some level in all products, regardless of risk assessment; second, it is inappropriate to assume that all possible chronic hazards of chemicals are currently known; and third, personal exposure should be prevented when using chemical products. Over the years, feedback from our customers indicated that reading "nontoxic" on the label implied the paints could be used for things we did not intend; such as body painting, painting with the fingers or tongue, tattooing, and decorating dishware.

Risk Assessment?
For years, federal law has required that toxicologists evaluate art materials and appropriately label them with warnings for any potential acute or chronic health hazards. This evaluation is performed according to the guidelines of ASTM D 4236, Standard Practice for Labeling Art Materials for Chronic Health Hazards. The assessment uses factors such as chemical form and concentration, anticipated frequency and duration of use, and bioavailability 1 of the chemical.

This mathematical process necessarily relies upon the use of averages and assumptions, as well as significant compensating safety factors. The nature of the process is such that there is room for debate over many of the individual factors used. The result is that different opinions may arise as to the relative toxicity of a material. These are complex issues and there is validity in more than one opinion.

Toxicological assessment can only rely upon current scientific and medical knowledge of chemical hazards. Although ASTM D 4236 states that "knowledge about chronic health hazards is incomplete", we have seen the leap made from the "absence of known hazards" to the declaration that a product is "non-toxic" under this Standard. We do not believe these phrases mean the same thing and our labels reflect this.

California Prop 65 Warnings

The State of California has unique labeling requirements for products that contain certain chemicals. These chemicals are listed, under rules of the California Safe Drinking Water and Toxic Enforcement Act (otherwise known as Proposition 65), as being known to cause cancer and/or reproductive toxicity. If chemicals on this list are in products sold in California, the product label is required to provide clear and reasonable warning to that effect. The Act exempts products that do not pose a "significant risk" from the labeling requirement. However, as described above, "significant risk" is debatable. The result is that we apply warnings to all products which contain any Prop 65 -listed chemicals, where such are listed as ingredients on the product's Material Safety Data Sheet and/or label. Chemicals on the Prop 65 List include cobalt, nickel compounds, cadmium compounds, carbon black, chromium, lead and crystalline silica. For products containing these chemicals, we label with a phrase such as: "**WARNING:** This product contains a chemical known to the State of California to cause cancer".

X Means Harmful

So how do users quickly differentiate between products that do and do not pose significant known risks? Products deemed to present a significant risk under conditions of foreseeable use, based upon Federal guidelines (ASTM D 4236), carry the European symbol for a harmful product, which is a prominent black X on an orange background. All GOLDEN cadmium colors are included in this group in order to draw attention to the fact they should not be spray-applied. Other GOLDEN products carrying the X symbol and related warnings include Varnishes, Acrylic Flow Release, and GAC 900.

It's A Better Label
We have always believed that people have a right and need to know what chemicals they are working with, and that they should follow basic precautions when using any of our products. This approach is reflected on our labels, which give pigment identification information as well as general guidelines for safe use, and on our Material Safety Data Sheets (MSDS) which list hazards of product components without incorporating the use assumptions of toxicological risk assessment. Our label advice for using chemical products safely, while conservative, emphasizes the need to err on the side of caution when using art materials. We reinforce this message by explaining why. It's a lot of information to fit onto a label, but we believe it's the best we can offer. For more information, contact our Product Safety staff.

[1] bioavailability is the extent that a substance can be absorbed in the body in a biologically active form

JUST PAINT
Issue 3 / © March 1996

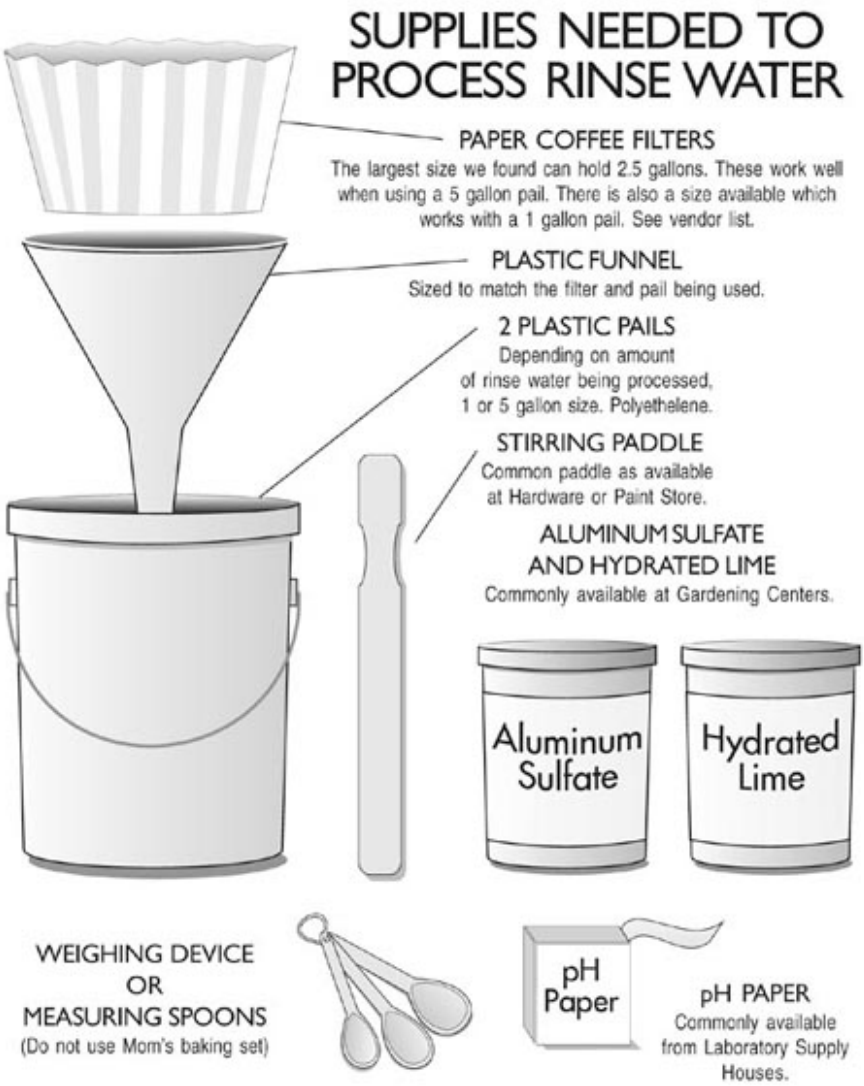
Printer Friendly Version

Removing Water-Based Paint Solids from Rinse Water

If you would rather not flush water laden with acrylic paint solids down the drain, they can be removed prior to disposing of the water. This process consists of chemically treating the contaminated water to cause the solids to flocculate, followed by filtering to remove them from the water. The materials and equipment needed are available locally and/or via mail order from the Vendor List found at the end of this article. The chemicals are hazardous so read label precautions and keep everything out of the reach of children. Safety goggles and a dust mask are recommended. The process described is intended for nonindustrial users of acrylic paints.

Start by assembling the supplies listed below. Decide on the process batch size. Using 5 gallon pails allows you to process up to 2½ gallons at a time. A 1 gallon pail and matching funnel allows for up to a ¾ gallon batch.

1. **Add 10 grams of granular aluminum sulfate for each gallon of water**. This is about ½ Tablespoon, well rounded. So, 2½ gallons would require about 25 grams, or 1¼ Tablespoons. Dissolve this material in a small jar with several ounces of water before adding to waste water. Then, add to waste water and stir vigorously.
2. **Add 9 grams of powdered lime per gallon being processed** (a scan ¾ Tablespoon). Stir in vigorously and observe. The flocculation of solids should start occurring within a couple of minutes. You should start to see a clear layer of water forming very quickly as the solids settle to the bottom. If, after several minutes, flocculation has not occurred, repeat steps 1 and 2.
3. **Check the pH** of clear water. It should be between 5 and 9. If lower, adjust by adding lime, If higher, adjust by adding aluminum sulfate.
4. **Assemble the filtering equipment as shown.** Use 2 coffee filters at a time. Pour the water through the filters after flocculation has occurred. The water will take several hours (over night) to completely pass through the filter. The resulting filtrate should be clear and should be flushed to a sanitary sewer. The solid filtered residue should be disposed of in a licensed landfill.



Vendor List

- Filters may be found at restaurant supply houses. We use "Brew Rite" 18"x7.5" for the 1 gallon setup and 25"x11" for the 5 gallon, purchased from Smith Restaurant Supply Co, Inc., 500 Erie Boulevard East, Syracuse, NY 13202; Phone (315)474-8731.
  Filters are also available from Coffee Wholesale USA, Po Box 1614, Round Rock, Texas, 78680; Phone (512)388-9700. Ask for the 18" or 24" size, manufactured for 3 or 10 gallon coffee urns.
- Funnels need to be large enough to rest on rim of pail. Check with industrial supply firms, such as McMaster-Carr, 473 Ridge Road, Dayton, NJ 08810; Phone (908)329-3200. Order the 13.5" diameter #4360T6 for the 5 gallon setup and the 9" #4144T4 for the 1 gallon.
  These may also be ordered on-line at www.mcmaster.com. Search for "funnel".
- Pails, such as the polyethylene type that hold our products, work fine.
- Aluminum Sulfate and Hydrated Lime are common soil amendments available from gardening centers.
- pH paper is available from laboratory supply houses.
- Measuring spoons should be purchased and kept separate from kitchen utensils.
- Safety Equipment (goggles and dust masks) are available on-line at www.northernsafety.com.

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- *Lawn Care* and *Weed Management for the Lawn and Garden* by David Johnson. These two fact sheets and others are available from the Washington Toxics Coalition, 4516 University Way NE, Seattle, WA 98105 206/632-1545.

- *Pesticides in Lawn Contract Maintenance* and *Healthy Lawns Without Toxic Chemicals* are available from the Rachel Carson Council, 8940 Jones Mill Road, Chevy Chase MD 20815 301/652-1877.

- Contact University Extension's Master Gardener programs in your area.

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- *Safe Use, Storage and Disposal of Paint*. Available from the Household Hazardous Waste Project.

- *Vermont Waste Paint Collection and Management Plan*, prepared by the Vermont Solid Waste Management Division of VT Agency of Natural Resources, January 1992. Available from: Andrea Cohen, Agency of Environmental Conservation, 103 S Main St, W Bldg, Waterbury, VT 05676, 802/244-7831.

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Cancer Institute, 83:1226-1231.

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- *Common Sense Pest Control Quarterly* is available from the Bio-Integral Resource Center, P.O. Box 7414, Berkeley CA 94707. An excellent magazine that reports on the latest research in integrated pest management as applied to homeowners.

- *EPA's Pesticide Program* (May 1991), publication # 21T-1005, published by U.S. EPA Washington D.C 20460.

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Programs, 401 M Street, SW, Washington DC 20460.

- "A Pesticide Reform Toolkit," by the Northwest Coalition for Alternatives to Pesticides in the *Journal of Pesticide Reform*; Winter 1993.

- *Pesticide Reregistration May Not Be Completed Until 2006* (1993) is available from the U.S. General Accounting Office, PO Box 6015, Gaithersburg, MD 20884-6015, 202/512-6000.

- *Pesticides and You* is available from the National Coalition Against the Misuse of Pesticides (NCAMP), 530 Seventh Street S.E., Washington D.C. 20003, 202/543- 5450. The newsletter addresses the use and misuse of pesticides.

- *Safe Use, Storage and Disposal of Pesticides*. Available from the Household Hazardous Waste Project.

- *School Pesticide Use Reduction (SPUR) Guide: Working Together for Pesticide-Free Schools* (1991), by Sharon Taylor. Published by the Environmental Health Coalition, 1717 Kettner Blvd, #100, San Diego, CA 92101-2532, 619/235-0281.

- "What Is Integrated Pest Management?" by William Olkowski, Helga Olkowski, and Sheila Daar in *The IPM Practitioner*, Nov/Dec 1991.

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- Philip Dickey. *Buy Smarter Buy Safe: A Consumer's Guide to Less-Toxic Products* (1994), Published by the Washington Toxics coalition, 4516 University Way NE, Seattle, WA 98105, 206/632-1545. This excellent booklet provides a ranking of many common household products based on their impact on human health (acute and chronic), the environment and their reactivity.

- Annie Berthold-Bond. *Clean and Green* (1990), published by Ceres Press, Woodstock NY

- *Compilation of Statutes Administered by CPSC* (1985). Available from the U.S. Consumer Products Safety Commission Washington D.C. 20207.

- *A Database of Safer Substitutes for Hazardous Household Products: Phase One Report* (1990) and *Phase Two Report* (1991), by Philip Dickey. These informative reports are available from the Washington Toxics Coalition, 4516 University Way NE, Seattle WA 8109, 206/632-1545.

- *Guide to Hazardous Products Around the Home* (1989). Available from the Household Hazardous Waste Project.

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- "Opportunities for Household Hazardous Waste Reduction by Product Substitution," (1990) by Philip Dickey. In the *Proceedings of the Fifth National Conference on Household Hazardous Waste Management*. This paper discusses the hazardous constituents found in tested household products and how to substitute

safer ingredients and practices.

- "Priorities for Source Reduction," (1992) by Philip Lickey. In the *Proceedings of the Seventh National Conference on Household Hazardous Waste Management*.

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- *Consumer Products Heavy Metals Inventory* (1991), by Daniel Rourke. Available from the City and County of San Francisco Dept. of Public Works, Bureau of Environmental Regulation and Management, Bayview Plaza, 3801 Third St., Suite 600, San Francisco, CA 94124, 415/695-7363.

- Nancy Richardson Hansen, Hope M. Babcock, and Edwin H. Clark, *Controlling Nonpoint-Source Water Pollution: A Citizen's Handbook* (1988), published by The Conservation Foundation, Washington, DC, and the National Audubon Society, New York, NY.

- *Groundwater Protection: Measurement of Relative Vulnerability to Pesticide Contamination* (1991) is available from the U.S. General Accounting Office, PO Box 6015, Gaithersburg, MD 20884, 202/512-6000.

- *How To Create A Stormwater Pollution Prevention Campaign* (1992). Available from the Environmental Health Coalition, 1717 Ketmer Blvd., Suite 100, San Diego, CA 92101, 619/235-0281.

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- "Household Hazardous Wastes In Municipal Wastewaters and Storm Drains," (1990) by David Galvin. In the *Proceedings of the Fifth National Conference on Household Hazardous Waste Management*.

- "Household Hazardous Wastes in Septic Systems: Types, Quantities, and Impacts," (1990) by John Kolega. In the *Proceedings of the Fifth National Conference on Household Hazardous Waste Management*.

- *Storm Drains and Water Quality* (1993). Available from the Household Hazardous Waste Project.

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Youth Involvement and Protection

- "A Scattershot Approach to Youth Education: Integrating HHW into Environmental Curriculum," (1992) by Sarah Dewey. In the *Proceedings of the Seventh National Conference on Household Hazardous Waste Management*.

- *Automotive Care for the Environment (Project ACE): Lean, Green, Drivin' Machine* (1994), is designed to educate new and existing drivers through drivers education courses and license renewal programs. It is composed of a video, educational poster, and student handouts. Available from Environmental Hazards Management Institute, 10 Newmarket Road, Durham NH 03824, 800/446-5256.

- *A-Way With Waste* (1991), by Jan Lingenfelter. Available from WA Department of Ecology, 3190 160 Ave SE, Bellevue WA 98008-5452.

- Joyce Schoemaker and Charity Vitale. *Healthy Homes, Healthy Kids: Protecting Your Children From Everyday Environmental Hazards* (1991), published by Island Press, Washington, DC.

- *Lessons in Household Hazardous Waste Management: Grades K-3 and 4-8* (1993). Available from the Household Hazardous Waste Project.

- *Pest Control In The School Environment: Adopting Integrated Pest Management* (1993), publication number 735-F-93-012 from the U.S. EPA, Field Operations Division (H 7506C), Office of Pesticide Programs, 401 M Street, 5W, Washington DC 20460.

- *School Pesticide Use Reduction (SPUR) Guide: Working Together for Pesticide-Free Schools* (1991), by Sharon Taylor. Published by the Environmental Health Coalition, 1717 Kettner Blvd, #100, San Diego, CA 921@I-2532, 619/235-0281.

- *Teaching Toxics: Creating Solutions to Household Pollution* (1992) by Wendy Verrei- Berenback. Available from Association of Vermont Recyclers, PO Box 1244, Montpelier VT 05601, 802/229-1833.

- *Tools for the Environmental Teacher* (1991) by the Household Hazardous Waste Project and the California Department of Toxic Substances Control. This is an annotated bibliography of household hazardous waste educational materials and curricula from the U.S. and Canada for K-12. Available from HHWP.

Reference/Resource Menu

The following pigments are recommended for studio use at the School of Art at the University of Arizona

Ivory Black (Pigment Black 9)
Mars Black (Pigment Black 11)
Thalo Blue (P. Blue 15)
Ultramarine Blue (PB 29)

Burnt Sienna (P. Brn 6)
Burnt Umber (Raw)(P. Brn. 7)
Van Dyke Brown (P.Brn 9)

Green Earth/Terre Verte P. Grn. 23
Ultramarine Green (P.G. 24)
Hooker's Green (no designated P.#)
Thalo Green (P.G. 36)

Ananthranoe Orange (P.R. 168)
Diarylide Orange (P.O. 13)
Hansa Orange (P.O. 1)
Perinone Orange (P.O. 43)
Quinacridone Orange (P.O.48 & 49)

Alizarin Crimson (P.R. 83)
Permanent Red (P.R. 4)
Arylide Red & Napthol Red]} (P.R. 2, 5, 7, 14, 22, 23, 63, 112, 146, 168, & 170)
Anthraquinone red (P. R. 177)
Quinacridone Reds (P.R. 122, 152, 202, 206. 207. & 209)
English Red, Venetian Red, Red Iron Oxide, Indian Red. Mars Red, Terra Rosa (P. R. 101)
Perylene Red (P.R. 149)
" Maroon (P.R. 179)
" Scarlet (P.R. 190)
" Vermillion (P.R. 123)
Ultramarine Red (P. Violet 15)
Pyrrole Red (P.R. 254 & 255)
Perinone red (P.R. 194)
Napthol Red Crimson (P.R. 180)

Mars Violet (P.R. 101)
Quinacridone Violet (P.R. 123. P.V. 19)
Ultramarine Violet (P.V. 15)
Dioxanine Violet (P.V. 23)

Titanium White (P.W, 6)

Recommended Pigments Con't.

Diarylide Yellow (P.Y. 12, 13, 14, 17, 20, 55, 83)
Hansa Yellow, Arylide Yellow(P.Y. 2, 35, 4, 5, 6, 10, 60, 74, & 75)
Mars Yellow, Yellow Ochre, Raw Sienna, Yellow Iron Oxide (P. Y. 42 & 43)

Pigments containing Cadmium, Lead, Cobalt, Mercury, Manganese Compounds, Chromium and Zinc are to be avoided for School usage. These are known Carcinogens and irritants.

Acrylics contain trace amounts of Ammonia and Formaldehyde and students should be notified of this for possible allergic reactions.

DRAWING MATERIALS

Charcoal, graphite, compressed charcoal and Conte are not hazardous. Solvent-based markers should be discouraged or used with proper ventilation. Encourage water-based markers. Pastels are dry pigments and may contain the banned metals, minerals or chemical compounds. Encourage students to read the labels before they use them. The use of a dust mask should be encouraged with all dust-creating materials.

Paint Companies are very aware of the hazardous materials and they are continually producing permanent pigments that are safer to use.

Hazardous pigments will be available in art stores. Encourage students to read the following books:

"The Artist's Complete Health and Safety Guide," by Monona Rossol
"Artist Beware," by Michael McCann

For local on-line information: http://www.ci.tucson.az.us/arthazards/paint1.html This is a good site for all areas of the School of Art.