



## Don't Vent Flammable Storage Cabinets

By Linda Swihart

The National Fire Protection Association (NFPA) recommends against the venting of flammable storage cabinets. The reason for this is that "flam cabs" as we commonly refer to them, are designed to protect their contents from fire which is happening *outside* of the cabinet, in the immediate surroundings of the cabinet.

They do a great job of this — see photos from the University of California Santa Cruz lab fire of January 2002 at <http://www.chem.purdue.edu/chemsafety/NewsAndStories/UCSantaCruz.htm> — if air is not being delivered into them from the fire area.



Flammable cabinets at Purdue should not be vented unless approved by Fire Safety Engineers. The Fire Safety Engineers will review individual cases that need to vent and then draw up plans which provide for a carefully controlled rate of air flow through Schedule 40 pipe fitted into the upper and lower bungs which are built into (most) flam cabs.

Odor control is the principal reason for vents, and other types of cabinets may be vented for particularly bad odor problems. Please remember to tightly close your containers before storage, use containers that are in good condition, check routinely for container integrity, and clean the outer surface of containers with particularly noxious smelling compounds, such as thiols and mercaptans. Also the compatibility of the chemicals that are stored should be routinely considered.

Contact REM at 49-46113 for questions about flammable storage cabinets.

## Seen a Good Movie Lately?

By Stephanie Rainey

You can't see them at Wabash Landing. You won't find them at Broadway Video. You can't even order them from Columbia House. No problem! The REM Safety Committee would like to introduce you to the comprehensive video list — nearly 200 titles from a variety of subjects — available to help your department achieve their training goals.

Our video library includes topics from ergonomics to waste handling and disposal. Some videos are intended for introductory training for new employees while others are more tailored for refresher training. An abbreviated list of what we have to offer includes:

- "I Chose to Look the Other Way" - deals with the consequences of witnessing but NOT confronting unsafe behavior
- "Office Safety" - takes a rather humorous look at safety issues in a stereotypical office setting
- "Chemical Safety" - focuses on examples of chemicals and definitions of the terminology, understanding material safety data sheets (MSDS) and labels, and simple safety tips
- "Toxicology" - discusses adverse health effects of dangerous toxins and control measures to implement when working with them



Some videos also include instructor handbooks and quizzes, ideal for ensuring a better understanding of the material being presented.

A complete listing of videos as well as an electronic request form may be found at [http://www.adpc.purdue.edu/PhysFac/safety/video\\_list/VIDEOS.XLS](http://www.adpc.purdue.edu/PhysFac/safety/video_list/VIDEOS.XLS). If you have any questions about video content, length, or availability, please give us a call at 49-46371.

# Visit The REM Online Researchers' Guide

By Judah Young

REM is here to help researchers comply with Purdue University's policy of taking every reasonable precaution to provide a work environment for its employees that is free from recognized hazards. REM manages the implementation of all Federal, State, and Purdue rules, regulations, policies and programs enacted to ensure researchers create and maintain safe laboratories. These management issues may apply to specific types of laboratory operations or be common "across the board" requirements for all laboratories.

The REM web site is an extensive, continuously updated informational resource and should be your main source for biological, chemical, radiological and other safety information at Purdue. There are many links to pages that contain information and instruction essential to the operation and maintenance of safe and compliant research laboratories. The REM web site also contains links to research-laboratory-related-training, documentation, and posting requirements.

The purpose of the Researchers' Guide page is to provide all the regulatory

information a researcher needs to run a compliant laboratory in one place.

The Researchers' Guide may be accessed by clicking on the "Researchers Guide" button located in the list of buttons along the left margin of REM's Home Page:

■ <http://www.adpc.purdue.edu/PhysFac/rem/>

The Researchers' Guide may be accessed directly at the following World Wide Web address:

■ <http://www.adpc.purdue.edu/PhysFac/rem/home/files/researchers.htm>

The Guide contains links to governmental agencies that influence Purdue policies and guidelines as well as links to the policies, programs, guidelines, forms, postings, and templates required for specific laboratory operations at Purdue. The Researchers' Guide has an introduction followed by a "short course" on navigating REM's web site if starting from our REM Home Page. After the introduction and site navigation course is a table with a list of links to program, policy, and guideline summaries relating laboratory operations.

The top cell of the table has links to four (4) summaries that all research laboratories are required to comply with. They are:

1. Chemical safety
2. Chemical waste disposal
3. Personal Protective Equipment (PPE) and Hazard Assessment Process
4. Respiratory protection

The bottom cell of the table contains a list of links to program, policy, and guideline summaries that apply to specific types of laboratory operations. Beginning immediately after the table is an alphabetical listing of summaries by title of program, policy, or guideline. Each summary has links to any training, documentation, and/or posting requirements as well as a link to any Purdue documents referenced.

In addition to REM assistance, many schools and/or departments should have Safety Committees that may assist with safety issues and with regulatory compliance.

## Science Publications Are Within Reach

By Elena Dominguez



For the first time, the United States Environmental Protection Agency (EPA) Science Inventory is available to everybody! On November 18, 2003, the EPA launched the Science Inventory Database for researchers, government, attorneys, students, industry, and the public. The database contains more than

4,000 science activities, 750 peer-reviewed products and more than 19,000 records in the archives. Science activities include research and development projects, scientific and technical studies, routine monitoring, economic and social science studies, audits, inspections, compliance and enforcement activities, technical assistance, and technology transfer. The search can be done by keyword or within nine science subjects:

- Aging initiative
- Children's health
- Contaminated sediments
- Cumulative risk

- Ecological assessment tools
- Environmental justice
- Genomics
- Non-indigenous species
- Tribal science

The database is managed by the EPA's Office of Research and Development and has been used for years by the EPA for research. New records are published after revision and approval by database librarians throughout the year. The Science Inventory Directory Database is a free service to the public and no registration is required. It is available at <http://cfpub.epa.gov/si/>.

# Practice Waste Minimization in the Lab

By Elena Dominquez

If I ask you, “What are the processes or steps involved in doing an experiment?” A probable answer would be, “First, I develop the best procedure and get the right reagents and supplies. Then, I set up the equipment, carry out the experiment, and record the results carefully in my laboratory notebook. I analyze the data and voila! That’s it.” But if I ask you to look under the fume hood, review the equipment, supplies, and glassware, what do you find? Chemical waste and residue? Then is the process over? Not really! You have used glassware and produced waste; therefore, you need to clean glassware and dispose of waste properly. You also need to consider whether you could have generated less waste by using alternative procedures or reagents or by modifying the equipment.

You may ask, “Why should I consider waste minimization and what are the steps to follow?” Waste minimization is defined as the reduction to the extent feasible the hazardous waste that is generated or subsequently treated, stored or disposed of. Motivations for implementing waste minimization are numerous. For example, you will improve safety in the lab, increase environmental quality, decrease risk of long-term liability, save space in landfills, save money, and improve efficiency and competitiveness. Besides the above, waste minimization is one of the main

goals of the EPA and it is specifically mandated by the U.S. Congress in the Resource Conservation and Recovery Act (RCRA).

In general, strong acids or alkaline solutions, heavy metals, toxic organic components, ignitable compounds and solvents are wastes produced in the labs. This high diversity of waste is generated by different processes performed in the lab (See Table below).

Since we know about 40% of hazardous waste comes from unused chemicals, **source reduction** offers an excellent alternative to reduce laboratory waste. Source reduction is more economically desirable than waste management because the amount of waste to be disposed is decreased and it produces less environmental impact.

Source reduction includes:

■ **Good material management.**

Keep an organized and up-to-date inventory, identify potential contaminants, only buy what is needed, and have a good waste segregation plan.

■ **Substitute hazardous chemical with non-hazardous chemicals.**

For example: Use alcohol or ketones instead of xylene or toluene. Use Alconox or non-chromic detergent as a substitute to chromic acid solutions for washing laboratory equipment. Don’t use mercury-based equipment.

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# What is a DTI? Who is my DTI? How Do I Find Out More?

By Stephanie Rainey

If you can’t answer these questions, I would encourage you to read on...

The acronym “DTI” stands for designated trained individual, a person who functions as the liaison between their work area/department and REM, generally with regard to the OSHA Hazard Communication Standard or Right-to-Know Law. Occasionally, however, these enterprising folks may be found coordinating other safety or regulatory initiatives within their area primarily due to their diligence in practicing and promoting safe, responsible behaviors, along with their knowledge of the dynamics of their department’s staff and ability to maintain an active, viable program.

Because a DTI is responsible for details such as facilitating job-specific training and maintaining chemical inventories and material safety data sheets (MSDS) for each work area, they are an integral part of their department’s success as they strive to keep their areas in compliance with regulations that affect them.

As this campus continues to expand, the attention to regulatory compliance will increase as well, making our Dais’ contributions even more valuable. Becoming involved as a DTI definitely takes personal commitment; but, if you combine the support of your co-workers and administrators with the safety benefits to your department, it is well worth the effort. So, if the letters “MSDS” or “RTK” are foreign to you...if you can’t remember being trained on the potential hazards of materials you work with...or if you wouldn’t know where to begin to find any of this information...please contact Stephanie Rainey at 43152 (slrainey@purdue.edu) or Lila Albin at 40204 (lcalbin@purdue.edu) to find out more about the Hazard Communication/Right-to-Know program here at Purdue.

**Table: Generation of wastes in laboratories**

Waste	Origin
Spent solvents	Cleaning, extraction, other processes
Unused reagents	No longer needed Contaminated Exceeded storage life
Reaction products (known or unknown) Testing samples	Research activities Not entirely consumed in the process
Contaminated materials and PPE	Glassware, paper, plastic products,

## Waste Minimization

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■ **Good Laboratory Practices.** Use computer modeling, perform small-scale experiments, read instructions carefully, do not mix hazardous with non-hazardous waste products, avoid unknown chemicals by labeling containers, review procedures to generate less waste, and include hazardous waste disposal planning in the experimental procedure.

When source reduction is not feasible, use other waste minimization methods such as recycling and treatment.

**Recycle** by using donated chemicals and re-circulating unused excess chemicals. Practice solvent distillation if feasible. Return excess pesticides to the distributor or call REM. Although less preferable, **treatment of residues before disposal**, such as elementary neutralization, is a way to reduce the volume or the hazard characteristic of a waste. Other treatments include oxidation, separation, precipitation, and ion exchange.

For successful waste minimization implementation in the laboratory, you need collaboration and group cooperation. Integration into the laboratory environment of chemical and energy conservation as a routine starts at the personal level. Remember, in the case of waste...**less is better**.

# Meet our New Health Physicists



**Mary Reynolds**  
Health Physicist



**Mark Pflug**  
Health Physicist

We are happy to announce the hiring of two new staff members in the Radiation Safety Group. **Mary Reynolds** joins us as a Health Physicist and will have responsibilities in Laser Safety and our radioactive waste program. Mary has a B.S. degree in Sociology from Ball State University and a M.S. Degree in Environmental Engineering/Health Physics from the University of Florida. Her experience includes consulting work at various sites around the country, a short stay with the Tennessee Department of Environment and Conservation and most recently serving as the Radiation Safety Officer at

Western Kentucky University. Mary enjoys reading, quilting, and spending time with her family.

**Mark Pflug** is also a Health Physicist and will coordinate our x-ray safety and training programs. He has a B.A. Degree in Mathematics and Physics from Thomas Edison State University (NJ). Mark has significant experience in radiation safety, from a 10-year tour in the U.S. Navy to his most recent experience in the Radiation Safety Department at the University of Utah. Mark is an accomplished artist and enjoys reading anything science related.

### REMNEWS

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