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LABELS: READING BETWEEN THE LIES

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Our first source of information about a product is usually the label. And as people become increasingly health-conscious, more words are appearing on product labels--words like: "water-based," "nontoxic," "biodegradable," and "natural." Unfortunately, we are often misled by these labels. We should be aware of the actual legal definitions of these terms.

BIODEGRADABLE. Disposal of products bearing the "biodegradable" label is easy. Liquids may go down the drain. Solids may go out with the trash. However, do not assume that what is safer for the environment is necessarily safer for you. For example, the new refrigerants and spray-can propellants are safer for the ozone layer, but most are more toxic to people using the product.

And remember the old banned phosphate detergents? They were not very toxic, but they were readily taken up by plants as fertilizer. They were banned because in lakes and streams, the fertilizer fed the algae and bacteria.

These detergents were replaced with the phosphate-free and the biodegradable detergents which included the enzyme cleaners. Some of the enzymes cause serious allergies and other health effects in many people. And while the detergents do not break down into substances that act as fertilizer, they do break down into something! For example, one type of phosphate-free detergents (nonylphenol ethoxylates) degrade to substances that cause deformity in the sex organs of fish and aquatic life. These detergents are already banned in Europe.

If this were not enough, the word "biodegradable" can be applied to any chemical that has not been proven to be an environmental hazard. Unfortunately, the environmental fate of most chemicals is utterly unknown. This includes a majority of the hundreds of non-metal-containing organic pigments and dyes used in art materials. EPA and the National Toxicology Program suspect that many dyes and pigments have long term adverse effects on people and on the environment.

BIODEGRADABLE REALLY MEANS: You can legally flush or trash the stuff, but there are no guarantees it is safe for you to use. And some are probably not safe for the environment either.

LOW or NO "VOCs." Strictly translated, VOC means "volatile organic chemical." Some of us try to avoid toxic solvents by using products labeled "contains low VOCs." But the label term VOC is defined by EPA as those chemicals on a list of chemicals that react with sunlight in the atmosphere to create smog. This reaction with sunlight is unrelated in any way to your health.

The Clean Air Act only requires EPA list 188 chemicals as VOCs. So only the chemicals that react most strongly with sunlight are listed. For examples, the list does not include chlorinated and highly toxic methylene chloride and perc (perchloroethylene). Also unlisted is highly flammable acetone.

In addition, industry representatives have petitioned EPA to delist other solvents. Two of those delisted include 2-butoxyethanol (delisted in 2004) and methyl ethyl ketone (2005).

And all of these delisted and unlisted toxic and/or flammable solvents can be present in any amount in a product, up to 100 percent, without triggering the VOC warning label.

"NO VOCs" LABEL MEANS: no solvents in this product are on EPA's current VOC list, but the product can be full of other solvents which are toxic to users.

WATER-BASED. Water-based products often contain significant amounts of toxic solvents. For example, one water-based latex urethane wall paint being used by artists was over 30% solvents and the primary solvent was N-methyl pyrrolidone which is scheduled to be banned in consumer products due to its toxicity. The other solvent was trimethylamine which has a very low workplace air quality limit (5 parts per million) indicating its extreme toxicity.

In addition, many toxic glycol ethers are found in water-based latex wall paints, paint strippers, felt-tip markers, and fast household and industrial cleaning products.

Some of these "water-based" products are actually more toxic than the solvent-based products they replaced. And a few "water-based" products actually contain little or no water. These are called "water-based" only because water can be used to clean them up.

WATER BASED MEANS: Water is probably an ingredient, but the product also is likely to contain solvents and other toxic ingredients.

GRAS (Generally Recognized as Safe). GRAS is an FDA term applied to food and medicinal additives. When FDA began regulating additives in the 1950s, thousands of chemicals were already used as additives or medicines. All substances in use before 1958 were automatically given GRAS status without testing. For example, a common laxative ingredient called phenolphthalein was listed as GRAS and used for 90 years. It was finally tested in animals, found to be a potent carcinogen, and banned in 1999.

Some GRAS substances are known to be highly toxic and are only allowed to be added to food in specified amounts. Other known toxic substances with GRAS status are restricted to use in food packaging, as disinfectants and soaps to sanitize food processing utensils, and similar uses in which they would not be ingested. For example, highly hazardous substances can be GRAS for use in food packaging if manufacturers can prove they do not migrate from the package into food.

Even substances that are allowed in food in very small amounts may not be safe other routes of entry into the body. For example, fumed silica and kaolin and mineral oil are allowed in some foods and medicines. They are not hazardous to eat, but they are hazardous to inhale.

GRAS MEANS: either the ingredient has been used for years without testing or the FDA has tested and approved it for some very limited use related to food, food packaging, etc. And GRAS status never is a guarantee of safety by inhalation.

NATURAL. There is nothing inherently safe in substances derived from nature. This is obvious if we just think for a moment about turpentine, wood dust, molds, poison ivy, cocaine, jimson weed, curare, hemlock, tobacco, and so on. In fact, most plants and trees contain substances that are toxic to us and these natural toxins like ricin from the castor bean plant can be vastly more toxic than man-made chemicals like sodium cyanide or the methyl isocyanate that killed over 2000 people in Bhopal, India!

Nature also manufactures carcinogens. For example, wood dust, whole leaf aloe juice, goldenseal root powder, dantron herbal laxatives, and ginkgo biloba extract have been listed as carcinogens or suspect human carcinogens by the International Agency for Research on Cancer and several other agencies. We should judge natural products using the same criteria we use to evaluate synthetic ones.

NATURAL MEANS: manufacturers want you to prejudge the product's toxicity based on its origins. Instead, look up its hazards and you will find some are highly toxic and most have never been tested for long term toxicity. Highly toxic products are manufactured by both God and Goodyear.

CITRUS OIL—AN EXAMPLE OF A “NATURAL” SOLVENT. Citrus oil and its major component, d-limonene, are derived from the rinds of citrus fruit. Products containing d-limonene are touted as "natural" and "biodegradable." Examples of products containing citrus ingredients include Citra-Solv™, Lithotine™, Citrus Clean™, Grumtine™, Citrus Turps™, Fast Orange Hand Cleaner™, and many solvents, strippers and cleaning agents.

Advertisements for these products fail to mention that d-limonene is registered with EPA as an "active ingredient" in commercial pesticide fly killers. Or that d-limonene usually is contaminated with other pesticides from the spraying of the citrus fruit groves including pyriproxyfen, imazalil, fenabutin oxide, and cyfluthrin. Or the workplace air quality limit set by the German government for d-limonene that are more restrictive than those for most other common solvents. Or that EPA researchers have recommended d-limonene not be used as an air freshener because it forms a toxic "smog" indoors. Or that rags wet with d-limonene may spontaneously catch fire. And that d-limonene is on a list of skin sensitizers banned for use in European Union cosmetics and children's products. (Ask for full data sheet on citrus oil at actsnyc@cs.com.)

To evaluate its toxicity by inhalation, it makes sense to compare d-limonene to other solvents:

ACGIH SOLVENT TLVs IN ORDER OF INCREASING HAZARD

SOLVENT VAPOR (molecules in air)	TLV-TWA* (ppm)	SOURCE
heptane (most good rubber cement & thinner)	500	Petroleum
isopropyl alcohol (rubbing alcohol)	200	“
Gamsol®, certain Isopar solvents**	100	“
turpentine (natural)	20	Natural
2-butoxyethanol (not now lists as a VOC)	20	Synthesis
d-limonene—the citrus solvent (natural)	5***	Natural

* 2015 values used.

** These two solvents are among the best refined petroleum distillate solvents. The natural solvents have more restrictive air limits than these petroleum solvents.

*** This limit is set in the German Federal Republic. ACGIH has not set a limit for it. See Chapter 4, Airborne Hazards for information on all these standards.

NONTOXIC CONSUMER PRODUCTS. Under the United States Federal Hazardous Substances Act and the Canadian Federal Hazardous Products Act, toxic warnings are required on products capable of causing acute (sudden onset) hazards. Products requiring warning labels are identified by tests which expose animals to a single dose or period of exposure by skin or eye contact, inhalation, and ingestion. To illustrate the flaw in these tests, powdered asbestos could be labeled "nontoxic" based on these tests. All the animals will appear healthy in the two week-long tests. Cancer takes much longer to develop.

In 1992, the law was amended to require labeling of chemicals known to cause long-term neurological damage, reproductive damage and cancer. But of the estimated 150,000 chemicals used in consumer products, only about 900 chemicals have been cancer-tested and even fewer have been tested for other effects. And the law ignores other chronic hazards such damage to the liver, kidneys, lungs, and other organs. Even stranger is the fact that the vast numbers of chemicals that have had no testing for chronic toxicity at all may be labeled “nontoxic!”

“NONTOXIC” CONSUMER PRODUCTS may have been tested to show that they don't kill half or more of the animals in short term toxicity tests. But most have been never been tested for chronic effects such as nervous system damage, long-term organ damage, cancer, or reproductive damage. All these untested chemicals may be labeled “nontoxic.”

NONTOXIC ART MATERIALS. In the past, asbestos-containing products such as instant paper maches and clays were routinely labeled "nontoxic" using the short term tests. This should not happen today because a law passed in 1988, the Labeling of Hazardous Art Materials Act (LHAMA), requires warning labels on products containing known chronically hazardous substances. This law requires a toxicologist to assess the products' hazards and certify that the labeling required is sufficient for consumers to use the product safely. However, the manufacturer pays the toxicologist for certification which creates a built in conflict of interest. As a result, LHAMA has serious deficiencies:

1. Substances requiring labeling must be known to possess chronic hazards. Yet most organic pigments and dyes used in art materials, have never been tested for chronic hazards. In this case, the toxicologist can label these untested products "nontoxic" by default—even if the product contains pigments that are in chemical classes that the National Toxicology Program has suggested be listed as carcinogens!
2. Some tests used by the toxicologists to determine toxicity are faulty. For example, a test in which materials are placed in acid is sometimes used to determine if the toxic substances in the product will be released in the digestive tract. This test does not consider that in addition to acid and water, our digestive tracts use bases, enzymes, cellular activities, heat, and movement to dissolve materials. Only after there were poisonings and deaths from "nontoxic" lead ceramic glazes were these tests abandoned by certifiers of glazes. Acid tests are still used to evaluate some other types art products.
3. Faulty methods are used to determine when the amounts of toxic substances in art materials will result in a significant exposure. Toxicologists who estimate exposures during art making usually have never created or taught art themselves. They often do not consider the artist's intimate contact with their materials, crowded classrooms, tiny home studios, poor ventilation, lack of sinks, and other conditions common to home studios and schools.
4. The hazards of materials used in ways other than the label directs are not considered. Artists and teachers traditionally use materials "creatively." For example, melting crayons for candle making, batik resist, or for other processes causes these "nontoxic" products to release highly toxic gases and fumes from decomposition of the wax and from some of the pigments.
5. Methods for determining how exposures occur are often faulty. For example, some liquid ceramic glaze labels do not warn about dust exposure even though anyone who uses glazes knows that dust from the dried glaze gets everywhere in the studi and is the major source of exposure.

6. The certifying toxicologists will often write MSDSs or SDSs which reference this law and which do not disclose the presence of regulated ingredients (see page 5 below). ACTS recommends this law be repealed.

NONTOXIC LABELS ON ART MATERIALS MEAN: a toxicologist who has not taught or practiced art says that users will not be exposed to significant amounts of any KNOWN chronically toxic ingredients. Untested ingredients whose hazards are UNKNOWN may be labeled "nontoxic" even though they are expected to be toxic or cancer-causing on the basis of their chemical structure. Using art products creatively in ways other than directed can result in unforeseen hazards.

USE WITH ADEQUATE VENTILATION. Many people think ventilation means a window should be kept open while using the product. Actually, this label only indicates that the product contains something toxic which becomes airborne during the product's use. The ventilation required must be sufficient to keep the airborne substance below levels considered acceptable for air quality. Sufficient ventilation could vary from a simple exhaust fan to a specially designed local exhaust system depending on the amount of the material and how it is used.

In order to plan such ventilation, you must know exactly what substance the product gives off and at what rate. Ironically, this is often precisely the information the manufacturer excludes from the label. In order to plan ventilation, get the manufacturer's material safety data sheet. If you use a lot of the material or you use it in your business, get advice from an industrial hygienist or ventilation engineer.

ADEQUATE VENTILATION MEANS that something toxic gets airborne during use. To use it safely you need to know what it is and how much ventilation you need.

INDUSTRIAL OR PROFESSIONAL USE ONLY. Products carrying this label are not supposed to be readily available to general consumers and should never be used by children or untrained adults. Rules for the types of information and warning symbols which conform to the right-to-know law can be obtained from your local department of labor. This label warns workers that they should be skilled in the use of the product and should have a Safety Data Sheet as a guide to safe use of the product.

CALIFORNIA'S PROPOSITION 65 LABELS. California's Proposition 65 requires warning labels on products containing even very small amounts of chemicals on California's list of cancer-causing, reproductively or developmentally toxic chemicals. California requires this label even if a toxicologist certifying a product under LHAMA says that people using the product as directed will not be exposed to significant amounts of the toxin. A number of art material manufacturers

have found that violating this law can cost them huge penalties. Unless they can find a way to guarantee that their products are not sold in California, they must meet this law.

It has been a great help to artists since they use art materials in unusual ways and do not need "safe if used as directed" labels. They simply need to know if there is something in the product about which they should be concerned and take precautions.

Prop 65 also has a template for enforcement that every activist should consider a model. It provides enforcement without costing California taxpayers anything. The law has a citizen's enforcement clause which sets penalties for violations of the law and allows qualified attorneys

to develop proof (usually in the form of laboratory analysis) that the law was violated. If the California Attorney General (AG) pursues the evidence, part of the settlement goes to the attorneys. If the Attorney General doesn't pursue the case for some reason, the attorney can file and the settlement or penalties go exclusively to the attorney.

It should be clear that the AG does not need to pay inspectors or laboratories for this evidence thus saving taxpayers the expense of enforcing the law. Many activists groups and lawyers make a living enforcing this law. And at the same time, they are protecting the public.

If people really want laws enforced without cost, this is a method proven to work.

MANUFACTURER'S SAFETY DATA SHEETS. No matter what the label says, it is always wise to ask manufacturers for their safety data sheet (SDS) and to use Appendix 1 of this book to help learn to read it. The quality of the SDS data varies depending on the diligence and cooperativeness of individual manufacturers.

However in the U.S., art material MSDSs and SDSs are usually not very helpful. Most companies will not provide the required information. Instead, of listing the toxic or regulated ingredients, they will state that the product's ingredients have been assessed by a toxicologist as per ASTM D 4236. In my opinion, this is a violation of OSHA's intent to list potentially toxic chemicals. The law they refer to is one enforced by CPSC, but the SDS is an OSHA requirement and it is OSHA's rules that should be followed here.

Nevertheless, many manufacturers pay toxicologists or trade association certification programs to write these uninformative documents. Artists should purchase their supplies exclusively from manufacturers who provide ingredient information.

SO WHAT'S A PERSON TO DO? Just as we learned that we can't give up responsibility for our health by simply trusting a single doctor, we also can't trust our health to a few words or a seal on a label. We can't even trust the safety data sheets that are provided by the manufacturer. However, another important source of information is your own common sense.

TWELVE COMMON SENSE RULES

1. Ask questions when you buy products and services. Good salespeople selling good products have good answers. They also will have documentation to back their safety claims and will provide them to you. Get copies of this documentation including safety data sheets and other technical information.
2. If you need additional information, contact the manufacturer. The law requires manufacturers to put a telephone number on art material labels at which information about chronic hazards can be obtained. If there number is no number, or if the number provides only a recorded message rather than a person who is familiar with the product, be suspicious. For example, some companies refer callers to their own doctors or to Poison Control Centers who are unfamiliar with artist's practices and that usually focus on acute rather than chronic hazards.
3. Investigate natural and biodegradable products with the same vigor that you would synthetic ones. Most natural ingredients have never been tested for chronic effects.
4. Choose water-based products over solvent-containing ones, but get their material safety data sheets (MSDSs or SDSs) to verify that the water-based products do not also contain significant amounts of solvents or other toxic ingredients.

5. If solvents must be used, get their safety data sheets. Choose solvents with the high Threshold Limit Values (TLVs) and relatively low evaporation rates (they evaporate slowly). See Appendix 1 in this book to interpret unfamiliar terms.
6. Choose shop and household cleaning products carefully because getting MSDSs or SDSs on these products may be difficult. Remember: cleaners that easily dissolve crayon or graffiti off walls are not just soap--they contain synthetic or natural chemical solvents.
7. Choose products which do not create dusts and mists to avoid inhalation hazards. If powdered materials or aerosol products must be used, use them outdoors or in local exhaust ventilation.
8. Don't judge toxicity by odor. Some chemicals that smell terrible aren't bad for you. Some odorless and some pleasant-smelling chemicals are killers. A good example is ozone, which smells like clean fresh air. Unscrupulous companies take advantage of this odor when they sell ozone generators as air-purifiers to people who are unaware of the toxic properties of this gas. And manufacturers often use toxic solvents with almost no odor.
9. Listen to your body and watch for physical reactions in your students or family members. While your nose can be fooled about toxicity, it may be giving you good advice about your own personal allergies and sensitivities. Your body usually will provide symptoms that warn of sensitivities, irritation, and acute exposures to chemicals. However, your body is not likely to warn you about impending chronic illnesses from chemical exposures. These usually progress without symptoms until there is permanent and irreversible damage.
10. If you are pregnant, don't use any product that will expose you to solvent vapors, toxic metal-containing dusts, or any other toxic material. Substances that do not cause any symptoms in the mother can still affect the fetus. Pregnancy is a period of time in which we should postpone taking art classes or else choose media that can be used safely. For example, pregnant painters can use water colors, acrylics, water washable oils, or other paint that do not require solvents.
11. Don't adopt a highly hazardous lifestyle and blame your art materials for your problems. Smoking, drinking too much, or altering your consciousness with recreational neurotoxins is not recommended for people who also work with toxic chemicals. As an occasional expert witness in personal injury lawsuits, I can tell you that a poor lifestyle also can ruin your chances of recovering damages or obtaining worker's compensation for chemical exposures.
12. Get professional advice about products and chemicals from people who have no financial interest in your purchases. Your local health department and Consumer Reports magazine are examples of such agencies. The New Jersey Department of Health has Hazardous Substances Fact Sheets on various chemicals which provide unbiased data (www.state.nj.us/health/). The non-profit corporation, Arts, Crafts and Theater Safety (ACTS), also can help you evaluate material safety data sheets, label terminology and ventilation needs. We provide free advice by mail, e-mail and telephone.

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