INTERNATIONAL COUNCIL OF MUSEUMS (ICOM)

Disaster Relief for Museums Task Force

Established after the tsunami of 2004, the ICOM Disaster Relief for Museums Task Force (DRFM Task Force) was recently re-approved by the ICOM Executive Council for another three years, with a confirmed chair, and newly appointed members. The new task force consists of Dr. Thomas Schuler (chair), Cori Wegener (vice-chair), Carla Bonomi (ICOM secretariat), Amar Galla (ICOM CCTF), Hans-Jurgen Harras (ICMS), Hongnam Kim (ICOM EC), Leif Pareli (Blue Shield - ANCBS), Hanna Pennock (ICOM EC), Wadum (ICOM-CC). Its mission is to assist museums in natural and man-made disasters if disaster response exceeds national capacities.

After a disaster, the task force tries to:

- Identify all museums situated in the affected region
- Check which museums are affected and what kind of damage occurred
- Find out what kind of foreign assistance is needed
- Inform ICOM committees and members about the damage and needs

The task force may help by:

- Sending an assessment team to a museum or region
- Sharing expert knowledge
- Drawing attention to "forgotten" disasters
- Promoting international solidarity among museum colleagues
- Establishing twin relations between one of our Committees (or a major museum) and an affected museum
- Appealing to national and international Funds

Currently, the task force is:

- Researching damage of the museums in Myanmar (Cyclone Nargis), West China (Sichuan earthquake) and South Ossetia (Caucasian War)
- Investigating the impact of the hurricane season in the Caribbean and the US, and the floods in Nepal and India.

For more information visit http://icom.museum/disaster_relief/

Health and Safety

Some Chemical Things Considered: Xylene/Xylenes

Characteristics
Chemical formula: C_8H_{10}
CAS#: See list below
Molecular wt.: 106.16
m-xylene: 108-38-3 BP 139.12°C
o-xylene: 95-47-6 BP 144.5°C
p-xylene: 106-42-3 BP 138.3°C
[isomer: ethylbenzene: 100-41-4 BP 136.1°C]
xylenes (blend): 1330-20-7 BP 139.12°C
Synonyms: Dimethylbenzene; xylol; methyl toluene

Xylenes are clear, colorless liquids with a distinctive sweet odor. They are derived primarily from petroleum distillation/refining. Commercial

xylene is typically a mixture of three isomers: o-, m-, and p-xylene and the isomer ethylbenzene. Industrially xylenes are used as cleaning agents and as solvents for paints, adhesives, and resins. Conservators have typically used xylene as a solvent and diluent in a variety of treatment applications.

Xylene from some suppliers can contain as much as 30% ethylbenzene while others have very little or none. The amounts appear to vary by supplier, so consult the MSDS from your supplier to gauge how much ethylbenzene may be present. One popular brand only contains 4% ethylbenzene while another contains 15-25%.

Hazards

Xylenes are very flammable with a flash point of 29°C (CC), an autoignition temperature of 464°C, a lower explosive limit of 1.0%, and an upper explosive limit of 7.0% by volume in air.

Xylenes are listed by the EPA as a Group D chemical and the IARC as Group 3, both of which mean that it is considered not classifiable as a human carcinogen. From the EPA's IRIS listing:

"Data in both humans and animals are inadequate to evaluate potential associations between xylenes exposure and cancer. A number of human occupational studies have suggested possible carcinogenic effects of chronic inhalation exposure to xylenes. However, in each case co-exposure to other chemicals was a major confounding factor, leading to an inability to adequately assess the potential effects of chronic exposure to xylenes [4]."

Xylene, because of its lipophilic properties, is rapidly absorbed by all routes of exposure, rapidly distributed throughout the body, and, if not metabolized, quickly eliminated in exhaled air. In humans, absorption has been estimated as >50% through the lungs following inhalation exposure and <50% through the gastrointestinal system. In humans exposed by inhalation, up to 2% of the absorbed dose may be absorbed through the skin. The major pathway for metabolism involves mixed function oxidases in the liver, resulting mainly in the formation of isomers of methylhippuric acid that are eliminated in the urine and are used as an index of exposure for occupational monitoring [2].

Ethylbenzene is classified by the IARC as a Group 2B, possibly carcinogenic to humans. Ethylbenzene is also on the Prop 65 list as a chemical known to the State of California to cause cancer. The EPA lists ethylbenzene as a Group D chemical (not classifiable as a human carcinogen), but the data has not been reviewed since 1991.

To confuse the information on carcinogenicity, the Carcinogenic Potency Project [8] has two listings for xylenes, each based in tests performed on four rats. The mixture of isomers containing 17% ethylbenzene shows "no positive" for rat and mouse while the xylene isomer containing only the o-, m-, and p-xylene isomers has a "Tumor Dose in fifty percent of test subjects" (TD_{50}) for rats of 3,110 milligrams of xylene per kilogram of body weight per day (mg/kg/day). In direct contradiction of these results, one must suspect that using xylenes with as little ethylbenzene as possible would be the safest option. Given the uncertainties in the safety information on xylenes, conservators should follow all recommended engineering controls or scrupulously use appropriate personal protective equipment (PPE) as outlined below.

A list of symptoms of varying degrees of severity is listed below, as well as the targeted organs and systems:

Exposure routes: inhalation is the most common exposure route, also dermal absorption and ingestion

Target organs and systems: Eyes, skin, respiratory system, central nervous system, gastrointestinal tract, blood, liver, kidneys

Acute Symptoms: (inhalation) cough, sore throat, dizziness, excitement, drowsiness, incoordination, staggering gait, headache, nausea, (eyes/skin) irritated eyes, corneal vacuolization, dry skin, dermatitis, redness (ingestion) anorexia, nausea, vomiting, abdominal pain

Exposure Limits:
LD_{50}(rats): 3,523 mg/kg (ingestion) [2 & 3]
LD_{50}(rats): 5,000 ppm (inhalation) [5]

NIOSH does not include a guide to mixed xylenes, but does provide exposure limits for the individual isomers of xylene, all of which have the same exposure limits listed below: m-Xylene, o-Xylene, p-Xylene [5 & 6]
NIOSH REL: TWA 100 ppm (435 mg/m^3) ST 150 ppm (655 mg/m^3)
OSHA PEL: TWA 100 ppm (435 mg/m^3)
ACGIH TLV: 100 ppm as TWA 150 ppm as STEL A4 (ACGIH 2001)
IDLH (immediately dangerous to life and health) concentration: 900 ppm

Odor Threshold Value: 1.0 ppm [2]

In Europe, the principal hazards for this solvent are classified as flammability and skin irritation.

Personal Protection: For skin: prevent exposure to skin by wearing protective gloves and protective clothing. The Ansell glove guide recommends Nitrile and PVA coated gloves [7]. For eyes: prevent exposure by wearing protective eyewear such as goggles.

For ingestion: do not drink, eat, or smoke while working.

Respirator Recommendations NIOSH/OSHA [5]

For potential exposures up to IDLH levels of 900 ppm, NIOSH recommends wearing [6]:

- A chemical cartridge respirator with organic vapor cartridges
- A powered, air purifying respirator with organic vapor cartridges
- A supplied air respirator
- A self-contained breathing apparatus with a full face piece.

—The AIC Health and Safety Committee

JAIC Publication Reviews

The editors of the *Journal of the American Institute for Conservation* are always looking for book reviewers to assess titles that have been published in recent years. Please contact Harriet Stratis, Book Editor, at hstratis@artic.edu, or Michele Derrick, Editor-in-Chief, at MDerrick@mfa.org for more information.

Sources

[1] O'Neil, M.J. et al, eds. 2001. *The Merck Index*. 13th ed. Whitehouse Station, NJ: Merck & Co., Inc. p. 1799.

[2] Agency for Toxic Substances and Disease Registry (ATSDR). 2007. Toxicological Profile for Xylene. Atlanta, Georgia: U.S. Department of Health and Human Services, Public Health Service. (http://www.atsdr.cdc.gov/toxprofiles/tp71.html)

[3] U.S. Environmental Protection Agency. Integrated Risk Information System. Xylenes. (http://www.epa.gov/NCEA/iris/subst/0270.htm)

[4] U.S. Environmental Protection Agency. 2003. Toxicological Review of Xylenes. CAS No. 1330-20-7. (http://www.epa.gov/NCEA/iris/toxreviews/0270-tr.pdf)

[5] NIOSH. 2005. *NIOSH Pocket Guide to Chemical Hazards*. U.S. Department of Health and Human Services. NIOSH Publication No. 2004-103. (http://www.cdc.gov/niosh/topics/xylene/ and http://www.cdc.gov/niosh/idlh/95476.html)

[6] International Chemical Safety Cards. 2002. (http://www.cdc.gov/niosh/ipcsneng/neng0085.html)

[7] Ansell Healthcare. 2005. (http://www.ansell-edmont.com/specware/guide.asp)

[8] The Carcinogenic Potency Database (CPDB). (http://potency.berkeley.edu/index.html)

New Materials and Research

Union Carbide No Longer Manufacturing PVAC Resins

Union Carbide is no longer manufacturing PVAC resins (AYAA, AYAC, AYAF, and AYAT), as per information supplied by Dow, its parent company. Representatives of two conservation suppliers confirmed the change and stated that Union Carbide stopped supplying these resins approximately three years ago.

Readers should note that although some suppliers are currently selling resins labeled as AYAA, AYAC, AYAF, and AYAT, these products are not made by Union Carbide, unless the supplier has reserve stock of the discontinued resins. When Union Carbide stopped supplying the resins, at least one company, Talas, located