ACTS FACTS

THE MONTHLY NEWSLETTER FROM
ARTS, CRAFTS AND THEATER SAFETY (ACTS)
181 THOMPSON ST., # 23, NEW YORK, NY 10012-2586 PHONE 212/777-0062

January 1999 Vol. 13, No. 01

ACTS wishes you a healthy, happy 1999

NEW PENNIES MORE TOXIC THAN OLD

Science News Vol 154, Dec 5 1998, p.358

Toddlers put anything within reach in their mouths. Last year alone, some 21,000 youngsters ended up in emergency rooms throughout the U.S. after ingesting coins--mostly pennies. Now evidence presented at the annual meeting of the Radiological Society of North America shows that swallowing pennies minted after 1981 poses a special threat to children.

Pediatric radiologist Sara M. O'Hara stumbled upon the problem in March 1997, when parents brought a 2 and ½ year-old-boy into the Duke University Medical Center in Durham, N.C. They had watched in horror as their child ate a penny, and nearly choked. Once O'Hara X-rayed the boy and confirmed that the penny was in his stomach, the emergency room staff advised the parents to wait for the penny to pass in the stool.

But 4 days later, the boy was unwilling to eat, had a persistent stomach ache, and was vomiting blood. When O'Hara X-rayed the boy again, she saw a "moth-eaten disc" with irregular edges that looked "like something had been nibbling on it." Suspecting it was a piece from some toy, she had another doctor remove it with a tool inserted down the child's throat. What emerged was the penny. "You could just make out the date, 1989, on what was left," she said.

After 4 days in the child's stomach, the penny had lost one-quarter of its weight, developed dangerously ragged edges, and induced an ulcer in the stomach lining. Although most pennies pass through a child safely, O"Hara has since encountered a second eroding penny.

Pennies were 95% copper until 1982 when the U.S. Mint began making them out of zinc coated with a thin veneer of copper. Every little nick and scratch will expose zinc metal. ACTS thinks that it probably is the difference in electron potential of zinc and copper while in contact with hydrochloric acid gastric juice that create reactions which cause the penny to dissolve so rapidly.

GREENPEACE & PLASTIC MAKERS CHEW ON VINYL ISSUE

63 FR 70756-7, Dec 22, 1998, PRNewswire/www.emagazine.com/www.green7peaceusa.org/www.monitor.net/ etc.

Throughout 1998, Greenpeace and the Chemical Manufacturers Association (CMA) issued conflicting press releases about the safety of vinyl plastics used in toys that children may chew on.

METAL CONTENT. Greenpeace first criticized polyvinyl chloride (PVC) plastic toys because they may contain lead, cadmium, organic tin compounds and other toxic metals as stabilizers. The fact that these metals leach from the plastics was already established in the well-known recall of lead-releasing miniblinds and from studies showing organotin compounds in water carried by new PVC pipes. In November, Greenpeace announced plans to sue toy industry companies in California who continue selling PVC children's products containing dangerous levels of lead and cadmium.

The Chemical Manufacturers Association (CMA) countered with arguments that these metals are not in vinyl toys and that the Consumer Product Safety Commission (CPSC) did not find excessive amounts of toxic metals in the toys it studied.

PLASTICIZERS. In November, Greenpeace issued press releases about the hazards of the plasticizers that are added to vinyl to keep it pliable. Greenpeace and 11 other public health, consumer, environmental and religious organizations petitioned the CPSC to ban PVC toys and other vinyl products for children under age six.

The most common plasticizer in children's toys is di-isononyl-phthalate(DINP). The CMA says that the CPSC gave DINP a clean bill of health and that it was one of the "most studied and best understood compounds in the U.S. from a health and environmental viewpoint." Actually, the CPSC listed "significant uncertainties" that remain about the chemical and made two recommendations.

1. CPSC "requested industry to remove phthalates from soft rattles and teethers" and "to find a substitute for phthalates in other products intended for children under 3 years old that are likely to be mouthed or chewed."

2. CPSC Commissioner Ann Brown advised parents on national TV "that if you have a child who teethes a lot, who is mouthing toys a lot ... you may want to get rid of [toys containing phthalates] until the new products are on the market."

ACTS thinks that the real conflict between CMA and Greenpeace is over the decades-old law allowing industry to put chemicals into our products on the basis that "chemicals are innocent until proven guilty." CMA responded as if Greenpeace were trying to take away this "right." CMA points out that DINP is better studied that many of the chemicals in our products. While this is true, DINP certainly is not studied well enough to let children ingest small amounts. Whether DINP is actually hazardous is not the main issue. It is the laws permitting children's products to contain chemicals that have not had complete long-term testing that must be changed.

ACTS is also concerned about polymer clays such as Sculpey® and FIMO® and which contain ~15% phthalates that get on the skin during use and get airborne when the clay is hardened in kitchen ovens.

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MERCURY DIETARY SUPPLEMENTS

63 FR 68775-7,December 14, 1998

The U.S. Food and Drug Administration (FDA) does not approve of any mercury-containing "food additives" since they all are highly toxic. However, FDA has no jurisdiction over "dietary ingredients" as defined in the new Food and Drug Administration Modernization Act. Dietary ingredients do not require FDA premarket scrutiny, approval, or registration. Now, FDA is calling for data on food and drug products that contain intentionally introduced mercury compounds because they are aware that some traditional medicines contain mercury. FDA notes:

> *For example, mercury-containing compounds are used in traditional Chinese medicines. The Chinese Herbal Materia Medica reports that cinnabar (mercuric sulfide; cinnabaris, or zhu sha in Mandarin Chinese) and calomel (mercurous chloride; calomelas or qing fen in Mandarin Chinese) have been widely used as a sedative and detoxicant and to treat constipation and edema.*

The extent to which mercury is actually used in these products was studied by the California Department of Health Services in 1998. FDA reports that the study found:

> *...that 5 of 260 traditional Chinese medicines available in the retail marketplace, which they examined, listed cinnabar as an ingredient on the label. In this study, 35 of 251 products that were screened for mercury content were found to contain significant quantities of mercury. ....most of the products that contained significant quantities of mercury did not list mercury sources on the label.*

Clearly, these products pose a serious risk to consumers. There may be mercury-containing products from other countries, but this is the only study FDA found. Now they are asking for more data.

To reduce the average consumer's exposure to mercury, FDA recently banned as unsafe all mercurial drugs and antiseptics such as mercurochrome (AF June 1998). They also have banned mercurial soaps, makeups, and skin bleaching preparations. For political reasons, FDA has not moved to address a dangerous religious practice in some Hispanic and Caribbean immigrant cultures in which elemental mercury is burned or sprinkled in homes and cars. And the new law may prevent FDA from protecting consumers from toxic mercury-containing dietary supplements and medicines.

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CHANGES IN CANCER LIST RECOMMENDED BY NTP

BNA-OSHR, 28(27), December 9, 1998, P. 891

On December 2, The National Toxicology Program voted to recommend changes for their next report on carcinogens including:

* Ethylene oxide and crystalline silica: upgraded from "reasonably anticipated human carcinogens" to "known human carcinogens;"
* Alcoholic beverages to be listed as "known human carcinogens;"
* Diesel particulates to be listed as "reasonably anticipated to be human carcinogens;"
* Environmental tobacco smoke finally listed as a "known human carcinogen;" and
* Nickel compounds listed as "known human carcinogens."

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"NATURAL" CHEMICALS RECOMMENDED FOR TESTING

63 FR 70790-2,December 22, 1998

The National Toxicology Program (NTP) is requesting public comment on the chemicals that they have nominated for toxicological studies. This year, many of the nominated chemicals are "natural" products or dietetic supplements. People taking these products should be aware that these products are recommended for testing because NTP's panel of toxicologists has determined that there is insufficient data on them. Included among these substances are:

SUBSTANCE, CAS #, & USE	RECOMMENDED TESTS
Androstenedione[63-05-8] a widely used natural steroid dietary supplement and estrogen and testosterone precursor	--subchronic (cardiovascular & reproductive) toxicity --metabolism --carcinogenicity
Bentonite[1302-78-9] naturally occurring silicate clay used by potters and in some "natural" beauty products	--chronic inhalation toxicity
Chromium picolinate[14639-25-9] widely used dietary supplement	--subchronic toxicity --metabolism & pharmacokinetics --reproductive toxicity --carcinogenicity
Echinacea widely used dietary supplement	--subchronic toxicity --immunotoxicity --chronic toxicity
Ginkgo biloba extract natural product plant extract	--toxicological characterization --neurotoxicity --carcinogenicity
Ginkgolide B[15291-75-5] A constituent of *Ginkgo Biloba*	--micronucleus test
Pyrogallol[87-66-1] natural and industrial product FDA approved coloring additive	--subchronic toxicity --carcinogenicity

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ACTS FACTS' SOURCES include the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health, art, and theater publications. Staff: Monona Rossol, Editor; Tobi Zausner, Nina Yahr, Diana Bryan Research.

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NEW HALON FOUND UNSAFE

64 FR 3861-3869, January 26, 1999 & *BNA-OSHR*, 28(33), Jan 27, 99, pp. 1048-49

Effective immediately, the Environmental Protection Agency (EPA) has withdrawn two chemicals from the list of acceptable substitutes for ozone-damaging chlorofluorocarbons. The withdrawal is in response to new toxicological data that raises serious concerns about potential kidney damage to workers exposed during servicing of air-conditioning and refrigeration equipment containing them.

The withdrawn chemicals are hexafluoropropylene and MT-31. (The identity of the MT-31 blend is considered proprietary by the manufacturer.) Both hexafluoropropylene and MT-31 were previously listed as acceptable substitutes for CFC-12 and HCFC-22.

Many museums and archives use a similar chemical in their halon fire suppression systems. The banned hexafluoropropylene only differs by one fluoride ion from heptafluoropropylene, better known as HCF-227ea or FM 200 (Fire Master 200). This halon is currently used in the system protecting the Star Spangled Banner at the Smithsonian. ***ACTS FACTS*** (Nov. 1998) reported on evidence that FM 200 produces far greater amounts of toxic emissions than the older halons when used to put out a fire.

Long term health effects data on many of the new EPA-approved halons are very limited. It is likely that we will see more of these chemicals withdrawn as testing is done. Chemicals which are safer for the ozone layer are not necessarily safer for people.

RICK'S CRICK: A NEW ERGONOMIC INJURY

LOS ANGELES (AP Wire Service), 11/1/98

Funk singer Rick James suffered a stroke after a blood vessel ruptured in his neck and a lengthy recuperation period will be necessary before he can walk again, according to his spokesman, publicist Steve Levesque. "The doctor called it a result of rock 'n' roll neck, the repeated rhythmic whiplash motion of the head and neck," Levesque says.

James was performing at Denver's Mammoth Events Center on Friday when the blood vessel popped. He finished the show and was examined by doctors in Denver who advised him to seek further evaluation Los Angeles where he lives. On Monday, James's right side suddenly became numb and he was taken to Cedars-Sinai Medical Center in Los Angeles, Levesque said. Doctors were optimistic that James, 50, will recover without complications. This incident should remind us that any repetitive motion can be hazardous.

FDA RULES ON PHENOLPHTHALEIN AND DANTHRON

64 FR 4535-4540, January 29, 1999

Note: this issue is covered because the laxatives are anthrones or anthraquinones which are chemically related to many untested artist's pigments and dyes.

The Food and Drug Administration (FDA) is issuing a final rule establishing that the over-the-counter (OTC) laxative ingredients danthron and phenolphthalein are not generally recognized as safe and effective and are misbranded. Effective January 29, 1999, no phenophthalein- or danthron-containing OTC drug products that are subject to this final rule may be introduced into interstate commerce unless they are the subject of an approved application.

PHENOPHTHALEIN. FDA reviewed the available data and concluded:

> *... that phenolphthalein caused chromosome aberrations, cell transformations, and mutagenicity in mammalian cells. Because benign and malignant tumor formation occurs at multiple tissue sites in multiple species of experimental animals, phenolphthalein is reasonably anticipated to have human carcinogenic potential.* 64 FR 4538

Phenolphthalein has been used in laxatives for over 90 years and in apparently hazardous doses. FDA concluded that "the exposures used to demonstrate ... *in vivo* and *in vitro* genotoxic effects were in the range that could occur with human laxative use" (64 FR 4537).

DANTHRON, was already removed from most OTC laxative drug products by 1987. In 1998, it was listed by the National Toxicology Program as "reasonably anticipated to be a human carcinogen." Danthron's hazards are relevant to artists because its structure is almost identical to that of alizarine crimson pigment. Danthron is 1,8-dihydroxyanthraquinone. Alizarine is 1,2-dihydroxyanthraquinone and there is good reason to assume that, like danthron, alizarine would cause cancer if it were tested. Artists also use many other untested anthraquinone pigments and dyes.

FOUR MORE. Unmentioned in the notice were four other laxative ingredients FDA plans to reclassify. In a letter dated May 21, 1996, FDA informed manufacturers that it also intends to reclassify bisacodyl, senna, aloe, and cascara sagrada from category I (safe and effective) to category III (more data needed). All four ingredients are related through their anthrone or anthraquinone structures. For example, bisacodyl's structure is closely related to phenolphthalein's, cascara contains an hydroxymethylanthraquinone, and aloe contains an anthraquinone glycoside.

SENNA. Several manufacturers are reformulating their products by replacing phenolphthalein with senna. Extracts taken directly from the dried leaves and pods of senna contain many different compounds some of which (the anthrones) are mutagenic on the Ames test. In its 1996 letter, FDA said that unless manufacturers show that commercially available senna preparations do not contain mutagenic or genotoxic components, the FDA is unable to state that they do not pose a relative risk to humans.

UNREGULATED PRODUCTS. Senna and all the other substances proposed for reclassification, bisacodyl, aloe, and cascara sagrada, are still on the market in commercial OTC products and in health food store products and alternative medicines. Buyer beware.

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REMINDER TO USERS OF POWERED TRUCKS AND LIFTS

29 CFR 1910.178(l)

Effective March 1, 1999, OSHA requires operators of fork lifts, platform lift trucks, and other powered truck lifts to be trained before they operate them independently. Training must consist of both classroom and practical training in proper vehicle operation, the associated hazards, and requirements of the OSHA standard for powered industrial trucks. The rule applies to all workers including those in theater, film, and entertainment.

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LEAD-CONTAINING ASIAN MEDICATIONS

MMWR, 48(2), January 22, 1999, pp. 27-29

Early last year a Cambodian woman, her husband, and their two children attended a free lead-screening event. The husband and the two children, aged 8 and 2 years had blood lead levels (BLLs) below 10 micrograms per deciliter (µg/dL). The woman, however, had a BLL of 44 µg/dL and a confirmatory BLL on March 3 of 42 µg/dL.*

An investigation revealed that the woman had taken "Koo Sar" pills, an Asian remedy for menstrual cramps. Analysis of the pills showed they contained significant amounts of lead. The pills were manufactured by Tien Sau Tong in Hong Kong and purchased in San Francisco. The San Francisco Department of Health Services bought two more bottles of "Koo Sar" pills which also were found to contain lead. Lead was not listed among the 11 label ingredients.

ACTS FACTS has reported on other Asian Traditional or folk medicines that contain lead. A list of folk remedies, cosmetics, and other products from East Indian, Pakistani, Chinese, and Latin American cultures that have contained lead include: alarcon, alkohl, azarcon, bali goli, coral, gliasard, greta, kohl, liga, pay-loo-ah, rueda, surma, ayurvedic metal-mineral tonics, Deshi Dewa (a fertility drug), and hai gen fen (clamshell powder) added to tea. Last month, ***ACTS FACTS*** reported on mercury adulterants in Chinese herbal medicines.

* CDC regards adult BLLs <10µg/dL as normal; the geometric mean blood lead level for adults aged 20-49years in the Third National Health and Nutrition Examination Survey (1991-94)was 2.1 µg/dL.

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"HAPPY STRING" RECALLED: A FIRE HAZARD

Press Release: 1/21/99, CPSC

In cooperation with the U.S. Consumer Product Safety Commission (CPSC), KMC USA Inc., is recalling more than 190,000 cans of Party Time "Happy String." The product's flammable propellant makes it dangerous to spray near an open flame. CPSC knows of two reports of burns from the use of spray string. A 4-year-old boy suffered first- and second-degree burns on his face and arm when some of the string ignited while he was blowing out birthday cake candles. A woman was burned on her ear in another incident.

The product comes in round metal spray cans about 5-inches high. "PARTY TIME" is written in different colored block letters and "Happy String" is depicted as if it is being sprayed from a can of the product. Additional labeling includes, "MADE IN KOREA" & "IDEAL FOR DECORATING WALLS, TABLES, TREES, PEOPLE, ANYTHING..." For more information, call Dollar Tree Stores at (800) 876-8077 anytime.

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LEGIONNAIRES DISEASE IN PLASTIC MOLDING FACILITIES

BNA-OSHR, 28(33), Jan 27, 1999, p. 1046

Workers in the plastic injection molding industry may be at risk for Legionnaires Disease--a potentially life-threatening form of pneumonia--a recent OSHA Information Bulletin warned. According to OSHA, the organisms that cause the disease were found in the water used to cool the metal molds and process equipment a Cincinnati facility, and unconfirmed cases of Legionnaires Disease were found among the workers. In addition, an outbreak of the disease was recently reported in a Baltimore plastic injection molding plant in which five workers developed Legionnaires' Disease and one died.

These incidents should remind artists that standing water is busy growing "stuff." This water can become hazardous if it is sprayed, used in wet grinding, or made airborne in some way. Artists must:

* Periodically clean and disinfect the water holding units;

* Use biocides to kill organisms in the water during long periods of operation; and

* Remove dissolved solids and organic material in the water such as grinding waste, decaying leaves, surface scum, etc.

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PLATING SHOP OWNER TO SERVE JAIL TERM

BNA-OSHR, 28(33), Jan 27, 1999, p. 1049

On January 19, a state court ordered the owner of a Santa Rosa plating shop to serve one year in jail and pay a #30,000 fine for violating California hazardous waste laws and endangering his employees. (*California v. Beeson*, Calif. SuperCt., Sonoma Country, No. SCR 27293, 1/19/99).

Prosecutors filed a 14-count criminal complaint against James Lee Beeson alleging hazardous waste disposal and storage violations at his facility, Gelardi Plating, involving nitric acid, cyanide, hexavalent chromium, copper, nickel, and zinc. The defendant was also charged with failing to properly train his workers. Beeson pleaded guilty felony and misdemeanor charges and was also found guilty of endangering his workers and the public by illegally storing cyanide and nitric acid solutions too close together. If mixed, these chemicals could create a toxic cloud.

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COLUMBIA UNIVERSITY CITED BY OSHA

The New York Hygienist, IV(3), Feb 1999, p. 4 & 6

The Occupational Safety and Health Administration (OSHA) has cited Columbia University's College of Physicians and Surgeons, Health Sciences Division, in NYC, and proposed penalties of $77,5000. The actions result from an inspection conducted in July in response to employee complaints about formaldehyde exposure.

WILLFUL VIOLATION: OSHA alleges that the university willfully violated the laboratory standard by failing to carry out the provisions of a written chemical hygiene plan. The alleged willful violation carries a total proposed penalty of $55,000.

SERIOUS VIOLATIONS: OSHA also cited the university for eight alleged serious violations of the formaldehyde standard for a total proposed penalty of $ 17,500 including:

* no sampling strategy for determining employee exposure.
* not repeating initial and periodic personal monitoring.
* not providing/ensuring use of personal protective gear.
* not providing medical surveillance for employees.
* no written hazard communication program for formaldehyde.
* not providing information and training.

OTHER-THAN-SERIOUS: seven more less serious alleged violations were cited for a total proposed penalty of $5000.

There is another uncited problem here. Students in schools like Columbia do not know they are learning their craft in unsafe, non-compliant venues. When they graduate, they may accept employment uncritically in similar unsafe workplaces. Thus Columbia's violations perpetuate unsafe conditions in the medical field.

MOLD DISEASE CONTRACTED DURING PRAIRIE DOG RELOCATION

MMWR, 48(5),Feb. 12, 1999, pp. 98-100

Two healthy adults working for the City of Boulder Open Space program on a prairie dog relocation were hospitalized with a fungal pneumonia called "blastomycosis." They contracted this serious disease in only two days of work about a week apart. They engaged in vigorous digging, creating large amounts of dust, and spending 6-7 hours each of the two days with their faces close to the dirt. These are the first cases recorded in Colorado. Blastomycosis is caused by inhalation of spores from *B. Dermatitidis*, a fungus found in soil and rotting wood. Both workers survived after hospital treatment followed by six months of oral antifungal medication. The employer is now instituting respiratory protection, protective clothing, and training for workers who disturb the soil.

ANTIQUE AND MODERN DINNERWARE HAZARDS

Editorial

In the last decade, very little research has been done on the hazards of antique ceramic and glassware. Modern imported and domestic dinnerware is also not well-monitored even by the U.S. Food and Drug Administration (FDA). However, one researcher, Ralph W. Sheets, Professor of Chemistry, Southwest Missouri State University, has continued independently to study dinnerware.

Dr. Sheets has done an impressive amount of work on toxic metal leaching and radiation emissions from old and new ceramic and glass dinnerware leaving him quite unrivaled in this field. He is currently organizing his findings into a book. I have read some of this material and predict that this book will be the definitive study on the history and hazards of U.S. ceramic, glass, and plastic dinnerware. I would be interested in suggestions from readers for helping to find a suitable publisher for this work.

Below are abstracts of some of Professor Sheets' papers. Some of the abstracts have been severely edited. Readers are encouraged to obtain the original papers. ACTS will send the full abstracts to readers who send a stamped self-addressed envelope.

"Accidental Contamination From Uranium Compounds Through Contact With Ceramic Dinnerware," R. W. Sheets and C. C. Thompson, *Science of the Total Environment*, 175, (1995) 81-84.

Uranium compounds were found on the surface of orange-colored glazed ware obtained in antique stores and flea markets. The data shows that it is possible for persons who regularly either handle or eat from certain orange-colored uranium-glazed dinnerware to accidentally ingest significant amounts of uranium.

"Thorium in Collectible Glassware," R.W. Sheets, C.C. Thompson, and H.M. Petefish, *Radioactivity and Radiochemistry*, 6(4), (1995) 18.

Some yellow glass dinnerware produced by twelve different U.S. companies during the 1930s-1950s have been found to contain significant amounts of radioactive thorium from cerium pigments obtained from thorium-rich monazite sands. The presence of thorium in glass dinnerware has not previously been reported in the literature.

"Effect of Microwave Heating on Leaching of Lead From Old Ceramic Dinnerware," Ralph W. Sheets, Sandra L. Turpen, and Patrick Hill, *Science of the Total Environment*, 182 (1996) 187

Samples of pre-1950s U.S. ceramic dinnerware, purchased in antique shops and flea markets were acid leach tested for 24 hours at room temperature and also tested after 2-5 minute leaching in a microwave oven. The concentration of lead found in the microwave leachates could not be correlated with, or predicted from, the 24 hour room temperature tests. Lead concentrations above the FDA limit (3 μg/ml) were found in microwave leachates of dishes glazed with uranium colorants, with copper colorants, and with floral over-the-glaze decals. This evidence suggests that use of such dishes in microwave ovens could result in the ingestion of dangerously large amounts of lead.

"Use of Home Test Kits for Detection of Lead and Cadmium in Ceramic Dinnerware," Ralph W. Sheets, *The Science of the Total Environment*, 219 (1998) 13-19.

Four commercial kits, advertised as a convenient means for testing dinnerware for detection of lead (Pb) and one for detection of cadmium (Cd), were tested on pre-1970s ceramic dishes. The same dishes were subjected to 24-hour leaching tests with acetic acid for comparison. With the lead kits, fewer than 10% of dishes leaching greater than 3.0 μg Pb/ml yielded false negative results. When the cadmium kit was used, 29% of dishes leaching greater than 0.5 μg Cd/ml yielded false negatives. Home lead test kits appear to be useful for screening of dinnerware, but the cadmium kit may not be suitable for this purpose.

"Lead Hazards From Old Ceramic Dinnerware." Ralph W. Sheets and Sandra L. Turpin, *Global Environmental Biotechnology*, D.L. Wise, Ed., Elsevier Science B.V., Oxford (1997) 327–333.

Orange, uranium–containing glazed dishes made by U.S. dinnerware companies before 1943 were found to leach concentrations (up to 350 μg/ml) of lead which greatly exceeded the FDA standard for flatware (3 μg/ml). Chromogen screening tests on 40 orange uranium–glazed dishes manufactured before 1950 by a total of 16 different U.S. companies showed that all released lead in concentrations exceeding FDA limits. Some blue or blue–green dishes made by U.S. companies before 1950 were found to release lead in high concentrations. The blue and blue–green glazes contained copper colorants and the concentrations of copper found in the leachates strongly correlated with the amount of lead in the leachate. Dishes of these types are widely collected in the U.S. and are readily available in antique stores and flea markets. These dishes are unsafe and should not be used for preparation, storage, or serving of food.

"Extraction of Lead, Cadmium and Zinc from Overglaze Decorations on Ceramic Dinnerware by Acidic and Basic Food Substances," Sheets, *Science of the Total Environment*, 197 (1997) 167–175.

Dinnerware decorated with overglaze designs made in the US before 1970 were leach tested with 4 % acetic acid for 24 hours and lead concentrations of up to 610 μg/ml and cadmium concentrations of up to 15 μg/ml were measured. More than half the dishes tested for lead (78 of 149) leached levels exceeding the FDA limit for flatware (3 μg/ml). One–fourth of dishes tested for cadmium (26 of 98) exceeded the FDA limit of 0.5 μg/ml. High concentrations of lead, cadmium and zinc were also released into 1% solutions of citric and lactic acids. Significant amounts of these metals were extracted by basic solutions of sodium citrate and sodium tripolyphosphate, as well as by commercial food substances including sauerkraut juice, pickle juice, orange juice, and low–lactose milk. Relative concentrations of lead, zinc and cadmium released depend on the leaching agent used. Citric acid leachates contain higher lead:cadmium and zinc:cadmium (but lower lead:zinc) ratios than do acetic acid leachates from nominally identical dishes. Repeated extractions with acetic acid show that even after 20 consecutive 24 hour leachings many dishes still release lead in concentrations exceeding FDA limits.

"Release of Uranium and Emission of Radiation from Uranium–Glazed Dinnerware," R. W. Sheets, Sandra L. Turpen, *Journal of Radioanalytical and Nuclear Chemistry*, Vol. 235, # 1–2(1998) 167–171.

Samples of orange, yellow, beige, ivory, and blue–green ceramic dinnerware glazed with uranium compounds have been examined. Measurements at glaze surfaces yielded exposure rates of 3.8–16 mR/h (1–4 μC/kgh) for orange glazes and rates of 0.04–1.3 mR/h (0.01–0.3 μC/kgh) for ivory, beige, and yellow glazes. Whole body exposure from a shelf display of 40 orange dishes was estimated to be 0.1–0.5 mR/h (0.03–0.13 μC/kgh), or up to 50 times the room background radiation level, at a distance of 1 meter. Twenty–four hour leaching tests of orange, yellow, and ivory dishes were carried out with various concentrations of acetic and citric acids. Uranium concentrations in leachates of some orange dishes exceeded 450 μg/ml (mg/L). A person consuming 2.2 L of drinking water per day containing EPA's proposed maximum contaminant level of 0.02 mg/L would ingest 0.31 mg of uranium per week. A person eating once a week from an orange glazed dish could easily ingest 10 or more times this amount.

"Release of Heavy Metals from European and Asian Porcelain Dinnerware," Ralph W. Sheets, *The Science of the Total Environment*, 212 (1998) 107–113

Porcelain dinnerware dishes made in five European and three Asian countries before the mid–1970s and imported into the U.S. were subjected to acid leaching tests to investigate heavy metal release. Forty–six dishes decorated with decals or hand painted designs applied over the glaze were examined including dishes from major manufacturers (Haviland, Limoges, Rosenthal, Noritake). In 24–hour acetic acid leach tests, half of the samples (23 dishes) released lead in concentrations exceeding the FDA limit (3.0 μg/ml) and another 17 dishes released lead in concentrations ranging from 0.1 to 2.9 μg/ml. Five dishes released cadmium, but only one value exceeded the FDA limit of 0.5 μg/ml. Zinc, cobalt, copper and chromium were also released by some of the dishes. None of the acetic acid solutions contained measurable concentrations of nickel although this metal, as well as those named above, could be extracted from some samples with 6M nitric acid. The FDA has not established dinnerware extraction limits for any metals except lead and cadmium. All overglaze–decorated dishes imported into the U.S. before the mid–1970s should be tested for lead release before they are used in the preparation, serving, or storage of food.

"Acid Extraction of Lead and Cadmium from Newly-Purchased Ceramic and Melamine Dinnerware," Ralph W. Sheets, submitted to *The Science of the Total Environment*, January 1999

Imported dishes can be hazardous if: (1) they leach toxic metals in excessive amounts; and (2) they are not labeled with warnings against use with food. In this study, non-random samples of dishes were purchased in new condition in US retail outlets and subjected to 24-hour acid leaching tests. Two of the 28 patterns of imported ceramic dinnerware were found to release lead in levels that exceed FDA limits, and 10 other patterns released lead in concentrations exceeding California Proposition 65 limits. One imported ceramic dish released cadmium in excess of FDA limits. Samples of new foreign-made melamine (plastic) dinnerware in four patterns released neither lead nor cadmium in detectable amounts. One of three patterns of imported decorative ceramic plates released lead in concentration exceeding 2000 μg/ml. These plates are not permanently labeled as hazardous and do not comply with FDA regulations.

Radioactive Art Glass & Glass Dinnerware, unpublished, to be part of a book on dinnerware. Much collectible art glass and glass dinnerware manufactured in the United States and Europe is radioactive, containing either radioactive potassium (^{40}K), thorium (^{232}Th), or uranium (^{238}U and ^{235}U). This paper discusses in detail glasses and glassware of each of these types in terms of history, manufacture, physical and chemical properties, and availability. An appendix describes the author's measurements of beta and gamma-ray emissions, ultraviolet and visible spectra, fluorescence properties, densities, and leaching characteristics of a total of 107 samples from the three radioactive glass categories. Only one group of dishes, those made from yellow uranium-glass in the "Marigold" color by A.H. Heisey & Co. in 1929-30, is found to involve a clear risk during daily use. These release lead in concentrations greater than allowed by the FDA. No other samples examined appear to present human health hazards.

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ANCIENT EGYPTIANS MADE LEAD COMPOUNDS FOR MAKEUP

C&EN, Feb 15, 1999, p. 51

The ancient Egyptians used chemical synthesis to make certain lead compounds for makeup. That's the conclusion of a French research team that analyzed cosmetic powders dating from 2000 to 1200 B.C. that were preserved in their original containers in the Louvre Museum. In addition to finding two natural lead compounds--the minerals galena (PbS) and cerussite ($PbCO_3$)--the researchers found two unexpected constituents: laurionite (PbOHCl) and phosgenite ($Pb_2Cl_2CO_3$). Despite being rare in nature, the last two are present in large amounts in the Egyptian cosmetics, according to Philippe Walter of the Research Laboratory of the Museums of France his and coworkers. They conclude that the Egyptians synthesized laurionite and phosgenite from "silver foam" (PbO) and rock salt, even through it is a difficult synthesis involving many repetitive operations.

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell, research; John Fairlie, OES.

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April 1999 Vol. 13, No. 04

ART MATERIAL LABELS TO CHANGE

Institute News, Vol. 41, No. 1, Jan/Feb 1999, p. 1 & ASTM-D4236 minutes

ACMI Changes Seals. The Arts and Creative Materials Institute, the major certifier of U.S. art materials, has redesigned and simplified its seals. ACMI currently uses six Seals:

* CP Seal - with and without the word "non-toxic";
* AP Seal - with and without the word "non-Toxic"; and
* HL Seal - used on both on non-toxic products and products requiring cautionary labeling.

This confusing system will be replaced with just two seals:

* AP Seal - replacing CP, AP, and HL "non-toxic" seals; and
* HL Seal - which will require cautions on the label.

ACTS thinks the new labels are a great improvement. One drawback is that manufacturers can still use the term "non-toxic" with the new AP seal if they wish. ACTS thinks this term is misleading as it is currently used and it should be excluded from art material labels.

ACMI members must use the new Seals on all their new approved products, but they have until 2009 to revise the labels on their old AP Seal non-toxic products and until 2004 to change to the new CL Seal on products requiring precautions. This means that 8 types of seals may be used for the next 5 years and 6 seals may be used up to 10 years. ACTS thinks relabeling should be done sooner.

The seals, of course, will include the legally required statement that they conform to ASTM D-4236, the labeling standard of the American Society of Testing and Materials. Manufacturers also may add wording on their labels indicating that the product conforms to other standards. For example, the label may state that the product also conforms to ASTM D-4302, a lightfast standard. ACTS favors this method of providing data on a product's specific qualities.

Requirement for a "real" address? The ASTM D01.57 committee voted to consider changing the ASTM D-4236 standard to state that the required address on a product label be one at which the manufacturer actually can be reached by letter. Some art materials makers and ACMI strongly object to this proposed change.

ACTS wonders why manufacturers would fight for the right to put an address on their labels at which they could not be reached. Do we really have to legally define the word "address" to mean "a correct and sufficient address?" Shouldn't this be assumed to be so?

FLOCK WORKER'S LUNG FIGHT STILL RAGES

In July, 1997, ***ACT FACTS*** covered a new occupational illness among textile workers exposed to nylon flocking fibers at Microfibres, Inc., in Rhode Island. The disease is a form of interstitial lung disease (ILD) nicknamed "flock worker's lung." It was discovered by David Kern, MD, founder/director of the Occupational and Environmental Health Service at Memorial Hospital of Rhode Island, an affiliate of Brown University's School of Medicine.

Dr. Kern's account[1] of his discovery is a sad tale of attempts by both Microfibres and Brown University to withhold information from the public and from workers. When Dr. Kern planned to present his findings at a scientific meeting, Microfibres threatened legal action and medical school administrators vilified Dr. Kern publicly. Ultimately, Brown terminated both the occupational clinic and Dr. Kern's employment. Legal proceedings are ongoing.

To partially explain Brown University's behavior, Dr. Kern notes that Microfibres was one of eight benefactors responsible for construction of the hospital's histology laboratory, that three members of the company owner's family were members of the Memorial Hospital Corporation, and Microfibres had been asked to contribute to another hospital program at about the time the dispute erupted. Academic freedom and worker safety can be compromised when close bonds are forged between industry and universities.

Dr. Kern also asked the National Institute for Occupational Safety and Health (NIOSH) to evaluate[2] the plant. The NIOSH study backs up Dr. Kern's observations and concludes:

* *An excess of ILD has occurred among workers employed at the Microfibres plant in Pawtucket.*
* *Even among those workers not diagnosed with ILD, substantial excesses in various respiratory, systems, and other symptoms have occurred.*
* *These excesses of ILD and respiratory symptoms are attributable to occupational exposure at the plant.*
* *Respirable dust exposures were found to be clearly in the hazardous ranges in some areas of the plant.*
* *Respirable dust generated during flock production, including respirable nylon fragments, causes very intense inflammation in animal lungs and represents the most likely cause of the excess ILD and symptoms observed among workers at this plant.*

In addition to flock workers, all fiber artists and costumers should be aware that nylon and other synthetic fiber dusts are not safe to inhale in quantity.

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1. "The Unexpected Result of an Investigation of an Outbreak of Occupational Lung Disease, David G. Kern, MD, MOH, *International Journal of Occupational and Environmental Health*, 4(1), Jan-Mar, 1998, pp. 19-32 Plus "Roundtable" comments on the article by four other doctors pp. 33-40.
2. NIOSH Health Hazard Evaluation (HETA) 96-0093-2685Microfibres, Inc., Pawtucket, RI, Rita Washko, MD; Joe Burkhart, CIH; Chris Piacitelli, IH. April 1998.

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FLOCKING PLANT EXPLODES: OSHA BULLETIN ISSUED

Chemical Health & Safety, Am. Chem. Soc., Jan/Feb 1999, p. 38

OSHA issued a hazard information bulletin on dust explosion hazards following a catastrophic explosion and fire at a flocking plant. The Methuen, MA, Area OSHA Office directed attention to this potential hazard when it was discovered that under certain conditions, dusts from processed and treated nylon fiber may be combustible, ignitable, and explosive.

Flocking is the application of finely cut fibers to substrates for decorative and functional uses. Substrates can be such items as upholstery and drapery fabrics, carpeting, toys, belts, ribbon, vinyl, picture frames, rubber seals, metals, foam, cardboard, paper, and automotive components. The fibers are usually cotton, acrylic, polyester, rayon, or nylon.

The process entails dyeing the fiber, cutting the fibers, chemically treating the fibers to prevent them from clumping, creating a fiber-air-mixture, and dropping the fibers through an electrical field. An explosion of the fine dust created during the process could be triggered by electrical equipment, static discharges or small fires. The OSHA bulletin is at:

http:www.osha-slc.gov/OshDoc/HIV_data/HIB19981006.html.

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"SUE" SAFETY SAGA SITE

ACTS directs readers to a new website that should interest readers who followed the safety issues associated with construction of the laboratories for removing stone matrix from "Sue." (Sue was the T-Rex dinosaur fossil sold at Sotheby's for $8 million.) In March, 1998, ***ACTS FACTS*** reported on the flexible duct exhaust systems and other safety features of the laboratories being built at both the Field Museum in Chicago and Disney's Animal Kingdom in Orlando.

Now the Field Museum's finished lab can be seen at www.fmnh.org. There is a live "Sue Cam" shot of the laboratory. Viewers can zoom in on the different areas and watch the fossil preparators as they perform their work in a safe manner.

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SOFT CONCRETE

Chemical Health & Safety, Am. Chem. Soc., Jan/Feb 1999, p. 38

An OSHA bulletin warns building restoration workers about asbestos in of one type of concrete. A material called "soft concrete" was used on the surface of a roof of a government building built in 1934. Inspection of a roof-repair project revealed that an unusual light concrete was used to form slopes on the building's roof in layers that were between 2 and 10 inches thick. Analysis showed that the concrete contained between 2% and 10% asbestos. Any substance over 1% must be handled as asbestos-containing material.

OSHA has no data on how many buildings might have soft concrete on their roofs. It is possible that such mixtures were used on other roofs and could pose significant health hazards during demolition or repair work to workers or to employees occupying the building.

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PLASTIC FIBER "MOVIE SNOW" CAUSES LUNG DISEASE

Letter to the Editor in *The New England Journal of Medicine* (3/18/99, 340(11)

NIOSH found (see page 2) that lung disease could be caused by tiny respirable nylon fibers which deposit deep in the lung, but it has always been assumed that larger fibers are safe. Larger fibers deposit in upper part of the lung that is comprised of tubes ranging from the big bronchi to the tiny bronchioles. The tubes are lined with mucous and hair-like "cilia" which sweep debris up and out. But this "self cleaning" mechanism doesn't always work according to Michael A. Sue, M.D., from the Southern California Permanente Medical Group, Panorama City, CA.

Dr. Sue tells about a 37-year-old nonsmoking special-effects coordinator in the moviemaking industry. While working on a set, he was exposed to artificial polyethylene fiber snow for two days. He developed a chronic cough and allergic rhinitis from which he suffered for 11 weeks while continuing to work on the movie. The cough was initially dry, but became productive of yellowish phlegm. He coughed several times every hour and it disturbed his sleep. A postnasal drip developed.

Many treatments were tried. Some of the medications he had been prescribed and which didn't help included:

- prednisone
- albuterol (inhaler)
- triamcinolone (inhaler)
- beclomethasone (nasal spray)
- fexofenadine,
- phenylpropanolamine
- guaifenesin
- narcotic cough suppressants
- nonnarcotic cough suppressants
- several antibiotics

A week before coming to Dr. Sue's clinic, the patient had undergone surgery on the nasal septum (septoplasty) and removal of a turbinate bone (laser turbinectomy) to relieve the nasal symptoms.

At Dr. Sue's clinic, the patient underwent bronchoscopy which revealed whitish plaques in several places. Biopsies were taken and washings (cleaning of the bronchi) were performed. The biopsies and washings revealed polyethylene fibers like those in the snow. The cough began to resolve a few days after the washing.

Dr. Sue warns all those in the moviemaking business: "don't inhale the 'snow.'" ACTS adds: "...or any other synthetic fiber."

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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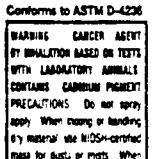
May 1999 Vol. 13, No. 05

ANOTHER WAY AROUND THE LABELING LAW

Editorial

Some art material manufacturers defeat the intent of the Labeling of Hazardous Art Materials Act by printing warnings in tiny type on their products and then providing contradictory statements in fancy promotional brochures. An ***ACTS FACTS*** reader sent us an example. It was a cadmium orange soft pastel stick made by Unison Colour. The stick is packed in a small cardboard box. On the side is a warning pictured below. To the left is the transcribed wording.


Conforms to ASTM D-4236

WARNING CANCER AGENT BY INHALATION BASED ON TESTS WITH LABORATORY ANIMALS CONTAINS CADMIUM PIGMENT PRECAUTIONS Do not spray apply When mixing or handling dry material use NIOSH-certified mask for dusts or mists When spray painting use NIOSH-certified mask for dusts or mists Spray apply only in a locally exhausting spray booth Do not use at home or in a home studio See MSDS for further safe use information Not for use by children For further health information contact a poison control center or call (800-233-2404).

WARNING: CANCER AGENT BY INHALATION BASED ON TESTS WITH LABORATORY ANIMALS. CONTAINS: CADMIUM PIGMENT

PRECAUTIONS: Do not spray apply. When mixing or handling dry material, use NIOSH-certified mask for dusts or mists. When spray painting, use NIOSH-certified mask for dusts or mists. Spray apply only in a locally exhausting spray booth. Do not use at home or in a home studio. See MSDS for further safe use information. Not for use by children. For further health information contact a poison control center or call (800-233-2404).

Accompanying the pastel is a multicolor brochure. One full 11x14 inch page in regular type presents a ~350-word statement in defense of using cadmium pigments written by the London-based Cadmium Association. The text refers to the theory that acid insoluble pigments are safe. The research supporting this theory was evaluated and rejected by OSHA in 1992 when the Cadmium Standard was published. Yet the Cadmium Association says:

> *Cadmium must be absorbed to have a harmful effect, and data has been assembled which shows negligible absorption of cadmium pigments. Cadmium colours should not be considered hazardous under normal conditions of use owing to their insolubility.*

The OSHA Cadmium Standard comments also presented copious evidence of damage to workers exposed to cadmium pigments, yet Unison says:

> *...there have been no known health problems associated with the use of cadmium pigments...*

The only warning in the brochure is:

> *...one should avoid the continuous inhalation of the dusty powder that is likely to arise during the normal application of pastels to paper. Harmless though their nature may be, the continued breathing of any powder is injurious to health. . . .*

Presenting conflicting information in this way is an effective method of confusing the artist and defeating the intent of the law. This problem must be addressed by Governmental regulators, certifying toxicologists, and the American Society of Testing and Materials D 4236 committee.

HALON REVISITED: ACTS FACTS RETRACTS

In the 13 years ***ACTS FACTS*** has been published, we have never had to print a retraction. Now we must. In the February issue this Editor referred to HFC-227ea, better known as FM 200 (Fire Master 200) as heptafluoropropylene. It is actually heptafluoropropane. The error was made in an article in which we reported on EPA's withdrawal of hexafluoropropylene from the list of acceptable substitutes for ozone-damaging chlorofluorocarbons. It was withdrawn in response to new toxicological data indicating a potential for kidney damage to workers exposed during servicing of air-conditioning and refrigeration equipment containing them.

I was concerned that other hydrofluorocarbon compounds (HFCs) used in museums for fire suppression might have similar hazards. I looked through a list of chemicals used in museum fire suppression systems and misread "heptafluoropropane" as "heptafluoropropylene." Clearly, the hazards association with the now banned hexafluoropropylene are not related to those of heptafluoropropane (HFC-227ea). These are two different chemicals.

HALON BY ANY OTHER NAME. There is also confusion about the term "halon" as we use it in our field. According to Hawley's Chemical dictionary, Halon is a registered trade name for tetrafluoroethylene polymers which are chemically resistant, non-stick plastics. The term came to be applied to many carbons/halogen compounds including gaseous ones. It is similar to misusing the trade marked name "Kleenex" for all brands of facial tissue.

The true halons are now banned for most uses. The replacements for these banned chemicals halon are more accurately called "halon substitutes," "HFCs," (hydrofluorocarbons) or "HCFCs" (hydrochlorofluorocarbons). The initialed names highlight the fact that hydrogen (H) is also present in the substitutes unlike the true Halons which contain only carbon and halogens.

USE OF HFC-227ea. The February article also referred to a previous issue (November) which ran comments by Richard G. Gann, Chief of the Fire Science Division of the National Institute of Standards & Technology. He questioned use of HFC-227ea in museums because studies showed that the amounts of hydrofluoric acid (HF) produced when HFC-227ea is used to suppress a fire are typically an order of magnitude larger than that which is produced by Halon 1301. I contacted Mr. Gann and he stands behind that opinion.

Great Lakes Chemical Corporation, which markets FM-200 systems, claims that the tests to which Mr. Gann refers are flammable liquid (Class B) fires and not the ordinary combustible fires (class A) that would occur in museums. An FM-200 brochure says

> "An analysis of the available test data indicates that the levels of HF produced upon extinguishment of typical Class A fires with FM-200is insufficient to cause damage to electronics and other sensitive equipment and assets. Fire growth models and test data indicate that thermal decomposition product concentrations from FM-200are comparable to that formed from Halon 1301..."

ACTS does not have the data to evaluate these contradictory claims at this time and will revisit this issue in a later issue.

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BIRTH DEFECTS LINKED TO ORGANIC SOLVENTS

C&EN, Mar 29, 1999, p. 6 & J. Am. Med. Soc., 281, 1106 (1991)

Women exposed at work to organic solvents during the first trimester of pregnancy are 13 times more likely to give birth to a baby with major defects, a new study reported in the *Journal of the American Medical Society* in March. The exposed women were also more likely to have miscarriages and to give birth to premature babies and babies with low birth weight and fetal distress.

The solvents to which the women were exposed included aliphatic and aromatic hydrocarbons, phenols, trichloroethylene, xylene, vinyl chloride, and acetone, all of which cause birth defects in test animals at high-doses.

The study involved 125 pregnant women who were exposed to solvents at work and 125 unexposed women. Each exposed woman was interviewed early in her pregnancy and then matched to a control woman in terms of age, previous births, smoking, and alcohol use. Defects in babies born to these women were tabulated.

Occupation of Women Exposed to Organic Solvents

	# studied
Factory workers*	37
Lab researcher/technician	21
Graphic designer	16
Painting Industry employee	14
Industrial chemist	13
Commercial painter	8
Office Worker	4
Car cleaning worker	3
Veterinary technician	3
Orthotic manufacturing worker	2
Mortuary technician	2
Carpenter	1
Social worker	1

* Industries include rubber, paint, cosmetics, automotive

In infants born to the exposed women, 13 major and five minor malformations occurred. Babies born to the unexposed women had only one major and one minor defect. Major defects included deafness, clubfoot, neural tube defect, heart abnormalities, spina bifida, and micropenis. Twelve of the major 13 defects occurred in babies born among the 75 women who had acute symptoms associated with their solvent exposures such as eye and respiratory irritation, breathing difficulties and headaches.

The study's lead author, Sohail Khattak of The Hospital for Sick Children in Toronto, says that this study is just a first step toward determining if a problem exists and further research is needed. However, he thinks that "health care professionals ... should inform their patients that some types of employment may influence reproductive outcomes," and that "based on our study, if you are not symptomatic, you are probably safe."

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TABLE SAW GUARDING VIOLATION

BNA-OSHR,28(36), 2/27/99, p. 1131

Riverbay Corp., Bronx, NY, is contesting a repeat citation and a $10,000 penalty for the alleged violation of 1910.213(c)(1), for failure to guard the portion of circular hand-fed ripsaws that was above the table and the material being cut.

==========

CADMIUM AND FRACTURES

The Lancet 1999;353:1140-1144

People in 10 cadmium-polluted districts in Belgium were studied for 7 years. Researchers recorded subjects' urinary cadmium excretion, bone density, incidence of fractures, and height loss. Residents living in more polluted districts had a higher risk of fractures than those living in areas with less environmental cadmium. The impact of cadmium on bone density loss was particularly significant in postmenopausal women. Overall, the authors found that in people with doubled urinary cadmium, the risk of fractures were 73% higher for women, and the risk of height loss was 60% higher for men.

==========

AMERICAN FIREWORKS CITED BY OSHA

BNA-OSHR, 28(10), 3/17/99, p. 1237

The American Fireworks Company of Springfield, Ill, is contesting a serious citation and a $6,000 penalty for the alleged violations of four items, including for failure to have employees use appropriate eye or face protection when exposed to eye or face hazards from flying particles, liquid chemicals, acids, or caustic liquids (1910.133(a)(1)); for failure to use protective equipment whenever hazards capable of causing injury and impairment were encountered (1910.132(a)); and under the general duty clause failure to furnish employment and a place of employment free from recognized hazards that were causing or likely to cause serious physical harm in that employees were exposed to hazards of being struck by or burned due to ignition of pyrotechnic shells (Section 5(a)(1)).

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FATAL BLAST AT FIREWORKS FACTORY

San Francisco Examiner, Mar 30, 1999, p. A16

A fireworks factory where seven workers died in an explosion in December was hit by another blast and fire that killed five people. The March 29th explosion at the Independence Professional Fireworks Company destroyed a building just 100 yards from the one wrecked in December. Agents with the federal Bureau of Alcohol, Tobacco, and Firearms, who investigated the December blast, were on the scene Monday and promised a full investigation. Robert Slayton, co-owner of the factory, was among those killed.

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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June 1999 Vol. 13, No. 06

NEW LIMIT AT LAST FOR FIBER GLASS DUST

BNA-OSHR,28(49), 5/19/99, pp. 1524-2525

A program committing manufacturers and users of fiberglass to lower worker exposure to fiberglass has been developed by three industry associations: the North American Insulation Manufacturers Association, the National Insulation Association and the Insulation Contractors Association of America. The program was developed through a voluntary, cooperative effort with OSHA.

Unable to overcome the political opposition to setting more protective permissible exposure limits (PELs), OSHA has taken this cooperative strategy. The aim is to protect workers from the known increased risk of cancer and chronic respiratory disease caused by fiberglass. Currently fiberglass is regulated under a "nuisance dust" standard (up to 50 fibers per cubic centimeter (f/cc)). The new cooperative limit will be 1 f/cc 8-hour time-weighted average.

The new agreement also directs workers to wear NIOSH-approved dust respirators when the new permissible exposure limit is exceeded or when performing certain tasks such as blowing insulation into walls and when demolishing buildings.

CANDLE HAZARDS

http://www.cpsc.gov and Robert Bailey e-mail:IAQPEng@aol.com

Candlemaking is a popular craft among professionals and public school art teachers alike. ACTS has addressed emissions from hot wax and other candlemaking hazards in one of our data sheets.[1] However, using the finished candles also may be hazardous. In the last few years, literally hundreds of thousands of candles have been recalled as fire hazards by the Consumer Product Safety Commission (CPSC). There are three major reasons for these recalls.

1. Large flames. Some candles were recalled because they suddenly flare and burn with a tall flame. This can occur if too much aromatic oil or the wrong type of oils are used in the candle. It also occurred in candles that contained too much potpourri, lavender, dried flowers, or similar combustible materials.

In other cases, candles made with more than one wick were recalled when consumers found that the wicks were close enough to each other to burn with one large flame. The best example was a recalled hand-shaped wax candle whose flames reached 8 inches high as the candles melt down to the palm where the wicks of the five fingers burned together. (An individual observing the candles noted that as the fingers all burned down, the longest lasting finger was, appropriately, the middle one.)

2. Holders catch fire and burn. Some candles were recalled because their holders burned. One holder designed to look like a toy train melted and ignited when the flame burned down to it. An expensive sliver holder with a leather strap over it got so hot that the leather caught fire. Some ceramic holders also caught fire! Porous terracotta or bisque holders first soaked up the hot wax and then the entire holder would burn fiercely.

3. Holders break. Some candles were recalled because their ceramic or glass holders shattered when hot. Some glass holders would actually explode with heat. Glass holders covered in plastic resin also were recalled for shattering explosively.

DAMAGE TO AIR QUALITY. In addition to being fire hazards, candles release many toxic substances when they burn. Research done by Robert B. Bailey of Bailey Engineering Corporation in Palm Beach Gardens, Florida has shown that about 20 volatile organic chemicals (VOCs) were emitted by the aromatic candles he tested.

Some compounds in emissions of 2 brands of scented candles

* Acetone
* Benzene
* Trichlorofluoromethane
* Carbon disulfide
* 2-Butanone
* 1,1,1-trichloroethane
* Carbon tetrachloride
* Trichloroethene
* Tetrachloroethene
* Toluene
* Chlorobenzene
* Ethylbenzene
* Styrene
* Xylene
* Phenol
* Cresol
* Cylcopentene
* Lead
* Carbon monoxide
* Soot
* Particulate Matter[2]

In addition, Mr. Bailey found carbon black and particulates[2] in candle emissions. His research indicates that candles may be responsible for a substantial number of reports of a phenomenon known as black soot deposition (BSD) that has been occurring in homes for the last 2 to 2 1/2 years with increasing frequency.

Mr. Bailey also thinks some candle emissions should be tested for cancer-causing polycyclic aromatic hydrocarbons and VOCs. He believes that these emission may be present because some companies may add fragrances and oils that are unsuitable for combustion.

Lead fume. Some manufacturers still use lead core wicks which contain a thin lead wire to help stiffen the wick. The wire volatilizes during normal candle burning resulting in lead fume emissions. Mr. Bailey tested dust in a home in which a number of lead core wick candles[3] had been burned. He documented surface lead concentrations of 40 micrograms of lead per square foot ($\mu g/ft^2$). (EPA proposed a standard of 50 $\mu g/ft^2$ for housing-***ACTS FACTS***, July 1998). See "http://members.tripod.com/~rkfabf/index.html" >Candles and Indoor Air Quality< (http://www.fiscorp.net/iaq) for more on Mr. Bailey's research.

SUMMARY. Clearly, candles can be a fire hazard and a significant source of pollution of both household air and surface dust.

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1. "All About Wax," Data Sheet available from ACTS.
2. Bailey found particulates of <2.5 μ in excess of 3200 micrograms for 1 candle burning 45 minutes.
3. The candles that were used for the tests were sold by the Gap and Banana Republic and probably imported. A report has been filed with the CPSC regarding aromatic candles sold by the Gap and Banana Republic (CPSC Product Report # H9790225A).

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FINGER PAINTS SICKEN SIXTY

Townsend Letter for Doctors & Patients, December 1998, p. 24 and "Toxicologist says finger paints could cause illness." April 17, 1998, CNN.com The PointCast Network on the net.

Odors given off by bacteria growing in jars of finger paints caused vomiting and landed over 60 students at a Manchester, New Hampshire, elementary school and their teachers in the hospital. Preservatives designed to prevent bacteria from multiplying in the paint had apparently become ineffective, and the bacteria flourished.

It was assumed that bacteria from the children's hands found the paint a perfect medium for growth. Parents and teachers should not let little ones put their hands into jars of paint. Paint that has been poured into smaller containers for use by children should not be poured back to the original container. Old finger paints should be checked and discarded if they have an odor.

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THREE LIBRARIES CLEANUP MOLD INFESTATIONS

Abbey Newsletter, 22(7-8),1998, p. 93-94

The *Abbey Newsletter* reported on three mold outbreaks in libraries covered in the March and April issues of *American Libraries*. The incidents are good illustrations of three of the common causes of mold infestations.

1. Renovation. At California State University at Northridge, water got into a library area from a reconstruction project accident. Reconstruction and renovation work usually involves water for uses such as cleaning or mixing of cement and plaster. Spills are often ignored. But in this case, the water caused a subsequent outbreak of mold that affected 500,000 books and other items. Cleanup was estimated to cost between $100,000 and $500,000.

2. Carpet Cleaning. The Earl K. Long Library in New Orleans was infested by mold as a result of cleaning their carpet just before the library was closed and the air-conditioning shut off for the long July 4th weekend. Closing buildings, even briefly, before all the water from carpet cleaning has evaporated is known to cause mold outbreaks. In this case, close to a million books were infected with mold over the week end. The State Emergency Board approved $1.56 million to clean up the books, which are valued at $45 million.

3. Malfunctioning Air Conditioning System. Last August, mold was discovered in the stacks of the Ellis Library at Arkansas State University at Jonesboro. A team of archivists and preservationists was immediately formed and within minutes they had found the cause: the reheating function of the air conditioner had malfunctioned causing the humidity in the library to fluctuate widely during heating and cooling cycles. This problem was compounded by a water leak in the mechanical room and by weather that was more humid than normal. More than 100,000 volumes were affected, with an estimated value of $3.3 million.

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FAILURE TO TRAIN & MAINTAIN: EVIDENCE OF NEGLIGENCE

BNA-OSHR,28(46), 4/28/99, p. 1434

A federal district court April 16 found enough evidence of negligence on the part of a forklift owner to sustain a suit brought by a worker who was injured while operating the vehicle (*Buzzell v. C.C. Eastern Inc.*, D. Maine, No. 96-219-B, 4/16/99).

Paul E. Buzzell was an independent contractor working at Eastern's trucking terminal in Gardiner, Maine, in December 1994. An experienced forklift operator, Buzzell was using the forklift to unload a trailer. When he dismounted to inspect a load of goods, the forklift rolled forward and one of its tines pierced his leg.

The terminal manager claimed Buzzell did not set the brake, but Buzzell claimed he did. Another employee testified that the forklift's brake disengaged after he set it on several occasions and that he had brought this to the manager's attention.

More importantly, Eastern did not follow OSHA guidelines requiring them to train Buzzell on forklift maintenance and operation. Training, which includes the use of chocks when parking on an incline, could have prevented the accident even if the brake failed.

Eastern also did not follow the forklift's manual with respect to maintenance. The operator's manual recommended that the vehicle be inspected and maintained by a service station every month or every 170 hours of operation, whichever comes first. Records showed that the forklift was serviced only three times between its acquisition in 1986 and May 1994. In this time it logged 11,435 hours of use.

Consequently, the court sustained the worker's suit. It held that a jury could logically infer that such malfunction resulted from Eastern's negligent failure to maintain or inspect the machine and to train Buzzell. The decision holds implications for other employers who do not train their workers or maintain equipment.

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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July 1999 Vol. 13, No. 07

WORLD LIVE PERFORMANCE CONFERENCE

EDITOR'S REPORT. I attended the International Federation of Actors conference on Live Performance in Lisbon, Portugal, from June 18 to 21. The conference brought together over 200 representatives of performing unions from more than 50 countries. Simultaneous translation was provided through headsets in six languages.

The conference speakers included international stars Gila Almagor from Israel and John Kani from South Africa. But most speakers and panelists were from unions of actors, dancers, and singers, and other artists who came to share problems and look for solutions.

My job was to speak on performer's safety and health. The subjects included illnesses from theatrical fogs, smoke, and pyrotechnics, poor air-quality on airplanes and in performance venues, raked stages, and theatrical and special effects make-up. After I spoke, there were many good questions from the audience on theatrical fogs, lasers, costume dyes, rubber latex allergies, mold, differences in laws in our respective countries, and more.

Even more questions from delegates were waiting in my e-mail when I returned! Those e-mails illustrated one of the major benefits of being at the conference: we now can reach out all over the world for information, advice, and support from people we met in Lisbon.

The conference was not all work. There was wonderful food. And the Mayor of Lisbon held a reception for us with a chorus for entertainment at City Hall. Lisbon's City Hall is actually a palace and I tool a lot of pictures including some shots of an improperly placed fire extinguisher. Now I have lecture slides to show that safety problems can be found even in palaces!

CHECK YOUR HAIR DRYER

CPSC, press release # 99-133,June 30, 1999

More hair dryers have been recalled for having no ground fault circuit interrupter to cut off current in case of contact with water. Some are "LOGIX" and TraVeller's" brands. However there are many, many recalled brands. Actors and other performers are at particularly at risk, however, many scenic painters and other artists also use hairdryers to the speed drying of their work. To see if your hairdryer has been recalled, check http://www.cpsc.gov or call 800/638-2772.

CANCER RISK ASSESSED FOR CERAMIC FIBER

Workplace Quality News, Greg Drumm, UNIFRAX, No. 11, Spring 1999, p. 1

Refractory ceramic fiber (RCF) is in common use in the crafts. Examples include fiber blanket insulation on kilns and furnaces, and chopped fiber or RCF paper in glass slumping and jewelry work. Dust from RCF can be inhaled during work or it can contaminate artist's living areas when they work at home. This dust is considered a cancer hazard.

To assess the cancer risk for RCF workers, the Refractory Ceramic Fibers Coalition (RCFC), a group of RCF manufacturers contacted Sciences International Incorporated (Sciences), a consulting firm which employs internationally recognized researchers. The RCFC directed Sciences to use all available data to conduct an independent and objective state-of-the-art cancer risk assessment using U.S. Environmental Protection Agency policies and protocols.

RESULTS. According to Science's calculations, 7.3 workers in 100,000 are at risk of developing cancer if they are exposed to RCF at the RCFC's Recommended Exposure Guideline (REG) of 0.5 fiber/cubic centimeter (f/cc). At a level of 1.0 f/cc, Sciences calculated the risk at 1.5 workers in 10,000.

The Occupational Safety and Health Administration (OSHA) considers risks greater than 1 in 1,000 to be significant. This means that the cancer risk at the REG of 0.5 f/cc is well below the OSHA significant risk threshold. To reach a 1 in 1000 significant risk level, Sciences estimated that fiber exposure would have to average more than 5 f/cc over one's working lifetime.

OTHER STANDARDS. ACTS considers OSHA's 1 person per 1000 level of acceptable risk inadequate. We applaud the RCFC for setting its level of acceptable risk significantly below OSHA's. Their REG is midway between the OSHA proposed limit for synthetic vitreous fibers, and the proposed RCF Threshold Limit Value (TLV) of the American Conference of Governmental Industrial Hygienists (ACGIH).

AGENCY	LIMIT	STATUS of LIMIT
OSHA	1.0 f/cc	proposed permissible exposure limit for synthetic vitreous fibers
RCFC	0.5 f/cc	recommended guideline currently in effect
ACGIH	0.1 f/cc	published notice of intended change (NIC)

All three limits are designed to protect almost all healthy adults over a working lifetime of 40 hour weeks. The limits do not apply to children or people with other risk factors such as pre-existing health problems or people living in RCF-contaminated homes where they are exposed 24 hours a day to low levels of fiber.

SUMMARY. Clearly, RCF must not be used in public schools or homes. RCF use is acceptable only in universities or studios that provide OSHA-compliant respiratory protection and hazard communication programs, personal air-monitoring to assure that workers are exposed below limits for RCF and silica (which forms when RCF is heated), ventilation, clean up, and other precautions.

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ABSTRACT

HAZCHEM ALERT 13(8) p. 71, Aug. 1998

RESPIRABLE SILICA occupational exposure during relining of metal furnaces was investigated. While removing refractory ceramic fiber linings, employees can be exposed to crystalline silica, refractory ceramic fibers, and other contaminants. Such workers have been found to be overexposed to these materials and have developed disabling lung diseases, including some that resemble asbestosis. (*Applied Occupational & Environmental Hygiene*, 13(7):508-510, 1998)

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AS PREDICTED: ANTHRAQUINONE IS A CARCINOGEN

BNA-OSHR,29(1), June 2, 1999, pp. 11-12

Since 1991, ***ACTS FACTS*** has been reporting on the National Toxicology Program's (NTP) investigation of six naturally occurring dye-related chemicals called "anthraquinones." As each study has been completed, we have provided readers with the results. Up to now, five of studies have been completed. In each case, the anthraquinone chemicals were found to be carcinogenic.*

Now the sixth and last study, that of the parent compound, anthraquinone itself, has been completed. As ***ACTS FACTS*** predicted, anthraquinone is also a carcinogen. It showed clear evidence of carcinogenic activity in female rats and in both sexes of mice in a two year dietary study. Some evidence of carcinogenic activity also was seen in male rats.

Anthraquinone is used as an intermediate in manufacturing hundreds of dyes and pigments. It is also used as an additive in paper pulping processes, as a catalyst in the isomerization of vegetable oils, as an accelerator in nickel electroplating, and as a bird repellant. The compound has been identified in outdoor air samples, in diesel engine exhaust, in samples of fly ash from municipal incinerators, and in surface water, tap water and in drinking water from 12 cities in the Great Lakes region.

Artists are not exposed to anthraquinone itself, but to the more complex anthraquinone pigments and dyes. For example, alizarin crimson (1,2-dihydroxyanthraquinone) is commonly used in children's products and labeled "non-toxic." Yet, alizarin crimson is almost identical to one of the NTP-studied, proven cancer-causing anthraquinones (1,8-dihydroxyanthraquinone).

ACTS is not alone in believing that almost all the anthraquinones will one day be considered carcinogens. Some experts even think that the mechanism by which anthraquinones cause cancer is understood.** Artists would be wise to treat all anthraquinone dyes and pigments as carcinogens and take appropriate precautions.

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* These were: 1-amino-2,4-dibromoanthraquinone(CAS No. 81-49-2);2-aminoanthraquinone(CAS 117-79-3);1-amino-2-methylanthraquinone(CAS 82-28-0);1,4,5,8-tetraaminoanthraquinone(CAS 2475-45-8,Disperse Blue 1); and 1,8-dihydroxyanthraquinone(CAS 117-10-2).

** Anthraquinones are chemicals which convert or metabolize to form quinoid structures which in turn can generate free oxygen radicals.

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PET GROOMERS AT RISK FROM FLEA-CONTROL PRODUCTS

MMWR, 48(21), 6/4/99, pp. 443-447

Pesticide poisoning continues to occur among workers who regularly use flea-control dips and shampoos such as pet groomers and handlers. Illnesses associated with flea-control products were collected from reports to the California Department of Pesticide Regulations and to the state health departments in Texas and Washington. Two pesticides were found to be causing poisoning:

1. Pyrethrins. These insecticides are common ingredients in flea-control dips and shampoos. Although pyrethrins have low toxicity in humans, exposures have caused dermatitis and upper respiratory tract irritation. Allergic contact dermatitis and asthma, sometimes resulting in death, have been reported.

2. Phosmet. This chemical is an organophosphate insecticide used in flea-control products. Its primary target in humans is the nervous system. Organophosphate exposure is associated with many of the symptoms reported by poisoned pet groomers such as malaise, chest pains, nausea, vomiting, dizziness, diarrhea, stomach cramps, tremors, blurred vision, and excess salivation.

Phosmet-containing product labels tell users to wear safety glasses, long-sleeved shirts, long pants, elbow-length waterproof gloves, waterproof aprons, and unlined waterproof boots. It appears that many workers are not given this protective gear nor are they trained about the pesticide's hazards or symptoms of over-exposure.

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VENTILATION FOR OFFSET PRINTING PRESSES

AIHA Journal, (60) May/June 1999, pp. 377-383

Robert Olcerst provides a method of quantifying the term "use with adequate ventilation" in his article in the *AIHA Journal*. To make his point, Olcerst tested air quality in a school offset press room. The room had a volume of ~2100 ft^3 and the press produced ~100,000 pages/month. Volatiles from all inks, cleaners, toners, and even the hand cleaners used in the room were considered. Olcerst's formulas to determine ventilation rates for use of these products are useful. Equally useful is the finding that an exhaust ventilation system providing 6-8 room exchanges/hour is needed to meet air quality regulations in this typical offset press room.

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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FOSSIL WORKERS' HAZARDS: RADON, HEAT, & SILICA

NIOSH *Health Hazard Evaluation Report* 96-0264-2713

The National Institute for Occupational Safety and Health (NIOSH) studied conditions at the National Park Service's Hagerman Fossil Beds National Monument (HAFO) in Hagerman Idaho. HAFO's primary activities are excavation, preparation, display, and storage of fossilized mammal skeletons. Hazards to workers found included:

RADON. NIOSH noted that the greatest radiological hazard was from radon gas generated by the decay of uranium in the fossils (a common ingredient in fossils). Air in the poorly vented collections room where the fossils were stored had radon concentrations of about 8 picoCuries/Liter (pCi/L). Levels inside the fossil storage cabinets ranged from 128 to 500 pCi/L. (EPA recommends taking action when levels in homes exceed 4pCi/L.) NIOSH recommended:

1. Minimize fossils storage by disposing of unnecessary specimens;
2. Apply one or more coats of Butvar® resin to cleaned fossils;
3. Store fossils in unoccupied, mechanically ventilated rooms;
4. Open one cabinets at a time, only when necessary, and minimize time spent in the area;
5. Label cabinets and rooms containing radioactive fossils with signs saying "Caution, Radioactive Material", the radiation symbol, and "Radon Area";
6. Institute a quarterly passive radon monitoring program;
7. Design future fossil storage rooms with dedicated ventilation systems for the room or for the individual collection cabinets.

IONIZING RADIATION. Exposure to ionizing radiation could occur from inhalation or ingestion of the dust from fossilized materials. Significant exposure was found unlikely because the amounts of dust from abrasion of the fossils is small and because NIOSH found that HAFO has instituted good laboratory practices. These practices include a local ventilation system to capture dust, routine handwashing after handling fossils, and prohibiting food, drink, tobacco, and storage of personal items in fossil handling areas.

HEAT. Volunteers, visiting scientists, and other short term workers dig fossils outdoors. They may only stay for a week or two, which is about the time it takes to acclimatize to hot conditions. These people may come from cooler climates, lead sedentary lives, or have other risk factors for heat disorders. NIOSH stated that it is unsafe to place these workers in a hot desert environment, miles away from medical help, for eight hour shifts of outdoor work.

NIOSH recommended a full heat stress management program. Program elements include: a medical questionnaire to screen workers for conditions that increase risk from heat strain; heat stress training for all field workers with record keeping and proof of proficiency; assured access to water; acclimatization schedules; work/rest regimens; radio contact; buddy systems; and heat alerts (prompt notification when weather conditions are hazardous).

SILICA & PARTICULATES. The soil at the dig contains 20-25% silica by mass, but workers' exposures to respirable silica were found to be low during the digging procedures. Since the potential for overexposure exists due to the high silica soil content, monitoring should be repeated if conditions change. Exposure to general soil dust also was found to be low under most conditions except during windy conditions, during sifting of soil, and similar dusty procedures. These exposures were high enough to cause nuisance effects (coughing, eye irritation, etc.).

DUST FROM FOSSILS. The lab's ventilation hoods were able to physically contain heavy dust and projectiles generated during fossil preparation. However, the air flow was insufficient to remove fine dust and the system lacked air cleaners to remove dust from the exhausted air. NIOSH recommended upgrading these systems.

PERSONAL PROTECTIVE EQUIPMENT. Employees were seen wearing personal protective equipment (PPE), sometimes incorrectly. NIOSH saw a bearded employee wearing a respirator (see p. 4) and people inserting earplugs incorrectly. In some instances PPE was not worn when needed (e.g. no safety glasses at the dig). NIOSH recommended that the site's Safety Officer, who is responsible for PPE, undergo the training required by law for federal employees. Then a formal PPE program with training and record keeping should be established.

A copy of this report can be obtained by writing to the NIOSH Publication Office, 4676 Columbia Parkway, Cincinnati OH 45226 and enclosing a self-addressed mailing label.

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ANOTHER REASON TO READ THE MSDS

BNA-OSHR,29(6), 7-7-99pp. 134-135

A paper pulp worker was exposed to a new chemical biocide used to kill naturally forming bacteria in the paper stock. The material safety data sheet (MSDS) on the biocide was posted near the worker's station. Three days after starting to work with the biocide, the worker developed a rash that eventually spread over his body. He was diagnosed with occupational contact dermatitis. The condition is disabling and he can no longer work.

The worker sued the biocide's maker claiming the MSDS contained insufficient warnings. But he testified that he didn't read the MSDS because he thought he had no reason to read it. Since he never read the MSDS, he could not show his injuries were caused by inadequate warnings, a federal appeals court said May 21 (*Andrews v. Buckman Laboratories Inc.*, 4th Cir., No. 98-1189, 5/21/99).

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CLAY MIXERS: BEWARE

BNA-OSHR, 29(5), 6-30-99p. 112

Christopher Walk worked for Continental Clay Co., in Minneapolis. He mixed 20 to 30 batches of clay per day. To clean the pug mill between batches, Walk would disengage the auger, remove the protective cover on the trough, and use a scraper to push the left-over clay toward the vacuum tube. He would then re-engage the auger and scrape the residual clay from between the blades.

In 1996, while doing this job, Walk's scrapper got caught when the auger was turning. His hand became entangled and pulled his arm into the machine. Medical personnel were unable to remove his arm from the machine. It was amputated at the site of the accident.

Walk sued Starkey Machinery Inc., the maker of the pug mill. Walk asserted strict liability and negligence claims based on the unreasonably dangerous design of the mill. Walk stated in deposition that he had observed other employees using the same process to clean the pug mills, but no one had instructed him to do it that way. He also stated that he knew the process was dangerous and that the pug mill could be cleaned with the auger disengaged.

The U.S. District Court for the District of Minnesota granted summary judgement to the defendant, and Walk appealed. The federal appeals court ruled (*Walk v. Starkey Machinery Inc.*, 8th Cir., No. 98-2554, 6/8/99) that the manufacturer of a clay-working machine is not liable under negligence or strict liability theories to an experienced worker who cleaned the equipment incorrectly despite awareness of the danger.

This ruling makes one think that pug mill makers could be liable if if the worker had less experience such as a student or intern.

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COMING SOON: LEAD-FREE ENGINES

Science News, Vol., 155, June 26, 1999, p. 406

The type of steel commonly used for machined car parts contains a small amount of lead, about 0.15 to 0.33 percent by weight. Lead makes the steel alloy, known as 12L14, easy to drill and cut, but its presence also requires that steelmakers and machiners follow strict safety measures to ensure that lead fume and dust doesn't endanger workers or pollute the environment.

Now two researchers at the University of Pittsburgh, Anthony J. DeArdo and C. Isaac Garcia, found that tin can replace the lead in 12L14 without changing the steel's mechanical properties. Tin at a concentration of 0.035 to 0.08 percent by weight--significantly less than the amount of lead it replaces--worked best. They expect a patent for the material soon.

The Curtis Screw Co., in Buffalo, N.Y., has cut about 15,000 pounds of the lead-free steel into precision parts, says president Bob Squier. "It machines at least as well as 12L14." he reports. One less source of lead in the workplace or for use by junk metal sculptors is always welcome.

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HAIR TODAY? GONE TOMORROW!

29 CFR 1910.134

ACTS repeatedly receives inquiries about the use of respirators by men with beards or facial hair. We thought we'd remind readers that the OSHA respiratory protection rules published in January 1998 contain very explicit rules about facial hair under 29 CFR 1910.134(g) *Use of respirators.* This paragraph requires employers to establish and implement procedures for proper respirator use. Among these provisions is one that reads:

(1) Facepiece seal protection. (i) The employer shall not permit respirators with tight-fitting facepieces to be worn by employees who have:

(A) Facial hair that comes between the sealing surface of the facepiece and the face or that interferes with valve function, or
(B) Any condition that interferes with the face-to-facepiece seal or valve function.

In addition, the mandatory fit testing procedures in Appendix A of the regulations prohibits fit testing of respirators on workers with facial hair. Under "Fit Testing Procedures (Mandatory) Part I OSHA-Accepted Fit Test Protocols A. Fit Testing Procedures--General Requirements" it says:

9. *The [fit] test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache, or sideburns which cross the respirator sealing surface. ...*

This rule must be enforced for all employees. Employers also would be wise to extend the rules to non-OSHA-covered students, interns and volunteers. If students are allowed to engage in practices that are deemed unsafe by OSHA, school administrators may find they have increased their liability for any resulting accidents or injuries.

The practice of turning a blind eye to violations of this rule is also a liability and citation risk. OSHA requires employers to monitor their respiratory protection program and enforce its rules.

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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September 1999 Vol. 13, No. 09

CHINESE CERAMICWARE: AGREEMENT REACHED WITH FDA

64 FR 40603-40611,July 27, 1999

A Memorandum of Understanding (MOU) between the U.S. Food and Drug Administration (FDA) and the People's Republic of China has been signed. Effective as of May 20, 1999, the MOU establishes a certification system that will increase the likelihood that daily-use ceramicware manufactured in the People's Republic of China and offered for import into the U.S. will comply with U.S. law.

China will be overseeing testing at factories, developing lists of manufacturers that comply with our regulations, using shipping cartons that are not easy to break into, and taking other actions. This should enable the FDA to reduce the frequency of its sampling of daily-use ceramicware from China. At present, Chinese products frequently fail the FDA lead and cadmium leach testing. Many items also escape FDA scrutiny and are being sold here without testing.

One type of ware that always fails FDA leach tests is Chinese traditional ceramicware. These are dinnerware, spoons and other items usually made from porcelain and highly decorated with vivid-colored, intricate patterns that are hand painted with soft lead-containing enamels. The patterns are of red, yellow, and green. Examples of the names of patterns include "Longevity," "Flowers on Black," and "One Thousand Flowers."

In this regard, China agreed to encourage the development and use of lead-free and cadmium-free decals, glazes and pigments in daily-use ceramicware and Chinese traditional ceramicware production. They further agree to prevent to the extent practicable, the export to the US of Chinese traditional ceramicware and any other ware that is not produced in one of the certified factories.

FDA AND FAA NOW REGULATE LASER SHOWS

64 FR 40603-40611,July 27, 1999

A Memorandum of Understanding (MOU) between FDA and Federal Aviation Administration (FAA) was signed in November of 1998 and published this July. The MOU requires cooperation between the two agencies to reduce incidents of aircraft illumination by lasers projected into navigable airspace. Between 1993 and 1995, the FAA reported 52 incidents of aircraft illuminations from outdoor light show lasers that occurred in or near Las Vegas. Eleven incidents resulted in temporary blindness of flight crew members, and 24 took place during critical flight times (***ACTS FACTS*** June 1996). The FAA now is consulted whenever permits for laser shows are granted by FDA to insure the lasers do not intersect with flight paths.

EPA SETS NEW OUTDOOR AIR QUALITY INDEXES

64 FR 42529-42573, Aug. 4, 1999 - Air Quality Index Reporting: Final Rule

EPA has revised the uniform air quality index (AQI) used by the State agencies that report daily air quality to the general public in accordance with section 319 of the Clean Air Act. And despite the fact that EPA's enforceable national ambient air quality standards (NAAQS) for particulate matter (PM) have been challenged in court, EPA included the new PM guidelines in the indexes. EPA believes that the AQI doesn't serve to implement the NAAQS involved in the litigation. The AQI only provides information on air quality and health that will help individual citizens take prudent, self-protective actions to avoid or reduce exposures on days when unhealthy air quality is projected.

U.S. EPA AIR QUALITY INDEX (AQI)*

AQI value	description	Ozone (O_3) 8-hr	Ozone (O_3) 1-hr	Particulate matter (PM) $PM_{2.5}$ 24-hr	Particulate matter (PM) PM_{10} 24-hr	Carbon monoxide (CO) 8-hr	Sulfur dioxide (SO_2) 24-hr
50	good	0.06 ppm**	..... ppm	15 $\mu g/m^3$**	50 $\mu g/m^3$	4 ppm	0.03 ppm
100	moderate	0.08	0.12	65	150	9	0.14
150	unhealthy for sensitive groups	0.10	0.16	100	250	12	0.22
200	unhealthy	0.12	0.20	150	350	15	0.30
300	very unhealthy	0.40 (1-hr)	0.40	250	420	30	0.60
400	hazardous	0.50 (1-hr)	0.50	350	500	40	0.80
500	"	0.60 (1-hr)	0.60	500	600	50	1.00

*64 FR 42529-42573.Aug. 4, 1999 ** ppm = parts per million, $\mu g/m^3$ = micrograms/cubic meter

ACTS thinks AQIs also could be used as indoor air quality guides. In this regard, we call readers' attention especially to the carbon monoxide (CO) levels. ACTS laments that consumers no longer have access to any inexpensive method of monitoring unhealthy levels of CO in their homes (***ACTS FACTS***, Aug 1998). Underwriters Laboratories (UL) changed the standards for home monitors to require that CO levels are not displayed until they are over 30 or 35 ppm--the "very unhealthy" AQI level. And the monitors do not alarm until levels of 100 ppm averaged over 90 minutes are reached!

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SPECIAL UNIVERSITY WASTE MANAGEMENT PROJECT

64 FR 40695-40715,July 27,1999

EPA is planning a pilot waste management project for the purpose of testing the effectiveness of an integrated, flexible, performance-based approach for managing hazardous waste in university laboratories and to determine whether this approach promotes better management of laboratory wastes than the current standards. The three laboratories chosen for the experiment are at the University of Massachusetts Boston, the Boston College in Chestnut Hill, MA, and the University of Vermont, Burlington.

A new approach is needed since university laboratories often are big EPA violators. For example, ***ACTS FACTS*** reported on EPA fines paid by Stanford ($995,000) and Yale ($70,000 plus $280,000 for mandated training) See the 1994 and 1995 December issues.

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ARENA WORKERS EXPOSED TO CARBON MONOXIDE & NOISE

NIOSH, HETA 98-0093-2717, U.S. Hot Rod Monster Truck and Motocross Show, November 1998.

In 1998, the National Institute for Occupational Safety and Health (NIOSH) assessed carbon monoxide and noise exposure in Cincinnati's Crown Coliseum during the Nederlander Arena Management's U.S. Hot Rod Monster Truck and Motocross Show.

CARBON MONOXIDE (CO). NIOSH found that the Cincinnati Safety Department's criterion of 35 ppm, which was specified in the permit for the show, was exceeded. And when CO concentrations were averaged for a one hour period, they were greater than 35 ppm which exceeds EPA's ambient air quality criterion (see also page 1).

NOISE. Researchers found that the OSHA permissible exposure limit for noise was not exceeded. However, the noise levels did exceed the OSHA action level which requires employers to implement a formal hearing conservation program. NIOSH also was concerned about noise exposures created at other events such as rock concerts, horns that sound when hockey goals are scored, and crowd noise.

NIOSH RECOMMENDATIONS INCLUDED:

* Reduce CO exposures of workers and spectators. Suggestions included more ventilation, longer breaks, and engine tuning.

* Perform additional CO testing by setting up monitors throughout the arena to cover all areas.

* Continue to measure noise exposures at events at the Coliseum, implement an OSHA hearing conservation program, and investigate some of the newer hearing protection devices on the market.

* Educate employees about the health effects associated with exposure to CO and noise, about the actions they should take to minimize exposure, and the actions management is taking to reduce exposure.

* Make hearing protection devices available to the audience if they choose to wear them. Ensure that users know how to use them by putting fitting instructions on the packages of the devices.

* The public also should be educated and made aware of the hazards of noise, CO, and their combined effects. NIOSH suggested:

> *The use of one-page fliers, information booths on the mezzanine level, and public address announcements before the beginning of the event can be used to inform those attending the event so that they are able to make informed decisions about their risks of possible health effects. Because this may be too late for those who have already purchased tickets to make such a decision, consideration should also be given to providing such information in announcements and advertising, and by ticket sellers.*

ACTS thinks the suggestions for protecting the audience also should be used for pyrotechnics, theatrical smoke, etc. For a copy of the report, write NIOSH Publications Office, 4676 Columbia Parkway, Cincinnati OH 45226; 800/356-4674. Ask for Health Hazard Evaluation Report 98-0093-2717. Include a self-addressed mailing label.

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JAIL TIME FOR FALSIFYING SAFETY TRAINING RECORDS

BNA-OSHR, 29(10), 8/4/99, p. 257 & 29(12), 8/18/99, p. 312

Two certified safety trainers were prosecuted for falsifying forms on which they attested that they had trained mine workers. First, Dwight D. Pugh, pled guilty to falsifying 14 Mine Safety and Health Administration (MSHA) forms and was sentenced to a one year prison term, given three years of supervised release, and ordered to pay a $3,000 fine (*U.S. v. Pugh*, W.D. Va., 1:99CR00029-001, 5/17/99). In a second trial, Charles R. Sommers, was sentenced to three years probation for falsifying MSHA forms and must pay $1,443.97 in restitution (*U.S. v. Sommers*, W.D. Ken., No. 4:99CR2-M, 8/9/99).

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NIOSH PUBLISHES GLYCOL FOG ANALYSIS METHOD

"Determination of Glycols in Air: Development of Sampling and Analytical Methodology and Application to Theatrical Smokes," Stephanie M. Pendergrass (NIOSH), American Industrial Hygiene Association Journal, July/Aug, 60:452-457 (1999)

The various studies of performers' exposure to glycol theatrical fogs have been plagued by inconsistent air sampling tests. Both the efficacy of sample collection and the analysis of components of the glycol mixtures have been questioned. Now NIOSH has developed an improved sampling and analytical method for glycol mists.

The fogs used to test this method contained ethylene, propylene, 1,3-butylene, diethylene, triethylene, and tetraethylene glycols. NIOSH found these glycols all were efficiently recovered from a particular type of sampler tube containing specific sorbents.*

Although NIOSH researchers believe that the new sampling and analytical method represents a significant improvement over previous techniques, they recognize that the collection of liquid glycol aerosols still presents difficulties associated with sampling. Possible explanations are the evaporative loss of glycol particles from the filter during sampling and/or adhesion of glycol particles to the interior surfaces of the sampler. Future research should focus on minimizing these losses. In other words, the old methods and even this new method still tend to underestimate the performers' exposure to the glycols.

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* An OSHA versatile sampler (OVS) tube containing a 13-mmglass fiber filter (GFF) in contact with a two-stage solid sorbent tube containing XAD-7(an acrylate polymer resin sorbent).

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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October 1999 Vol. 13, No. 10

EPA PROPOSES NEW REPORTING LIMITS FOR LEAD

64 FR 42222-42243,August 3, 1999

Lead is a designated "persistent, bioaccumulative toxic chemical" (PBT) for which EPA requires special environmental monitoring. Under the PBT rules, EPA proposes to lower current reporting thresholds* for lead and lead compounds from 25,000 pounds per year to 10 pounds per year. This means that all companies that use or process 10 pounds or more per year must report.

Accidental releases of 10 pounds of lead to the air, water, or soil would also have to be reported. EPA further proposes to eliminate the 0.1% de minimis concentration of lead as an impurity since use of large amounts could easily exceed the 10 pound threshold.

EPA believes that the reporting requirements would not be unduly burdensome on industry and that the new lower thresholds would generate significantly more information about lead and lead compound use in the country. EPA lists a number of types of companies that would have to provide this data including "facilities that manufacture, process, or use inorganic pigments," and "small arms ammunition." The rule also clearly would apply to thousands of small lead-using craft businesses such as potteries, ceramic/glass decorators, glassblowers, and stained glass studios.

If craft businesses have good control and collection of waste, dust, and fumes, the new rule would only involve filling out a form. But if they release lead to the environment from poor management, or from accidental spills, fires, floods, and the like, more complex reports and cleanup would be involved.

We think the rule also would be useful to the people who live near craft businesses. Many neighbors of lead-using craft studios have contacted ACTS. They are concerned about potential contamination of soil around the studios, of water (via treatment plants, septic systems, ground water, streams, etc.), and the air. These people often have difficulty in finding out how much lead these businesses use and where is goes. They would welcome a law requiring reporting of lead use and accidental releases of 10 pounds or more.

ACTS expects industry to mount a strong effort to block this regulation. But we believe the data EPA presents on lead's persistence, bioaccumulation, and toxicity support lowering the reportable level to 10 pounds. We further believe that the rule would generated important data quantifying the widespread use of lead by craft businesses across the country.

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* Lead currently is subject to reporting requirements under section 313 of the Emergency Planning and Community Right-to-KnowAct of 1986 (EPCRA) and section 6607 of the Pollution Prevention Act of 1990.

WORKER INJURED BY GRINDING WHEEL GETS COMPENSATION

BNA-OSHR, 29(14), 9/8/99, p. 377-8

A tool and die polisher is entitled to compensation for breach of Ohio safety standards for injuries sustained when a grinding wheel shattered, breaking the worker's glasses and driving fragments into his left eye, the Ohio Supreme Court ruled Aug. 25 (*State ex. rely. Hirschvogle, Inc. v. Miller*, Ohio Sup. Ct., No. 97-1630, 8/25/99).

In addition to workers' compensation, Hirschvogel must compensate its employee, Richard E. Miller, for the company's violation of several safety standards under the Ohio Administration Code. The court said the wheel that was not equipped with flanges as required by the Ohio Administrative Code 412:1-5-12(D)(3)(a)(i) and The maximum rated speed of the wheel was greatly exceeded by the minimum speed of the grinder (subsection (4)(a)).

Editor: I see non-compliant, unsafe grind wheels in almost every school and studio I inspect. When these wheels shatter, even safety glasses will not provide complete protection. People have even been killed by shattering grind wheels. We must repair or replace them.

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SILVER IS NOW MISBRANDED DRUG

64 FR 44653-8,Aug 17, 1999

Various silver compounds have been touted for years as cures for a host of diseases. After about a year of collecting data, research, and comments from the public and prescribers of the products, FDA has declared as misbranded all over the counter (OTC) products containing silver ingredients. These Ingredients include but are not limited to colloidal silver, silver proteins, silver metal and ion, and the chlorides, cyanides, iodides, oxides, and phosphates of silver. New products containing silver will be considered drugs and must comply with the investigations and testing required of all drugs. After September 16, all OTC silver-containing products are subject to regulatory action.

FDA found there was a lack of data establishing silver products as safe and effective. They also published testimony about medical complications. One complication is a disease called "argyria." This is a disfiguring disease causing permanent blue or black stains of the skin and/or the whites of the eyes. ACTS also knows of cases of argyria among people who have inhaled silver fume during silver soldering, fuming, or metal casting.

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CANCER FOUND IN DINOSAUR

Chemical & Engineering News, 8/30/99, p. 96

Bruce M. Rothschild of the Carnegie Museum of Natural History, Youngstown, Ohio, and is colleagues have identified the oldest known example known of a metastatic cancer in a dinosaur bone from an unidentified species from the Upper Jurassic Morrison Formation in western Colorado [*Lancet*, 354, 398 (1999)]. According to Rothschild, until now, examples of tumors were limited to benign bone tumors (osteomas) in mosasaurs, benign tumors of blood vessels (hemangiomas), and growths of unclear origin in dinosaurs.

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BLADDER CANCER: A DATA SHEET

ACTS is concerned about the number of bladder cancer cases we see among artists. For example, this Editor knows of a university painting/printmaking faculty in which there are three cases of the disease. And in a TV studio which employs between 8 and 10 scenic artists, two have had bladder cancer and two others are being monitored because they have blood in their urine and abnormal bladder wall cells.

STUDIES provide evidence that artists are indeed at elevated risk of developing bladder cancer. In the 1970's, hundreds of cases of bladder cancer were studied in Japan among silk kimono painters and dyers. And in 1989, a U.S. study called "Occupational Risks of Bladder Cancer in the United States: 1. White Men," showed that professional artists and printmakers are at greater risk of developing bladder cancer.

THE CAUSE AMONG ARTISTS is no mystery. Dyes and pigments related to a chemical called "benzidine" can cause bladder cancer. The connection between benzidine dyes and bladder cancer was discovered in 1895 when a Swiss urologist noted a high incidence of bladder tumors among dye workers. Bladder cancer is one of the oldest known occupational illnesses.

BENZIDINE DYES AND PIGMENTS. The first dyes that were are implicated are part of a larger class of chemicals called "aromatic amines." As industrialization progressed, greater use of aromatic amine chemicals contributed to rising incidence of occupational bladder cancer. Particularly at risk were workers in the chemical, rubber, and textile industries.

CIGARETTE SMOKING also caused an increase in bladder cancer incidence and it is the single largest cause. There is some evidence that aromatic amines in the smoke may be the cause.

OTHER CAUSES. Occupational chemical exposures account for an estimated 25% of cases in industrialized countries and some parts of the developing world. But the list of chemicals associated with bladder cancer has grown to include compounds other than aromatic amines. Further complicating the picture are other causes of bladder cancer including some drugs and disease treatments (such as pelvic radiotherapy), infectious agents, consumption of pesticide-contaminated drinking water, and more.

REGULATIONS. Germany and some other European countries have banned about 120 dyes that are primarily in the benzidine class for use on textiles such as clothing and bed sheets that have prolonged contact with the skin. But here in the United States there are no regulations. Worse, craft dyers, costumers, printmakers, and other artists often are unable to find out if there are benzidine dyes or pigments on the textiles they use, or in the dyes, inks and paints they buy. No law requires identification of colorants in these products. And benzidine-pigmented products may even be labeled "non-toxic!"

PRECAUTIONS. Since we often can't find out if our products contain benzidine dyes or pigments, we need to take common sense precautions to minimize potential exposure.

1. DO NOT INHALE any type of colorant. Use ventilation or respiratory protection whenever paints, pigments, dyes, or colored materials are sprayed, airbrushed, sanded, heated, or used in powdered form.

2. AVOID EXCESSIVE SKIN CONTACT with paints, dyes and other pigmented products. Wash dyed clothing before wearing and do not wear clothes which release visible amounts of dyes in wash water.

3. GET TESTED. Screening tests can detect bladder cancer at very early stages. If bladder cancer is detected and treated early, it is almost always cured. The 5-year survival rate for early bladder cancer is 90%. Once the cancer spreads (metasticizes), less than one in ten patients will survive five or more years. Take the test, not the chance.

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HAIRDRESSERS' HEALTH RISKS

The following abstracts from *HAZCHEM ALERT* indicate that hairdressers, and perhaps theatrical wig and hairdressers doing similar jobs, may have significant health risks.

OCCUPATIONAL ASTHMA in hairdressers is reviewed, the results of inhalation tests with bleaching powder are discussed. The study population consisted of 55 female hairdressers who had regular contact with various hair products and a clinical history of job-related rhinitic and/or asthmatic symptoms. There were 13 positive responses to bleaching powder in the skin test, and 32 individuals showed positive bronchial responsiveness to acetylcholine; positive responses to the challenge with bleaching powder occurred in 9 women (22% of those tested). None of the women in group II reacted to bleaching powder. In the diagnostic workup of hairdressers with work-related respiratory symptoms, bleaching powder is one of the products that need to be tested. (*Int. Arch. Occup. Envir. Health* 1997; 70(6):419-423; Medline 98103164)

SALIVARY GLAND CANCER high incidence among female hairdressers is under study. The disease occurs more frequently among hairstylists, oil and gas salespeople, railroad workers, and postal service employees--all of whom are exposed to inhaled chemicals. Of these professions, hairdressers had the highest rate of the cancer, about 13% of the stylists. Old-time use (about 20-30 years ago) of turpentine and lacquer as hair-care preparations ingredients and consequent exposure would lead to present-day cancers, in stylists who are now about 60 years old, the median age for diagnosis. (*Environmental Health Perspectives*, Vol. 106, No. 2, pp A59, 1998)

HAIRDRESSING SALONS offer chemical exposure scenarios; adverse health effects among hairdressing professionals are not unknown. However, few studies have described exposure levels. This paper describes exposures to isopropanol, ethanol, toluene, phenylene-diamines, diaminotoluene, and ammonia in six salons and the effect of local exhaust ventilation on exposure levels. Good exhaust practices lowered exposure to acceptable levels (*Ann. Occup. Hyg.* 42(4),277-281(1998); Chemical Abstracts 129:220379c, 1998)

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Editor; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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SUMMER THEATER TRAINING PROGRAMS

Editorial

The summer theater season has drawn to a close. It's a good time to reflect on safety practices in summer theater training programs.

SAFETY PROGRAMS. Not all theaters with apprentice training programs allot sufficient time or money for the training and safety programs required by the Occupational Safety and Health Administration (OSHA). Some directors even insist it is not possible to meet OSHA regulations and still have exciting seasons. They are wrong. Two safe and exciting theater programs come immediately to my mind: the Santa Fe and Glimmerglass Operas.

For example, the Santa Fe Opera's whole first workday is devoted to safety. The day starts with a safety orientation meeting. Then new and seasoned workers alike get a copy of the Opera's 60-page safety program and are formally trained in fire safety and OSHA hazard communication. Workers who will need to wear respirators are scheduled for medical tests and fit testing. An industrial hygienist checks ventilation and safety equipment in each shop and discusses shop-specific safety practices with each crew.

SAFE SCHEDULES. Safety training is useless if production and performance schedules do not allow time for people to work safely. Again, the Santa Fe Opera provides a good model. The Director makes it clear at the orientation meeting that no one may work when they are sick, overtired, or have any problem that may impair their coordination or judgement.

This is entirely unlike the "show must go on" pep-talks seen in theaters that traditionally work their apprentices and crews to exhaustion. An example of one of these programs was seen in this month's *STAGE Directions* (October 1999, p. 58-60). In the section on "Special Training" there is an article called "Riding on the Williamstown Express." A few extracted quotes tell the story:

> *From early in the morning until late into the night, the apprentices are everywhere: building and painting sets, running lights, sewing buttons onto costumes, selling concessions, house managing, ushering and, of course, acting. ...*
>
> *Indeed the work is never ending. In a typical 16-hour day, apprentices participate in workshops and are involved in every aspect of rehearsal and production of the 10-play season. After the curtains fall, they may spend the rest of the night striking*

a just-closed show and loading in the next one. In between their already jam-packed schedules apprentices steal free moments to rehearse independent projects, using campus lawns and dorm lounges as their rehearsal spaces. ...

Young people who have worked a week of 16 hour days are in no condition to be striking or loading in all night, setting lights, working with power tools, or even driving their cars to work.

BAD HABITS LEARNED. An unreasonable schedule not only puts young people at risk, it teaches them that this is acceptable. Another quote from *STAGE Directions* makes the point.

As Keely Flynn, a 19-year-old from Hampshire College put it: "If you survive the summer and still love theater, then you're set."

This young man thinks that he knows how to "survive" in theater. Instead, he has been taught to accept dangerously long working hours without complaint for the rest of his working life. This attitude is a major reason why it is difficult to improve working conditions and safety in theater.

CHANGE IS DUE. The Williamstown Festival was chosen as a bad example only because the article mentioning their work schedules and quoted above appeared conveniently. Williamstown's summer training program is not unique. Programs like these will be around next year and will still attract young people who are so eager to work in theater that they will toil to exhaustion and beyond.

But a willing slave is still a slave. Theater program planners must not take advantage of the enthusiasm of young people. Instead, they must reject apprentice "hazing" traditions. And trade magazines should write promotional pieces on theaters that put safety first and still have exciting seasons; whose apprentices learn the safe way to do each job; and whose workers know their rights.

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BOOK REVIEW: *THE CREATIVITY HANDBOOK*

The Creativity Handbook: A Visual Arts Guide for Parents and Teachers by Carolyn Boriss-Krimsky is a handbook for parents and teachers to help them understand their children's art work. It explains children's drawings from the strange and wonderful scribblings of two-year-olds to the graffiti of teenagers. The book also discusses the reasons many children lose their interest in art and makes suggestions for keeping their creativity alive.

The appendix includes guidelines for purchasing safe art materials. This information is integrated into the two chapters that detail art projects for children from ages two to seventeen. ACTS recommends this book for those interested in understanding and improving their children's artwork. The book can be obtained from Charles C. Thomas Publisher Ltd. Contact them at 800/258-8980, www.ccthomas.com, or books@ccthomas.com.

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FOUNDRY CITED

BNA-OSHR, 29(21), Oct 27, 1999, p. 567

Quality Castings Company in Orrville, Ohio is contesting a serious citation and a $21,825 penalty for the alleged violations of nine items including: failure to guard pulleys with parts seven feet or less from the floor or work platform (1910.219(d)(1)); allowing the distance between an abrasive wheel periphery and the adjustable tongue to exceed one-fourth inch (1910.215(b)(9)); and failure to guard the point of operation on machinery to prevent employees from having any part of their bodies in the danger zone during operation (1910.212(a)(3)(ii)). Art foundries often have similar problems.

EPA AND OSHA: DIFFERENT STANDARDS

Editorial

On occasion, ACTS been told by employers that their workplaces are safe because an "Environmental Site Assessment" was done. These assessments, however, only look at environmental hazards as defined by the Environmental Protection Agency (EPA). Workplace hazards under Occupational Safety and Health (OSHA) are defined by different standards. A site can meet EPA standards and still be a site requiring precautions under OSHA regulations.

WHAT ARE ENVIRONMENTAL AUDITS? A Phase I Environmental Site Assessment consists of describing the property's features and location, looking through records as far back as they exist to see what kinds of activities were conducted on the property, and predicting the kinds of contaminants that may be there. The site is also visually inspected. No samples are collected and tested, but recommendations for testing and/or proceeding to a Phase II site assessment may be made.

Phase II Environmental Site Assessments involve actual testing of soil, water, and/or building materials and recommendations based on the tests. But neither Phase I or Phase II assessments should be considered proof that the site is completely safe for workers.

THE TEST FOR SOIL and solid waste, for example, is called the Toxic Characteristic Leach Procedure (TCLP)*. It is a mild acid extraction that simulates the way toxic chemicals in the soil slowly dissolve into forms that can migrate into ground water.

TCLP tests are not directly relevant to human exposure. Humans have more efficient methods than mild acid extraction to dissolve metals from ingested or inhaled substances (e.g., strong stomach acids and enzyme and cellular activity in the intestines and lungs). For this reason, OSHA requires employers to determine the actual amounts of toxic substances in the soil's dust which can be inhaled.

KNOW YOUR RIGHTS. You have a right to see copies of any tests which relate to the safety of your workplace (under 29 CFR 1910.20(e)(1)(i)). If environmental audits have been done, you should see them, too. They are easy to read and can alert you to hazards such as underground fuel tanks, a past history of chemical spills, and TCLP data. But it is more important to be sure that the OSHA safety requirements have been met.

* Outlined in Title 40 of the Code of Federal Regulations, Part 261, Appendix II.

DEATH RESULTS FROM CHILD LABOR LAW VIOLATIONS

BNA-OSHR, 29(20), Oct 20, 1999, p. 519

The Department of Labor, on October 13, levied the maximum possible penalty against poultry processor Tyson Foods for violations of federal child labor laws that the Department said contributed to the death of one under-age worker and serious injury of another.

Tyson was fined $59,274 for violating the child labor provisions of the Fair Labor Standards Act. These laws prohibit the employment of minors under 16 years of age in any processing activity, including poultry processing. The law also prohibits 14- and 15-year-olds from working between the hours of 7pm and 7am except during summer months when they can work until 9pm.

Investigators at Tyson's Hempstead County, Arkansas plant found that a 15-year-old was electrocuted shortly after midnight when he bumped into a fan while working as a "chicken catcher." Another 15-year-old employed at Tyson's Sedalia, Missouri plant, seriously injured both legs when he slipped and fell into an auger 1:20am. Three other minors, one 15-year-old and two 14-year-olds were also unlawfully employed at the Missouri facility.

Tyson claims that the children presented false documents and one was working in their plant for an outside contractor. Tyson is also claiming that chicken catchers are agricultural workers who are exempt from overtime requirements. They also made this claim as part of another action in which chicken catchers were already suing Tyson for overtime pay.

The plight of these young people should remind us of the restrictions which also must be placed on the hours and tasks assigned to underage apprentices and workers in theaters, art schools, and museums. No level of casualties is acceptable in training and employment in the arts.

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ACTS FACTS sources: the Federal Register (FR), the Bureau of National Affairs Occupational Safety & Health Reporter (BNA-OSHR), the Mortality and Morbidity Weekly Report (MMWR), and many health and art publications. Monona Rossol, Ed.; Tobi Zausner, Nina Yahr, Diana Bryan, Sharon Campbell research; John Fairlie, OES.

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GLASS SUPPLIER CITED BY WASHINGTON STATE OSHA

WISHA Inspection No. 302174032, 3/1/99-8/66/99

Olympic Color Rods, in Seattle, was issued citations in September by the Washington State OSHA (WISHA). Olympic was fined $1100 for two of three Serious violations. Included were:

Citation 1 Item 1a **Serious** (62-05407(1)). The importer failed to evaluate chemicals imported by them to determine if they are hazardous. ($600 penalty, must be abated by 09/22/1999).

Citation 1 Item 1b **Serious** (62-05413(1)). The importer failed to develop a material safety data sheet (MSDS) for each hazardous chemical they import. (No penalty, must be abated 09/22/1999.)

Citation 1 Item 2 **Serious** (62-05409(1)(b)). The employer failed to develop, implement, and maintain a written hazard communication program. ($500 penalty, must be abated by 09/22/1999.)

ADDITIONAL GENERAL VIOLATIONS included failure to monitor and determine employees exposure to airborne arsenic (62-07349(5)(b)) and cadmium (62-07407(2)(a)), failure to maintain a written respiratory protection program (62-07109(2)), and failure to include in the written lead compliance program air monitoring data documenting the source of lead emissions (62-07521(6)(c)(ii)(D)). There were no penalties for these citations, but Olympic was given a date by which the violations must be abated. The date has passed (10/12/99). Olympic can expect a return visit.

DOWNSTREAM EFFECTS. ACTS regularly receives requests from people who buy glass colorants and want our help getting MSDSs on the products. They tell us that suppliers assure them either that MSDSs weren't needed because the products aren't toxic or that the foreign manufacturer would not supply them. Neither is true.

As the WISHA citations state, importers must evaluate the toxicity of imported products and must develop MSDSs on them. Glass products require MSDSs because almost all the metals that impart color or that flux glass are regulated. These metals can be made airborne and in many ways such as when transferring granular or powdered material; grinding or ball-milling glass; and by softening or melting the glass with heat to the point that the metals fume.

Lead, cadmium, and arsenic are commonly found in glass colorants and frits. As the General Citations state above, using materials from which lead, cadmium, or arsenic can become airborne puts the user under special rules. Employers who use products containing these metals must develop precautions based on the results of personal air monitoring tests on each exposed employee. These rules also apply to the supplier's customers! ACTS hopes to see more glass suppliers and users complying with OSHA regulations soon.

OZONE GENERATORS: SELLERS IN THE SLAM

Consumer Reports, Oct 1992 p. 661, ACTS FACTS, Jan 1993, FDA Consumer, Nov/Dec, 1999, p. 36-37

The Food and Drug Administration (FDA) cannot prohibit the selling of ozone generators, but it is illegal to make any health claims for them whatever. Kenneth Thiefault and his wife, Mardel Barber, were warned in 1990 to stop touting ozone as a disease treatment. They ignored the order. They claimed their machines could cure AIDS, cancer, herpes, and a host of diseases. Last March, Thiefault and his wife were sentenced in a US District Court in Florida to prison terms that together total over eight years and fines adding up to more than $100,000. Today, they are both in federal prisons.

For another example, **ACTS FACTS** reported in 1993 that William Converse, President of Alpine Air Products was found guilty of fraud for claiming that his ozone generators could improve health. He was ordered by a Minnesota Court of Appeals to pay $70,000 in civil penalties and $104,105 in attorney's fees. Converse sold Alpine Air Products to a buyer who renamed it Alpine Industries and kept selling the machines!

WHAT IS OZONE? High above us the ozone layer deflects the sun's ultraviolet rays. Down here where we breathe, ozone is toxic. Ozone is created when electricity passes through air and converts normal oxygen (O_2) to ozone (O_3). Ozone, in turn, breaks down to normal oxygen and a negative oxygen radical (O^-). The radical can kill bacteria in water purifying systems or harm tissues in our lungs.

OZONE AIR POLLUTION. Mom Nature makes ozone when lightening goes through air. We all recognize the "fresh air" odor of ozone after a storm. This fresh air odor makes it easy for charlatans to convince people that ozone is good for them. Ozone also is created as a byproduct of various electrical and chemical processes. Common workplace sources include welding, electric generators and motors, fuel powered engines, and laser copiers and printers.

AIR QUALITY STANDARDS. OSHA set an eight hour workday limit of 0.1 part per million (ppm) for ozone. Other workplace standards vary with the amount of air inhaled during light, moderate and heavy work (see table). The Environmental Protection Agency (EPA) also sets Air Quality Indexes for ozone. These standards show that EPA considers the OSHA standard unhealthy for sensitive groups!

STANDARDS FOR OZONE EXPOSURE

Agency	Description	8-hour limit
ACGIH	TLV* for heavy work	0.05 ppm
"	TLV* for moderate work	0.08
"	TLV* for light work	0.1
OSHA	PEL** for all work	0.1
EPA***	unhealthy for sensitive people	0.1
"	unhealthy for general public	0.12

* American Conference of Governmental Industrial Hygienist's standards.
** Occupational Safety & Health Administration permissible exposure limit.
*** Environmental Protection Agency Air Quality Indexes.

RECOMMENDATIONS. Avoid ozone exposure on the job and do not generate more ozone at home! The types of air purifiers to avoid include ozone generators and most kinds of negative ion generators.

PUG MILL ACCIDENT REVISITED

BNA-OSHR, 29(5), 6-30-99, p. 112, Minnesota Dept. of Labor & Industry, OSHI ID, M0407

Last August, **ACTS FACTS** covered a federal appeals court ruling (Walk v. Starkey Machinery Inc., 8th Cir., No. 98-2554, 6/8/99) on a suit against a pug mill manufacturer. The suit stemmed from a 1996 accident which occurred when an employee of Continental Clay in Minnesota, Christopher Walk, was cleaning the mill. His scrapper got caught when the auger was turning. His hand became entangled and pulled his arm into the machine. Medical personnel had to amputate the arm above the right elbow at the site of the accident.

The court affirmed a lower court's decision that the manufacturer of a pug mill is not liable under negligence or strict liability when an experienced worker cleans the equipment incorrectly despite awareness of the danger. But reading over the decision, it became clear that Walk's employer used unguarded pug mills and had no training or lockout/tagout procedures. These are OSHA violations. ACTS looked for and found the OSHA citation. It reads in part:

Citation 1 Item 1 Type of violation: **Serious**

29 CFR 1910.212(a)(3)(ii) and 29 CFR 1910.147(c)(1): Point(s) of operations of machinery were not guarded to prevent employee(s) from having any part of their body in the danger zone(s) during operating cycle(s) and The employer did not establish a program consisting of an energy control procedure and employee training to ensure that before any employee performed any servicing of maintenance on the machine or equipment where the unexpected energizing, start up or release of stored energy could occur and cause injury, the machine or equipment would be isolated, and rendered inoperative in accordance with 29 CFR 1910.147(c)(4):

For the employee exposed to the rotating auger while scraping the chute of the pug mill.

Date by Which Violation Must be Abated	08/18/96
Penalty:	$ 750.00

WHY SO LOW? This seems a small fine for a violation that led to the loss a man's arm. OSHA explains that although the accident was severe, they also consider "credits." In this case these were:

55% size	(Continental is a small employer)
10% history	(There is no history of OSHA violations)
20% good faith	(the employer corrected the violations)

Continental Clay demonstrated good faith by installing lockouts and a protective grating on and around the pug mill, by installing lockouts on their other manufacturing machinery, and by drafting written lockout and operating procedures for their machinery.

IMPLICATIONS FOR PUG MILL USERS.

- The court's ruling that the manufacturer is not liable for injuries to an experienced worker implies that they may be liable for injuries to less experienced workers such as students or hobbyists if they sell directly to such users.
- Any employer or school administrator who has a pug mill whose auger is unguarded must install lockouts, and institute training programs and written lockout procedures.

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