

University buildings contain array of hazardous chemicals

By John Burket

Of the Emerald

Hazardous chemicals are a fact of 20th century life. Broadly defined, a hazardous chemical is any substance that poses a threat to human health and safety.

That includes many everyday household items as well as specialized-use chemicals found at the University.

"Probably every building on campus contains hazardous chemicals," said Tom Hicks, University environmental health officer.

"Paint thinner, photographic fixer, printing ink, bottled gases — all of these are considered hazardous, mostly because they are either flammable or toxic," Hicks said.

Governmental agencies that monitor hazardous materials separate them into four categories: flammable, corrosive, reactive and toxic.

Examples of each category are gasoline, which is a flammable chemical; powerful acids and bases, which are corrosives; explosive chemicals (that can explode sometimes in the presence of only air or water), which are reactives; and poisonous or carcinogenic chemicals, which are toxics.

"The three places on campus where hazardous chemicals are consolidated into relatively small storage areas are the Physical Plant, the art department and the chemistry storage room," Hicks said.

Chemistry Storage Manager Dave Senkovich said, "We store a lot of very dangerous chemicals here in one place."

"It's not so much what is stored, but how it is stored that is essential for safety. For instance, simply storing certain chemicals alphabetically on a shelf could be disastrous. If three chemicals such as acetone, manganese and perchloric acid got knocked over at the same time you would have an unbelievably explosive reaction and a fire that is nearly impossible to control," Senkovich said.

"Chemicals are arranged by their own storage code that places those which would react with each other in completely different areas."

Hicks and Senkovich both say flammable chemicals stored on campus pose the greatest danger.

"We store about 4,800 pounds of flammable organic chemicals here. That's about one-fourth of what used to be stored. We have a policy of keeping on hand only what is used up quickly," Senkovich said. "By holding our inventory in line with demand, we can cut down on the need to store excessive amounts of flammables," he added.

Flammable organic chemicals such as alcohols are stored in a separate fireproof room that is well ventilated.

"Our storage of flammables complies with and in some ways exceeds the state fire marshal's guidelines," Senkovich said.

"The regulations say that flammables may be stored only in containers of 2 gallons or less, so that is what we do even though 5-gallon containers are much less expensive per unit volume," he said.

"We even have a fireproof cabinet inside our fireproof room," Senkovich added smiling. "How is that for safety?"

Toxic chemicals also are on stock in Chemical Storage. A tour through the carefully arranged shelves reveals items such as arsenic, mercury and cyanide.

Carbon monoxide, a very deadly gas used for metal work in the art department, is stored in large tanks at the end of one aisle. Several known carcinogens, such as carbon tetrachloride and benzene, also are found in Chemical Storage.

"We have on hand about 25 pounds at a time of the highly toxic chemicals. The things that are real bad I special order only the amount I need," Senkovich said.

The storage of hazardous chemicals is only one aspect of their presence at the University; what happens to the chemicals after they are used by the various departments is the concern of the Environmental Health Office.

Before 1982, most hazardous chemicals used at the University were flushed down the drain when they were no longer needed, Hicks said.

Because of stricter laws, hazardous wastes are no longer flushed into the sewage system or sent to local landfills.

About 50 percent of the University's hazardous waste goes to the hazardous waste disposal facility in Arlington, Ore., Hicks said. Thirty percent, including sulfuric acid, mercury, paint thinner and sodium metal is sent to various

places to be recycled, while 5 percent is in good enough shape to be stored and reused.

The rest, which is made up of non-hazardous insolubles, is put in barrels and sent to the Short Mountain landfill, Hicks added.

"We also handle about 40 cubic feet a month of low-level radioactive wastes," Hicks said.

All radioactive material arriving at the University goes first to the Environmental Health Office so its type, quantity and destination can be checked before going on to one of the 35 authorized users, he said.

The radioactive waste is then returned to Hicks and checked again, he said.

"About 80 percent of what we first receive comes back to us in the form of waste," Hicks said. "The rest can be accounted for by the decay of short-lived isotopes and some limited spillage."

Short-lived radioactive isotopes are stored for quick decay and are then either burned at the Physical Plant incinerator or flushed down the drain when their radioactivity has reached the legally acceptable level for these procedures, he said.

Long-lived isotopes, such as carbon-14, are shipped to the radioactive waste disposal site at Hanford, Wash., Hicks said.

Both Hicks and Senkovich believe channeling the purchase of all hazardous chemicals through Chemical Storage, coupled with more extensive computerized record keeping, would increase the already high safety standards for handling hazardous chemicals.

"For less than \$20,000 we can have a system that will tell us exactly who has how much of a certain chemical, its date of purchase and its hazard level.

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