



Lab Notes

October 2000

IUPUI ENVIRONMENTAL HEALTH AND SAFETY

Examples of Chemicals Known to Cause Reproductive Toxicity*

Female Reproductive Toxicity

- Anabolic steroids
- Carbon disulfide
- Cocaine
- Cyclophosphamide
- Ethylene oxide
- Lead
- Streptozotocin
- Tobacco smoke

Male Reproductive Toxicity

- Anabolic steroids
- Benzene
- Cadmium
- Carbon disulfide
- Cyclohexanol
- Epichlorohydrin
- Ethylene glycol monoethyl ether (and other glycol ethers)
- Streptozotocin

Developmental Toxicity

- Arsenic (inorganic oxides)
- Benzene
- Cadmium
- Carbon disulfide
- Cocaine
- Ethyl alcohol in alcoholic beverages
- Fluoruracil
- Halothane
- Lead

Chemical Hazards Involving Reproduction and Development

Issues have been raised by lab workers concerning their risk of working with chemicals and their desired outcome of having healthy children. These concerns are almost always raised by women who have recently found out that they are pregnant. While these concerns are certainly valid, they should be considered well before conception. By the time a women typically determines that she is pregnant, some crucial time for fetal development has already past.

Although most of the concerns for conception and healthy babies are frequently associated with the female, there are reproductive risks of chemical exposure for men as well. In fact, the range of risk extends to the entire reproductive life of both men and women.

As more information becomes available from research efforts, the database of chemicals that can cause reproductive harm and the extent of the effects observed continue to change. One institution that has developed a listing of reproductive chemical hazards is the State of California. In 1986, California voters approved an initiative to address growing concerns about exposures to toxic chemicals. This initiative became the Safe Drinking Water and Toxic Enforcement Act of 1986, better known by its original name: Proposition 65. As a part of this Act, the California EPA was charged with developing a listing of chemicals known to cause reproductive toxicity. A sampling of some of the chemicals from the December, 1999 update of the list is provided in the adjacent box. The entire listing can be found at the following website: http://www.oehha.org/prop65/out_of_date/122499LSTA.html

There are additional resources available to learn more about reproductive health hazards. Washington State Department of Labor and Industries developed a technical report in 1999 entitled *Workplace Hazards to Reproduction and Development: A Resource for Workers, Employers, Health Care Providers, and Health & Safety Personnel*. This 124-page document can be found at the following website: http://www.lni.wa.gov/sharp/repro_dev.pdf.

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Chemical Hazards Involving

MERCURY WARNING: COULTER-BRAND CELL COUNTERS

by Kevin Mouser

A recent incident has brought to light a mercury concern for Coulter-brand cell counters. During the incident, two Coulter cell counters were laid on their side following a recent move of a laboratory from one campus building to another. While working to set up the new lab, staff in the lab noted a small amount of mercury inside one of the units. It was reasonably presumed that the mercury may have originated from a broken mercury-filled thermometer that may have been used in or near the unit. Staff in the lab promptly reported their find to Environmental Health and Safety (EHS) which responded to the lab to address the concern.

During the course of the response, it was discovered that a significant volume of mercury actually had been released. The cell counters contained no indication, including warning labels from the manufacturer, that they contained mercury or that mercury may be released if the unit was not maintained in an upright position.

Discussions with Beckman-Coulter have revealed that open-looped mercury manometers were incorporated into the design of the cell counters until as recently as 1994 or 1995. As the name implies, the manometers are open to the atmosphere on one end which allows mercury to escape when the unit is placed in any position besides an upright position. Each cell counter contains between 6 and 12 milliliters of mercury. Coulter reports that once released from the manometer, the mercury will readily contaminate the electronic circuitry and commonly disrupts the normal operation of the unit. Coulter states that in most cases, once contaminated, the unit cannot be effectively repaired.

Coulter reports that the following models of cell counter contain mercury-filled manometers and should be handled with due caution:

Model KZM	Model ZM
Model ZBI	Model ZF

The Service Department at Beckman/Coulter also reports that they will no longer provide repair/calibration services on these models after December 31, 2002.

Cell counters of this make and model numbers may continue to be used as long as the unit is fully functional. EHS strongly encourages labs to identify the applicable units with the following warning labeling.

Caution:
*This device contains Mercury
 Maintain in an upright position*

*Report any mercury spillage
 by calling 274-7911.*

*Call 274-4351 for disposal of
 this unit. Do not discard in trash
 or Surplus Property.*

Units that are no longer needed or are no longer fully functional must be referred to EHS for formal decommissioning at which time the mercury will be removed from the unit for proper disposal.



Health Risks Associated With Formaldehyde

by Rodney Davis

Formaldehyde, the hazardous gaseous component in formalin, embalming fluid and formol, is a substance with extensive uses in manufacturing, industrial processes, laboratories and the health care industry. Formaldehyde is a colorless gas compound with a sharp odor that can irritate eyes, mucous membranes and the upper respiratory system. The most common routes of exposure include skin absorption and inhalation.

The presence of formaldehyde is responsible for a number of different health problems. The onset of these problems include eye, nose and throat irritation, followed by coughing and breathing difficulties. Asthma attacks, nausea, vomiting, headaches and nosebleeds can also be caused by exposure to high concentrations of formaldehyde.

If the exposure to formaldehyde is relatively short term, then health symptoms usually disappear shortly after the pollutant is removed. However, long-term exposure may increase a person's sensitivity to the gas and lead to health effects during future exposure at very low concentrations. Formaldehyde is considered a strong nasal carcinogen in rodents, which lead to concerns about its potential in humans.

A study recently completed by the Chemical Industry Institute of Technology indicated that there is no significant risk of cancer in humans from low-level exposures to formaldehyde. Nonetheless, those working with formaldehyde need to follow safe working practices to

Faucet-Mounted Emergency Eyewash Stations

Testing of emergency eyewash stations is recommended to be performed weekly. This is needed to flush out any rust or other particles as well as the documented problems with microbial contamination such as amoeba. Environmental Health and Safety checks all lab eyewashes annually along with other safety items as part of the yearly lab inspection program. The responsibility for the other 51 eyewash tests per year falls to departmental staff occupying each laboratory.

Recent lab safety surveys found that a significant number of faucet-mounted eyewashes do not work properly. The main reasons for failure include lack of adequate water pressure, faucet handles do not turn easily and lack of secure mounting of the unit on the faucet. If your eyewash is not securely fixed in position, the set screw that holds it in place is likely loose and needs to be tightened. This should be checked each week during the testing process. **Don't wait until you need your emergency eyewash to find out that it needs**



Emergency Medical Service

Have you ever been told that you should never use the '911' emergency number on campus due to the delay in time for emergency medical response? That used to be true, but an upgrade in the phone system has changed that. The current Emergency Procedures Handbook (flipchart), dated 12/99, indicates that the preferred Emergency Medical Services (ambulance) phone number is 9-911. A delay can also occur if the initial '9' is not dialed to get an outside line because the campus police will then be contacted. Please update all emergency telephone listings to indicate the best number to call for ambulance service:

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Lab Notes, a quarterly publication of IUPUI Environmental Health and Safety, is edited by John F. Beltz and published by Janet Jones



Printed on 100 % recycled paper

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Be Alert for Safety - Expect the Unexpected