

Creating a Safe and Healthy Campus

Part 1: Minimizing Hazardous Waste

The Vision:

- CU reduces the amount of hazardous waste generated by the campus while maintaining the quality and quantity of research.
- CU continues to advance pollution prevention programs to reduce the quantity of hazardous material present on campus and to promote a safer working and learning environment.

Progress within the Past Year and Upcoming Plans

To augment CU Boulder's current waste minimization and pollution prevention programs, the Blueprint for a Green Campus proposed eight action steps towards minimizing hazardous wastes. For each step, the current status as of March 2002 is described. Also, Environmental Health and Safety has included a few new action steps that are in the interest of waste minimization and pollution prevention.

Action Step: Based on a feasibility study, institute a central chemical procurement system.

Current Status: The EH&S Chemical Management Specialist met with staff from CU's Procurement Service Center to begin exploring a centralized system. A Request for Proposal was issued, unfortunately, the responses were not encouraging. However, EH&S is currently looking at other alternatives.

Action Step: Further advance 'Best Management Practices' already adopted by many laboratories and shops to maximize safety and minimize waste.

Current Status: CU-Boulder was asked to serve on a special commission sponsored and facilitated by the Howard Hughes Medical Institute. The commission is comprised of Federal/State regulators and representatives from each of the 10 EPA regions across the nation and will propose 'Consensus Best Practices,' for educational institutions.

The Best Practices project has been completed and a report of the findings was issued to Congress and the EPA. CU-Boulder's Environmental Health and Safety division (representing EPA Region 8) feel the next step in this process is for the EPA to acknowledge the best practices procedures in well defined regulations and guidance documents.

Action Step: Investigate the feasibility of applying an 'advanced disposal fee' to discourage bulk purchasing of chemicals.

Current Status: No direct progress has been made on this step within the past year. The concept, structure, and applicability of an advanced disposal fee will be discussed in the future.

Action Step: Further advance microscaling efforts. (Microscaling involves conduction experiments on a smaller scale thus reducing the quantity of hazardous substances use in experiments, manufacturing, and routine cleaning.)

Current Status: The efforts in this area continue and are ongoing. Many microscale experimentation efforts have proven successful and are in practice within Chemistry and other UCB departments. It is unknown how many labs currently practice microscaling and how many could do so. It is our understanding that the Hazardous Materials Advisory Board encourages and promotes this practice among teaching labs on campus.

Action Step: Add a waste treatment specialist to the EH&S staff to run the waste treatment process and advise on waste minimization techniques.

Current Status: A waste treatment specialist position was established within EH&S and he oversaw the installation of treatment equipment at the Environmental Health and Safety Center. As evidenced by the above below, the environmental and economic impacts of this treatment facility have been significant. Ralph Bogle's expertise and ingenuity in this area has further enhanced EH&S' commitment to reducing the amount of hazardous waste leaving the Boulder Campus.

Action Step: Install new treatment options and technology at the new EH&S facility which will significantly decrease hazardous waste volumes.

Current Status: A waste treatment area within the EH&S Center has been equipped as a state of the art waste treatment facility. The initial aim has been silver recovery and organic waste ozone/UV oxidation. In pure numbers, between May 2001 and January 2002, the treatment of photo processing chemicals has resulted in 18,600 liters being rendered non-hazardous. This is equal to more than 89 drums (over 4,900 gallons) and the recovery of 50 troy ounces of silver. In addition, neutralization of acid/base solutions has resulted in the reduction 900 liters (more than 220 gallons) of potentially hazardous waste. These processes have also resulted in the recovery of 19,500 liters (5,156 gallons) of water, returned to the city wastewater treatment facility. Actual cost savings, after preliminary start-up costs have been approximately \$10,400.

Action Step: Reduce photographic chemical waste by utilizing new technologies and procedures.

Current Status: In 1997, digital photo labs were established within UCB's Fine Arts and Publications Departments. These labs have proved a success both academically and environmentally and have significantly reduced the volume of photographic wastes generated on Campus. However, because photographic wastes still represent approximately twenty percent of hazardous waste volumes collected, one of EH&S' key treatment programs specifically targets these types of wastes and will render them non-hazardous. As stated earlier, between May 2001 and January 2002, the treatment of photo processing chemicals has resulted in 18,600 liters being rendered non-hazardous.

This is equal to more than 89 drums (over 4,900 gallons) and the recovery of 50 troy ounces of silver.

Action Step: Establish a battery recycling program so that rechargeable and alkaline batteries are recovered for recycling.

Current Status: In conjunction with the Environmental Center and the Recycling Group, we are planning to start a three month battery recycling pilot-program; it will consist of containers placed around campus in various locations, including the UMC, Facilities Management, dormitories, etc., for collection of most battery types (everything except unsealed lead-acid batteries). Presently, Environmental Health & Safety will fund the pilot-program, and the effectiveness of the program will be evaluated after three months to decide if the program will be permanent. It is tentatively scheduled to begin in March 2002.

Additional Progress by Environmental Health and Safety

- In February 2001, a Chemical Management Specialist position was established within EH&S. This position has focused on developing a comprehensive chemical inventory and reference resource database. To date, she has inventories for the entire Chemistry Department. She will soon be completing this process in other departments. This database is web-based and will shortly be linked to the EH&S homepage for possible reference by emergency responders on campus. This will assist them in knowing what chemicals are where on campus providing better knowledge in the face of an emergency. This position is also assisting the departments in acquiring new chemical storage cabinets. This is advantageous to the Campus by providing additional chemical security as well as bolstering pollution prevention measures.
- The aftermath of September 11th has pushed campus security to the forefront. EH&S staff help in this effort by providing knowledge and training regarding security within labs on campus. We are encouraging the locking of labs when they are unattended and making lab personnel aware of their surroundings. The Chem Store has also strengthened its security procedures.
- Effective July 30, 2001, the definition of Universal Hazardous Waste was expanded to include Electronic Devices and Electronic Components as Universal Hazardous Waste items. The Colorado Department of Public Health and Environment made this change to address the ongoing disposal of heavy metals and toxic components derived from these items. Historically, these types of items have been processed as main stream waste and were sent to the various landfills throughout the state. Businesses are no longer allowed to do this under the current rule. This new definition will in effect force the increased reclamation and reuse of these types of items and will require a change in the way all

University Departments handle, store, and dispose of electronic items and equipment. In accordance with the UCB disposal policy, all UCB departmental equipment, regardless of acquisition cost, and furniture is disposed of through Property Services. Disposal methods include re-placement on campus, donation and public auction. Property Services is working closely with EH & S, UCB Recycling and others to ensure proper disposal under the new regulations.

- Future plans to improve hazwaste training include providing web based instruction over the internet. Such developments will maximize the convenience of Hazardous Material/Waste Management instruction and allow Proctors more flexibility in accomplishing generator training.
- EH&S is working on revising and updating the Generators' Guide to Hazardous Material / Waste Management. Updating this booklet is an effort in EH&S' ongoing goal of providing the Boulder Campus with current, reliable information. March 2002 is the target date of completion.
- Through on-going efforts, EH&S with Facilities Management, have completed stenciling interior building storm water drains on the main and east campuses as well as about 90% of all the hard-scaped exterior storm inlets (161 emblems). The best ways to mark soft-scape (turf and grassy areas) are still being discussed.
- EH&S has worked with the campus to complete implementation of most of its Spill Prevention Control and Countermeasure Plan (SPCC) for above-ground petroleum tanks and emergency generators. This includes secondary containment, berms and spill prevention equipment. Full campus implementation is expected by June 2002.
- To help improve water and air quality and reduce water consumption, 6 new specialized vacuum pumps were installed in Ekeley and Cristol Chemistry at a cost of more than \$30,000, replacing water aspirators that were used to distill solvents. Unlike the aspirators, the new pumps do not use running water (was a wasteful environmental practice), do not use oil (which became hazardous waste), nor do they allow residual solvent vapors to be entrained into the sanitary sewer drains.