Compact of Department of Environmental Health and Safety
FY 2003-04

INTRODUCTION

The Department of Environmental Health and Safety supports the University’s overall mission of excellence in research, teaching, outreach and public service by partnering with University colleges and departments to facilitate safety and environmental programs. We place primary emphasis on programs that prevent accidents, minimize exposure to hazardous agents and conditions, prevent degradation of the environment, and prevent the spread of disease from unsanitary conditions.

UPDATE – MAJOR LONG TERM GOALS FROM PAST COMPACTS

Construction Program Support

Review and comment of projects from conceptual through construction plan phase is essential to anticipate safety and environmental problems that arise during renovations or new construction. During FY03, DEHS has continued to meet with Design and Construction and General Counsel to discuss methods of improving the construction process and communication during all project phases. We will continue these discussions during FY04.

NEW LONG TERM GOALS/PRIORITIES

Burning of Oat Hulls at Heating Plant

The goal of this project is determine whether oat hulls can be safely and efficiently handled in the University’s coal handling facility and burned as fuel. If so, oat hulls may be substituted for coal or natural gas. The oat hulls would be obtained as a byproduct from General Mills operations in Minneapolis. If successful, this could lead to burning of other biomass fuels. The annual savings in fuel costs could be realized through substitution of biomass for the more expensive fuels.
DEHS will assist Facilities Management/Foster Wheeler in the permitting the of the steam plant for burning of oat hulls. DEHS has already submitted an application to MPCA to allow test burning of oat hulls during the FY03 or FY04 heating season. With emission results from the test burn, DEHS will amend the existing steam plant air permit to allow other types of biomass burning under an overall emissions cap.

**Funding**
The permit process will be coordinated by the DEHS Environmental Compliance Specialist who is centrally funded. External support for completing permit applications will be provided by environmental consultants hired and funded by Facilities Management. Expedited work on the MPCA temporary test burn permit will require an extra expenditure and the total costs including consultant work are expected to exceed $20,000. Foster Wheeler will fund the delivery and handling of oat hulls and test burn.

**Storm water Plan Implementation**
EPA regulates storm water to prevent runoff from non-point sources (parking lots, feedlots, roofs, etc.) from degrading lakes and rivers. The University qualifies for EPA Phase 2 storm water rules, which require that storm water management applications and plans be submitted to MPCA by March 10, 2003. DEHS is coordinating efforts on the Twin Cities Campus to develop and implement a storm water management plan incorporating EPA Best Management Practices (BMPs). The plan must be implemented over the next 5 years and will describe the capital improvements and operation and maintenance activities planned to prevent storm water degradation on the Twin Cities Campus.

The plan has been developed in coordination with Facilities Management Utilities and Landcare staff to determine feasibility and impacts of implementing BMPs such as rain gardens and increased street sweeping. The watershed on the St. Paul Campus provides a unique opportunity since all water passes through a single outlet at the Sarita wetland, which ultimately flows to the Mississippi River. DEHS has been collaborating with students from the College of Natural Resources and College of Architecture and Landscape Architecture on the design Sarita Wetland of the restoration. Future opportunities for students will include environmental monitoring for research purposes and the use of the wetland as a “living classroom” for undergraduate teaching purposes. For the surrounding community and municipalities, the Sarita watershed and wetland will demonstrate how to apply BMPs to an urban setting.

In Minneapolis all storm water flows directly to the Mississippi River. Facilities Management will assess sanitary sewer systems in buildings for the possibility of cross connection to storm sewers. If any are identified, the correction will require extensive redesign
and rebuilding of sanitary sewer lines in affected buildings. A recent cross-connect in Physics cost the University in excess of $150,000 to correct.

**Funding**

Capital funding has been done through other building projects such as removal of fuel oil tanks and chiller projects in St. Paul, as well as HEAPR funding allocations from FY 2000 and 2002. Central administration has committed to fund design costs for later stages of Sarita wetlands renovation. In addition, DEHS staff has applied for and received funding from the Capitol Region Watershed District (CRWD) and a grant from the Metropolitan Council Environmental Services of the Sarita wetland renovation. Capital costs during the phase in of the plan are expected to average $600,000 per year.

Maintenance and operation costs will need to be covered through Facilities Management budgets and are expected to average $130,000 per year.

**Capital Plan**

<table>
<thead>
<tr>
<th>Phase</th>
<th>Description</th>
<th>Funding Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Construct pretreatment wetland– a primary settling basin to reduce solids and phosphorus loading in the wetland</td>
<td>HEAPR</td>
<td>$130,000</td>
</tr>
<tr>
<td>2</td>
<td>Construct on-site storm water infiltration and underground storage around new chiller plant and clean up downstream Sarita basins. Construct upstream infiltration area in sheep pasture to filter solids and nutrients and modulate flow downstream.</td>
<td>Chiller project, CRWD, MCES, HEAPR</td>
<td>$100,000, $75,000, $50,000, $500,000</td>
</tr>
<tr>
<td>3</td>
<td>Construct a demonstration wetland for use by University staff, students and community.</td>
<td>HEAPR, U Foundation, Facilities Management</td>
<td>Total $900,000</td>
</tr>
</tbody>
</table>
Development of Relationship with University's Compliance Office

DEHS is one of the key regulatory departments that the University’s Director of Compliance, Tom Schumacher, is including in the University’s risk assessment process. A DEHS goal is to take an active role in this process, as well as brief his office in key compliance issues as they occur.

DEHS management has met with Tom Schumacher several times within the last few months to complete a risk assessment of environmental health and safety issues. DEHS facilitates more areas of compliance in academic, research and support operations than any other department, which necessitates a comprehensive and in some cases complex risk assessment process. We have many customers with diverse needs and we support numerous all-University committees such as the All University Radiation Protection Advisory Committee, Institutional Biosafety Committee and Occupational Health and Safety Committee.

The outcome of our initial risk assessment effort will be a list of environmental health and safety risks to be provided to the Director of Compliance for assessment of impacts, probability and follow-up with responsible parties.

DEHS staff will also chair or staff the Research and Safety and Security work groups to be set up by Schumacher.

Funding
Risk assessment activities and the time spent in working group is to be funded by DEHS.

Transfer of Nuclear Regulatory Commission (NRC) Licensing and Regulatory Compliance to the State of Minnesota

The Minnesota Department of Health (MDH), Radiation Control Section, is continuing to pursue NRC Agreement State status for the State of Minnesota. Under this NRC Agreement, the State will take over responsibility for licensing and compliance inspections of current NRC radioactive materials licensees in the State of Minnesota. This will include the University’s NRC broad-scope medical/research license, radioactive waste management license, and veterinary cobalt irradiator license.
DEHS Radiation Protection Division (RPD) staff serve on the NRC Agreement State Advisory Taskforce of the MDH. RPD staff will continue to meet with MDH to review and recommend changes to the proposed NRC agreement revisions to the State of Minnesota Ionizing Radiation Rules to assure compatibility with University NRC licenses.

The projected date for final approval of the NRC Agreement is January of 2004. DEHS will keep all University radioactive materials users informed of the progress toward adoption of the Agreement and of the impact of the revised State Rules. Also, DEHS will assist users with the implementation of these rules to assure ongoing compliance.

**Safety and Security of Biological Agents**

In December 2002, the Centers for Disease Control and Prevention (CDC) and the Animal and Plant Health Inspection Service (APHIS) published regulations required by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 and Agricultural Bioterrorism Act of 2002. These regulations, relating to the use, handling, and transfer of certain biologically hazardous bacteria, viruses, toxins, and nucleic acids, referred to as select agents, were effective beginning February 7, 2003. The APHIS regulations apply to agents or toxins deemed a severe threat to plant health and plant products and agents or toxins that pose a severe threat to animal health or animal products. All institutions possessing such agents must comply with the regulations.

The University staffed two biosafety technician positions in 2002 to inspect all University laboratories for such agents. Having done the initial inventory, the University was able to determine which labs are covered and focus compliance efforts to meet the aggressive compliance schedule for registering laboratories, implementing safety and security plans, providing training, and conducting background checks of laboratory employees. The most obvious results will be greatly increased security and documentation requirements for a handful of labs that desire to store or work with select agents covered by these rules.

The second phase of information gathering is the development of ARMER, a web based submission form which will be used to annually collect information from researchers on the use of select agents, toxic gases, controlled substances and use of animals. The information received on the ARMER form will be transferred to a database maintained by DEHS staff, and will be used to prioritize ongoing annual lab inspections for biological safety, chemical safety and security issues. The ARMER database is expected to be ready for trial later in the first or second quarter of FY04.
**Funding**
The biosafety technician positions (2 FTE) were funded on a recurring basis from the central security allocation. Development of ARMER form and database is being funded by Vice President for Research.

**Increase Effectiveness of Research Safety Officers (RSO’s)**

The Research Safety Program was developed in 1999 by the Vice President for Research and DEHS to respond to Audit Department reports of inconsistent safety programs across various colleges and departments. The program requires that each unit designate an individual to serve as Research Safety Officer (RSO). The RSO must know the types of research done in the department, and be able to converse with principal investigators (PIs) regarding safety and environmental issues associated with research. The principal RSO tasks include being a local liaison between DEHS and department staff, tailoring the generic University lab safety plan to their department, reviewing the hazards of new operations, conducting annual audits of lab spaces, facilitating department safety training and maintaining department records. Among the resources available to the RSOs are DEHS staff, annual RSO training sessions put on by DEHS, web-based reference materials provided by DEHS, and department safety committees.

Within the last year, several laboratory accidents and feedback from RSOs have prompted DEHS to change some aspects of the program and the training to increase the effectiveness of RSOs as local safety and environmental facilitators. We have changed the format and content of RSO training to provide more practical information through the use of case studies and an on-line RSO toolkit which is available on our website. We are also requiring that research spaces within departments be inspected annually. This can be done by the RSO, or delegated to the PIs or to a safety committee formed within the department or college.

The measurable outcomes we have set for the program include designation and support of RSO for each department/college, receipt of tailored lab safety plans and completion of annual audits by each department/college. Patterns of non-compliance in research safety will be addressed by DEHS meeting with the department head or dean, or by working with the Office of Regulatory Affairs or Vice President for Research to resolve major issues.

**Funding**
The University’s Chemical Hygiene Officer (1 FTE) is funded 70% by DEHS and 30% by other departments while serving as RSO for Chemistry, College of Pharmacy and School of Public Health. Individual departments and colleges are responsible for funding the effort of local RSOs.
Ongoing Challenges
With pending budget and staff reductions, there is concern among departments and colleges about their RSOs being able to meet the responsibilities of this position.

Conversion from Ethylene Oxide to Steam Sterilization in Dentistry

Potential exposure of Dentistry employees to ethylene oxide (EtO) has been a concern since the late 1970s, when DEHS began monitoring exposures to EtO. Although employees have not been exposed to EtO concentrations exceeding health limits, short-term concentrations have been high enough to require employees to leave the autoclave rooms during purge cycles of the sterilizer. This practice has been adopted for the last 20 years as standard operating procedure, but concerns remain among employees. In addition, Facilities Management personnel were thought to have been potentially over-exposed to EtO during maintenance of the exhaust system serving the autoclave room during CY 2002. This led the Fire and Life Safety Committee to approve $30,000 in HEAPR funding for reconfiguring the exhaust system.

DEHS approached Dentistry in fall FY02 on conversion of the EtO sterilizers to steam to completely eliminate exposure to EtO. Obstacles included the cost of replacing autoclaves as well as the cost of dentistry tools compatible with steam sterilization. The Fire and Life Safety Committee agreed to increase the amount of money allocated for steam conversion to a total $85,000, with the original $30,000 for ventilation redirected to this effort. The conversion has been scheduled for August 2003, when the Dentistry clinical schedule is at a minimum.

The benefits for Dentistry include:
- Elimination of the hazard for employees
- Elimination of costs for EtO
- Elimination of staff time for EtO cylinder change-out
- Unrestricted use of the autoclave room

The benefit for the institution is elimination of the largest source of EtO on campus. EtO is regulated by EPA as a Hazardous Air Pollutant (HAP) under Title III of the 1990 Clean Air Act Amendments. This will demonstrate a commitment by the University to reduce its overall HAPs emissions.
Funding:

<table>
<thead>
<tr>
<th>Expense</th>
<th>Amount</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handpieces and motors for students</td>
<td>$220,015</td>
<td>School of Dentistry</td>
</tr>
<tr>
<td>Replacement of EtO autoclave with steam autoclave</td>
<td>$32,000</td>
<td>HEAPR</td>
</tr>
<tr>
<td>Removal of asbestos containing material, removal of utilities, and contingencies</td>
<td>$53,000</td>
<td>HEAPR</td>
</tr>
</tbody>
</table>

Disposal of Electronic Waste

DEHS pays the disposal costs for electronic equipment at the University of Minnesota in order to assure that individual departments do not have a disincentive for proper management of old computers, monitors and the like. This is in line with the University's approach to hazardous waste management generally, where disposal costs are centrally funded. Disposal costs are in effect a utility cost. These items are centrally collected at the Como Recycling Facility and sent to Asset Recovery, which manages the materials in a responsible manner.

The annual costs in FY00 and FY01 were approximately $35,000 per year. During FY02, disposal costs increased to approximately $100,000. The increase in disposal costs are due to the increasing number of outdated computers, and a significant increase in the cost for disposal. For example, between FY01 and FY02, the cost for disposal increased from $0.11 per pound to over $0.30 per pound. Our waste disposal contract is held with other state agencies to leverage buying power, share audits and other resources to arrive at beneficial contracts in these areas.

In arriving at the present contract cost for electronics disposal, the contract committee had to face the issue of the ultimate disposal of materials from the electronics. These electronics contain a large amount of lead, smaller amounts of other toxic materials, and very small amounts of precious metals. The computers or their components are often shipped overseas for direct re-use or as stock materials for industrial processes. There is little or no control over how they are used or the impact on the environment. There are documented cases of significant environmental problems especially involving the scavenging of electronics for recovery of precious
metals imbedded in the components. The committee referred this issue to the Attorney General's office for comment. The recommendation was that the State limit its disposal options to North American locations for which there is a clear track record of responsible management and environmental liability law. This is in line with a developing international consensus to ban disposal and recycling of hazardous materials in third world nations, until environmental controls are in place.

Funding
DEHS is now estimating FY03 costs of $165,000 and is pursuing voluntary cost reductions under the existing State contract; if not forthcoming, we will be re-bidding the contract separately from the State to determine if we can reduce the cost. We have requested a central allocation for FY03 and beyond because we believe that this cost should be borne by the institution as with any other utility cost. We are also pursuing local recycling options such as Project for Pride and Living which may be able to receive a small number of units for redistribution without further work.

ENROLLMENT MANAGEMENT  NA

FACILITIES ISSUES  NA

FINANCIAL ISSUES  NA

COMPACT DEVELOPMENT  - Each of the Divisions of DEHS were consulted as part of the development of the compact process.

REPORT SUMMARY AND ALLOCATION SUMMARY  NA