



Lab Notes

July 2000

IUPUI ENVIRONMENTAL HEALTH AND SAFETY

9th Report on Carcinogens

By Brandy Robinson

Newly listed as Known Human Carcinogens:

- * Ethylene oxide
- * Tamoxifen
- * Inorganic acid mists containing sulfuric acid
- * Crystalline silica
- * Cadmium and cadmium compounds
- * Environmental tobacco smoke
- * Tobacco smoking
- * Smokeless tobacco
- * Consumption of alcoholic beverages
- * Solar UV radiation
- * Dyes metabolized to benzidine
- * 1,3-Butadiene

Newly listed as Reasonably Anticipated to be Human Carcinogens:

- * Trichloroethylene
- * Phenolphthalein
- * Diesel exhaust particulates
- * Isoprene
- * Chloroprene
- * Tetrafluoroethylene

Deletions:

- * Ethyl acrylate
- * Saccharin

Saccharin No Longer Considered Human Carcinogen

In its 9th edition of the *Report on Carcinogens* (RoC), the National Toxicology Program delisted saccharin, a first since the establishment of formal processes for delisting in 1996. Saccharin had been listed in the RoC as “reasonably anticipated to be a human carcinogen” since 1981 due to sufficient evidence of carcinogenicity in experimental animals. Extensive reviews indicate that the rodent cancer data are not sufficient to meet the current criteria to list this chemical in the RoC as a “reasonably anticipated human carcinogen”. Recent studies show that tumors found in rats related to saccharin develop through mechanisms not relevant to humans. In addition, a decade of observations of humans using saccharin adds to the confidence of removing this artificial sweetener from the RoC.

The National Toxicology Program (NTP) collects information and data from government agencies, industry, academia and epidemiological studies that are then used to compile the *Report on Carcinogens*. An agent, substance, mixture or exposure circumstance can be listed in the RoC either as “known to be a human carcinogen” or as “reasonably anticipated to be a human carcinogen”.

- The “known” category is reserved for those substances for which there is sufficient evidence of carcinogenicity from studies in humans that indicates a cause and effect relationship between the exposure and human cancer
- The “reasonably anticipated” category includes those substances for which there is limited evidence of carcinogenicity in humans and/or sufficient evidence of carcinogenicity in experimental animals

A listing in the *Report on Carcinogens* does not by itself establish that a substance presents a cancer risk to an individual in daily life. It is important to understand that the RoC identifies potential cancer hazards.

Chemicals of Special Interest for Lab Staff:

- Ethylene oxide - increased risk for leukemia and non-Hodgkin's lymphoma
- Crystalline silica - workers exposed to respirable-size (breathable) particles experience increased rates of lung cancer

9th Report on Carcinogens

(Continued from page 1)

(Continued on page 2)

- Inorganic acid mists containing sulfuric acid – specifically associated with laryngeal and lung cancer in humans
- Cadmium and cadmium compounds – increased risk of lung cancer
- Phenolphthalein – causes cancer in multiple organs in multiple species of experimental animals
- Trichloroethylene – causes and increases risk of liver and biliary tract cancer

Agents of General Interest:

- Tamoxifen – drug used for treating breast cancer
- Environmental tobacco smoke – generated from sidestream and exhaled mainstream smoke of cigarettes, pipes, and cigars
- Tobacco smoking – directly inhaled cigarette smoke
- Smokeless tobacco – chewing tobacco and snuff
- Alcohol – causes cancer of the mouth, pharynx, larynx, and esophagus at the highest levels of consumption
- Solar UV radiation - exposure to solar ultraviolet radiation, sunlamps, or sunbeds

The 9th Report on Carcinogens Summary is accessible at <http://ehis.niehs.nih.gov/roc/> or can be ordered through

Safety Orientation Program Schedule Changes – Again

Due to some enhancements in Human Resources New Employee Orientation, the Monday morning training session for Bloodborne Pathogens was moved out of the 9 AM time slot. Human Resources will be using this time to provide A New Employee Orientation@ including an IUPUI welcome and review of key policies/expectations. This orientation is for all new hires and will be held every Monday morning from 8:30-9:50 AM. in the Union Building Roof Lounge. The General Safety Training program will follow in the same room at

10:00 AM.

Beginning on July 11, 2000, the new schedule of providing the Bloodborne Pathogens session the 2nd and 4th Tuesday of every month commences. Please note that Bloodborne Pathogen sessions will be held in the North wing of the Union Building, room 542 (the same room that the Chemical Lab Safety training has been held for some time). Remember that attendance at all listed training programs is required for persons who earn compensation from the University and meet the exposure characteristics for the

NEW EMPLOYEE TRAINING SCHEDULE

Union Building Roof Lounge - 6th Floor

General Safety-For all new employees.
10:00- 12:00 Noon

Jul. 3, 10, 17, 24, 31, 2000
Aug. 7, 14, 21, 28, 2000
Sep. 11, 18, 25, 2000
Oct. 2, 9, 16, 23, 30, 2000

Union Building (North) - Room 542

Bloodborne Pathogens-For all employees who may be exposed to human blood, body fluids or tissue. Session held the 2nd & 4th Tuesday of every month from 8:30 - 9:30 A.M.

July 11 & 25, 2000
August 8 & 22, 2000
September 12 & 26, 2000
October 10 & 24, 2000

Chemical Lab Safety- For all employees who work with chemicals in laboratories.
2000

Sessions held the second Tuesday of every month from 9:30 - 11:30 A.M.

July 11, 2000
August 8,
September 12, 2000
October 10, 2000

BIOCABINET NUTS AND BOLTS

by Doug Haughs

Filter Integrity – What Can Go Wrong

Each year we have our biological safety cabinets tested to insure that the physical operating parameters are still within the manufacturers' specifications. If they are, we feel confident that they will continue to operate properly and safely for another year. That warm and cozy feeling is certainly justified if a few critical parameters have been satisfied during the testing process.

Consider what could happen between test periods to compromise high efficiency filter or biocabinet shell integrity. Getting a report of a leaky filter and wondering how long it has been leaking, what caused the leak, who might have been exposed and to what they might have been exposed are thoughts none of us like to deal with. The good news is that many such situations can be avoided with awareness and casual observation.

While disruptions to normal air flow constitute the majority of problems associated with decreased functionality, breaches in High Efficiency Particulate Air (HEPA) filter integrity provide a greater potential for loss of personnel protection. HEPA filter media is delicate and unfortunately, not well protected. The biocabinet skin and panel seals are much more resistant to failure, but not exempt.

Failures to seals and HEPAs are usually associated with direct or indirect maintenance, and/or moving. Even small moves can stress seals as a result of vibration and skewing. More threatening, are maintenance functions on biocabinet services or duct work, and maintenance near the biocabinet, particularly above it. Maintenance functions to the biocabinet duct work or utility work around and above the biocabinet have resulted in exhaust filter damages from tools, sheet metal screws, molten weld drippings, hands, feet and elbows. Less obvious causes of tears in exhaust filter media can occur from seemingly harmless or unknown brushes against it. The filter media is pleated and usually has sharp corrugated aluminum separators between the pleats. Touching the separators on the top side can produce non-repairable tears on the bottom side. It's important to know if work is done around your biocabinet. It may also be a good idea to have it checked for integrity and/or airflow afterwards.

With an abundance of storage space in all of our labs,

we have no reason to be putting things on top of our biocabinets. Yea right! Try to keep that problem in mind. It doesn't take a very heavy blow to the surface of an exposed HEPA filter to damage it. Also, on ducted cabinets there should be a damper adjustment. Certain damper positions need only be changed by a very minor bump to the damper handle in order to effect significant changes to airflow.

I've enjoyed sharing a few thoughts on biosafety with you. My thanks to John Beltz for making it possible. I hope you find these thoughts useful and would like to hear from me again on related issues.

Doug Haughs is a microbiologist for Biomedical Safety

ARetiring@ That Old Equipment

by Kevin Mouser

As you look around your laboratory, it is almost certain that somewhere in your gaze you will observe equipment or supplies that are headed for the Aretirement zone. @ Due to its age or functionality, the item may be headed for the building trash dumpster or may even be suitable for redistribution by means of the campus Surplus Property program.

In either case, please take a moment to make a quick evaluation to help ensure that the following equipment is discarded in a manner to prevent any type of personal safety concern or environmental contamination:

C REFRIGERATORS AND FREEZERS: Most refrigeration or freezer units found on campus contain ozone-depleting refrigerant (freon). As such, federal law requires that the refrigerant be removed from the unit in a controlled fashion to prevent its release to the atmosphere. Please contact your zone maintenance manager to make arrangements to have the refrigerant removed from the unit prior to disposal.

Units that are still fully operational may be suitable for redistribution or sale and may be referred to the Surplus Property program by contacting Steve Staggs at 274-7753.

In the event the freezer or refrigeration unit has been used to store radioactive, chemical or biohazardous (infectious) materials, please ensure the unit is thoroughly cleaned and, if appropriate, decontaminated before the unit is referred for disposal or redistribution. Please ensure that all universal biohazard and/or radioactive hazard labels are removed from the unit before it leaves the lab.

(Continued on page 4)

ARetiring@ That Old Equipment (Continued from page 3)

- C MERCURY-CONTAINING DEVICES:** Any device known or suspected to contain elemental mercury or mercury compounds must be referred to Environmental Health and Safety for proper decommissioning and disposal. This includes but is not limited to: manometers, dialators, thermostats and thermocouplers, mercury vapor lamps or any other scientific apparatus which may use mercury for its operation or function.
- C EQUIPMENT CONTAINING POLYCHLORINATED BIPHENYLS (PCB=s):** Any type of electrical equipment manufactured prior to 1980, which may contain a Awet@-type transformer (containing dielectric oil within the transformer itself) or capacitor, must be suspected of containing PCB=s. Examples of where PCB=s have been discovered in the past on campus include: portable and stationary x-ray units, electron microscopy equipment, crystallography equipment. Please contact EHS at 274-4351 for additional assistance in evaluating any questionable piece of equipment.
- C LEAD-BEARING WASTE:** Similar to mercury-containing devices, any piece of equipment known or suspected of containing lead must be referred to Environmental Health and Safety for proper decommissioning and disposal. An indication that a device or piece of equipment may contain lead would be if the item is found to be especially heavy considering its size or design. Examples of where lead has been found in the past in campus refuse includes but is not limited to: scintillation counters, various shielding devices, counter weights, containers or Apigs@ used in the shipment of radioactive materials and even plumbing fixtures.

Did you know that early studies conducted by the Center for Disease Control for the U.S. Environmental Protection Agency ranked mercury and lead, due to their prevalence and toxicity, as two of the contaminants of most concern at the nation=s abandoned hazardous

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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



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Be Alert for Safety - Expect the Unexpected