2003 was a year in which the word “change” seems appropriate. Changes were evident throughout the University from changes within the administration to changes in how we do business. Over the last several years, we have consistently promoted a safety culture throughout the University and a commitment to include environmental, health and safety as one of our core values.

“Visionary companies display a powerful drive for progress that enables them to change and adapt without compromising their cherished core ideals.”¹ As we all adapt and change to enhance the University, we are still committed to our core value of:

**Protecting People;**

**Protecting the Environment; and**

**Promoting Compliance**

Foremost, we strive to protect our most value resource, our employees. We, once again, qualified for the New Jersey Department of Labor Governor’s Safety Award for 2003 for the 5th consecutive year. Although the number of recordable accidents was the lowest in over 10 years, we experienced an increase in the severity of accidents in 2003. Our goal is to:

- Achieve zero workplace incidents by instilling a safety culture;
- Ensure good management means good safety management; and
- Provide educational and training sessions.

We completed our last EPA Self Audit/Self Disclosure submittal in 2003. All reported violations were corrected. We have developed and implemented many new programs, practices and procedures to prevent recurrence of these violations. We wish to thank the University community for their assistance and participation in the audit program and their continuing efforts to promote compliance. Our continued partnership will not only promote regulatory compliance, but will also help make Rutgers a leader among colleges and universities in environmental protection efforts.

A truly effective environmental health and safety program requires the participation of all members of the University community and a commitment to continually improve the program. We look forward to working with you in providing a safe and healthful workplace. Please contact us if you have questions or suggestions.

Mark McLane
Acting Director

II. SELECTED ACCOMPLISHMENTS

University Safety Performance

REHS continued to promote a “safety culture” throughout the University. Our efforts included:

- Providing accident analysis and data to departments;
- Specialized training (based on accident data) to each University Housing unit; and
- Working with various safety committees.

Our measures for recordable accidents were the lowest total in over 10 years even with new stringent reporting criteria. For the 5th consecutive year, we qualified for the New Jersey Department of Labor “Governor’s Safety Award” for minimizing lost time incidents. We did experience an increase in the number of days away from work in 2003 due to the severity of several incidents.

Select Agent Program

We implemented the requirements of the “Possession, Use, and Transfer of Select Biological Agents and Toxins” regulations (42 CFR Part 73). The University’s Select Agent program includes:

- Identifying and reporting on the uses of selected biological agents and plant pathogens;
- Developing and implementing security and emergency response plans;
- Obtaining individual authorization to use such materials;
- Training; and
- Recordkeeping (i.e. access logs, inventory, approval)

We were inspected by the Centers for Disease Control (CDC) to evaluate our compliance with the safety and security requirements under the act. After addressing their recommendations, we were deemed in compliance with the regulations.

Radiation Safety

To improve our services, we enhanced our website to provide immediate access to information and training sessions, including:

- Creation of an on-line x-ray training program that increased training compliance by 70%;
- Addition of a training module for self-shielded irradiators;
- A 53% increase in the use of the on-line radiation (refresher) training session; and
- Implementation of a principle investigator (authoree) database allowing investigators to view and download information on their authorization.

An external audit of the radiation safety program was conducted in 2003. The results of the audit indicated that the program was in compliance with applicable federal and state regulations and the auditors were complimentary of the structure of the program. Recommendations were provided to help improve the program.
In conjunction with RU Emergency Services (RUES), we continued to improve our hazardous materials response capabilities by obtaining and preparing emergency response equipment (vehicles, monitoring equipment, spill kits, personal protective equipment, etc.), completing an internal Emergency Response Hazmat Written Plan, providing educational sessions, and conducting field training exercises.

We have also partnered with federal, state and local authorities in response activities. These partnerships will foster cooperation between the University and these agencies and improve our emergency response capabilities to the University community. Activities included:

- Participation in the MMRS (metropolitan medical response system) and LEPC (local emergency planning commission) in Newark;
- Participation in the Garden Vector tabletop exercises for central New Jersey; and
- Designation as a pharmaceutical distribution site location for Middlesex County.

**Responded to the following emergencies in 2003**

- 56 spills or release of hazardous materials
- 19 severe injuries or other safety incidents
- 41 complaints of indoor air quality emergencies (i.e. gas or other strong odors)
- 5 radioactive materials incidents
- 5 suspicious packages incidents

**Website Improvement**

We significantly improved our website to provide greater service to the University community. This involves:

- Online training sessions (radiation safety, x-ray, and RTK);
- Database access (PI self-inspection program, REHS laboratory audit information, authoree information);
- PDF access to policies, procedures, and forms;
- Online access to request services (waste pickups, radiation orders, and safety suggestions); and
- Access to MSDS sites

**EPA Self Audit / Self Disclosure Agreement**

We continued to audit compliance with eleven regulatory programs and submitted our final disclosure reports to the Federal EPA in March 2003. With the submittal of our final disclosure, our emphasis was placed on implementing mechanisms to prevent recurrence of violations. This included the following:

- Enhanced website to provide web-based refresher training, educational and compliance information;
- Prepared and distributed specific waste disposal guidelines posters for laboratories, MGSA, and maintenance areas;
- Implemented an annual University wide audit program including auditing all laboratories, farms, universal waste locations, and oil storage areas;
- Implemented principal investigator laboratory self-inspection program (web-base available);
- Met with all science department chairs in 2003 to discuss compliance activities;
- Provided specialized training programs for departments. Discussed specific violations particular to a department based on the audits;
- Inspected waste container management practices in all areas during REHS waste removal activities; and
- Revised many policies (i.e. darkroom waste, lab glass, etc.) to address deficiencies.
The University is a large, diverse institution. The health and safety program must address issues from cleaning of buildings to nanotechnology research. To accomplish this, we work with the University Occupational Safety and Health Committee, departments, supervisors and employees to identify and address potential workplace hazards.

Health and Safety Program highlights for 2003:

- Improved Art Safety Program to focus on potential hazards in the areas of photography, printmaking, ceramics, sculpture and theater arts;
- Included health and safety issues in the annual Laboratory Audits (focusing on safe work practices and procedures);
- Updated REHS website that it is more user-friendly; and
- Provided over 95 health and safety training sessions for over 3,600 employees. Training sessions included: Right-To-Know, Chemical Hygiene, Satellite Accumulation Area, Hearing Conservation, Lockout/Tagout, Confined Space, Powered Industrial Truck, Ladder Safety, Laser Safety, Bloodborne Pathogens, etc.

Because of the diverse nature of work activities performed at the University, we have developed and maintained many health and safety programs to protect the environment and to promote compliance with regulations. Select programs include:

- Lock Out/Tag Out of Hazardous Energy Sources
- Respiratory Protection
- Laser Safety
- Working Safely with Lead Based Paint
- Hearing Conservation
- Ergonomics
- Accident Investigation
- Asbestos Management
- Confined Space Entry
- Workplace Evaluations
- Bloodborne Pathogens
- Indoor Air Quality

Asbestos Management

Asbestos containing materials (ACM) are present in many Rutgers buildings. While many building materials (floor tile, fire-proofing insulation, thermal insulation, etc.) contain asbestos, theses materials do not pose a hazard to University staff, students and other building occupants provided that they are maintained in good condition. To ensure occupant safety, REHS continues to provide a comprehensive asbestos management program. Inspections of academic and housing buildings are conducted annually, suspect materials are sampled and analyzed prior to any disturbance and licensed and approved asbestos abatement contractors are used when abatement is necessary. Asbestos awareness training is also provided annually to maintenance staff to further ensure building occupant safety. During 2003 the following was performed:

- 780 asbestos bulk samples were collected and analyzed;
- 259 abatement projects were performed;
- 14 NESHAP regulated projects were performed; and
- Visual inspection of almost 2,900 rooms in over 30 buildings.
Research at the University includes use of biological materials. Viruses, bacteria, fungi, human tissues (including blood) and recombinant DNA are handled and worked with by faculty, students and staff everyday.

Biosafety services provided by REHS include:

- Laboratory inspections;
- Protocol reviews;
- Biosafety cabinet certification;
- Training; and
- Disposal of biohazardous materials.

This past year, REHS participated in the following:

- Reviewed 51 research protocols;
- Certified 92 biosafety cabinets;
- Performed 30 bloodborne pathogens training sessions; and
- Disposed of over 3,200 boxes of medical/biohazardous waste.

Radiation services provided by REHS include:

- Training and consultation;
- Surveys;
- Monitoring (personal and area);
- Inspections;
- Emergency response services; and
- Waste management services.

During 2003, we performed the following:

- Delivered 2,220 radioactive material packages;
- Calibrated 300 radiation detection instruments;
- Inspected approximately 2,250 individual labs;
- Inventoried and/or leak tested 170 sealed sources;
- Performed 90 x-ray and electron microscope inspections; and
- Deactivated approximately 90 former radioactive material use laboratories.
REHS is responsible for the management and disposal of hazardous waste generated from all University facilities. We collect the waste directly from research laboratories, facilities maintenance shops, and other generators. In 2003, we conducted 1,555 individual laboratory waste pick-ups, a 177% increase in the number of pick-ups from just 5 years ago. Wastes are transported to our Environmental Services Building (ESB) on Busch Campus or sent directly for disposal. To provide this service, we maintain Commercial Drivers Licenses (CDL) and Department of Transportation (DOT) training for our employees.

Disposal of hazardous waste is accomplished by various methods. We evaluate environmental impact, cost effectiveness and regulatory requirements when determining which method is used. The majority of the flammable wastes are ultimately reused for fuel, the appropriate aqueous wastes are sent for treatment and many of the small quantity laboratory wastes are sent for hazardous waste incineration. All wastes are shipped to permitted hazardous waste disposal sites through a licensed hazardous waste management firm, with the exception of small-scale onsite neutralization of acid waste. In 2003, we collected, processed and disposed of 154,913 pounds of hazardous waste.

This past year, we:

- Implemented a computerized system for completing waste audits during waste pick-ups;
- Created and distributed waste management posters for laboratories, maintenance areas and art studios; and
- Revised the regulatory permit and emergency response plan at our waste storage facility to provide better, more efficient, and cost effective services.

### Waste Handled by REHS in 2003 (pounds)

- **Hazardous Waste Solvents**: 414 pounds
- **Hazardous Waste Liquids**: 5,020 pounds
- **Non-Hazardous Waste Liquids**: 13,555 pounds
- **Hazardous Waste Solids**: 39,132 pounds
- **Non-Hazardous Waste Solids**: 16,310 pounds
- **Hazardous Waste Labpacks**: 17,050 pounds
- **Non-Hazardous Waste Labpacks**: 12,810 pounds
- **Used Oil**: 8,425 pounds
- **PCB Oil**: 13,100 pounds

### Total Number of Hazardous Waste Pick-Ups from Laboratories

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>352</td>
<td>410</td>
<td>485</td>
<td>506</td>
<td>498</td>
<td>561</td>
<td>705</td>
<td>1100</td>
<td>1200</td>
<td>1450</td>
<td>1555</td>
<td></td>
</tr>
</tbody>
</table>

### Hazardous Waste Shipped for Disposal

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>100,000</td>
<td>200,000</td>
<td>300,000</td>
<td>1999 Excludes Haz/Wastewater</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Radioactive Waste Management

REHS is responsible for the management and disposal of radioactive waste generated at the University as well as UMDNJ-RWJMS in Piscataway and New Brunswick. Solid and liquid radioactive waste is generated from research and teaching activities and transported to the Environmental Services building for proper management and disposal.

REHS has developed a “decay-in-storage” program that decays short-lived radioactive isotopes to background activities before they are sent for disposal. This process is both environmentally friendly and extremely cost effective by significantly reducing the amount of radioactive waste sent for final disposal. After decay, solid waste is sent out as over-classified medical waste for incineration and the liquid waste is disposed of through the sanitary sewer system in strict accordance with regulations. In 2003, we decayed 8,877 pounds of solid waste and 1,203 gallons of liquid waste.

Radioactive solid waste containing long-lived isotopes is presently sent for super-compaction prior to ultimate disposal in a properly designed and permitted landfill.

The construction of the new radioactive waste storage building in 2004 will provide a facility designed to store and decay waste, increase security, improve efficiency, improve safety and provide improved working conditions.

Air Emissions

The University generates air emissions primarily through the combustion of natural gas and oil for heating, cooling and providing electric power to the campus buildings. Due to the size of the University and the amount of fuel burned, Rutgers must comply with the same regulations that govern large power plants and industrial facilities. This includes elaborate and complicated permits (the combined permit for Busch and Livingston campus consists of over 180 pages of requirements) with extensive and continuous requirements for monitoring, testing, record keeping and reporting. Failure to properly meet these requirements would subject the University to significant penalties.
REHS has initiated a program to introduce Alternative Fuel Vehicles (vehicles that use fuels other than gasoline or diesel oil) into the campus fleet. Alternative Fuel Vehicles create significantly less emissions and have the added benefit of reducing our dependence on foreign fuel supplies. During 2003, a Natural Gas Fueling Station was installed on Livingston Campus, and a total of 8 Compressed Natural Gas (CNG) cars have been purchased. These cars are now in constant operation in the Housing, Dining, Parking & Transportation and REHS departments. Already planned for 2004 is the installation of a larger filling station on Livingston campus, two new cars and a pickup truck for the Facilities department and a pickup truck for the Housing department. REHS will continue to work with the NJ Board of Public Utilities and the North Jersey Clean Cities Organization to explore other options for advancing the use of AFVs at the University.

Spill Prevention Control and Countermeasure (SPCC) plans have been implemented for the Busch/Livingston, College Avenue and Newark campuses as well as several off campus University facilities. These plans ensure the continued safe management of all sources of oil (underground and above ground tanks and drums) through the implementation of best management practices and periodic inspections.

As a result of our UST closure program and other investigations into local water quality, there are several sites that are in the process of additional investigation and/or remediation. Currently, our largest such project is affiliated with the Busch Garage. Further remedial investigation this spring, will include the installation of several additional groundwater monitoring wells to aid in the delineation of the contamination plume. Other projects in progress include the Cook Blacksmith Shop, Corwin Housing and the Meteorology Building. Currently, there are approximately 20 projects that have been satisfactorily investigated and remediated and await administrative closure from State and Federal agencies.

REHS coordinated the creation of a Stormwater Management Group for the University, as a response to recently enacted enhanced stormwater regulations. This group is responsible for the planning, preparation, development of compliance policies and procedures and communication of these new regulations to the University community.
<table>
<thead>
<tr>
<th>Month</th>
<th>Agency</th>
<th>Activity</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>PEOSHA</td>
<td>Notification of hospitalization of Renovations employee</td>
<td>Employee injured head and shoulder from fall in Wright Chemistry</td>
</tr>
<tr>
<td></td>
<td>NJDEP</td>
<td>Stormwater inspection at ESB</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td>March</td>
<td>PEOSHA</td>
<td>Site inspection of Wright Chemistry from notification in January</td>
<td>Citation issued for improper work surface. All items abated</td>
</tr>
<tr>
<td>April</td>
<td>PEOSHA</td>
<td>Notification of hospitalization of FMS employee</td>
<td>Employee struck by automobile</td>
</tr>
<tr>
<td></td>
<td>PEOSHA</td>
<td>Notification of hospitalization of Camden Dining employee</td>
<td>Employee fractured hip while transporting cart on sidewalk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Site inspection of sidewalks in Camden from notification</td>
<td>Citation issued for damaged sidewalk. Item abated</td>
</tr>
<tr>
<td></td>
<td>MCHD</td>
<td>Air permit inspection of emergency generators on NB campuses</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td>May</td>
<td>PEOSHA</td>
<td>General inspection of Blueberry/Cranberry Research Farm</td>
<td>Citations issued for general safety hazards. All items abated</td>
</tr>
<tr>
<td></td>
<td>PEOSHA</td>
<td>General inspection of Camden FMS shops</td>
<td>Citations issued for general safety hazards. All items abated</td>
</tr>
<tr>
<td>June</td>
<td>NJDEP</td>
<td>Inspection of human use x-ray at Hale Center</td>
<td>Citation issued for failure to implement QA manual. Item abated</td>
</tr>
<tr>
<td></td>
<td>OSHA</td>
<td>Request for written response to employee IAQ complaint at Co-Op Bookstore</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td></td>
<td>DOT-FAA</td>
<td>Inspection of shipment of dangerous goods from Tuckerton</td>
<td>Citation for improper training of person offering dangerous goods for shipment</td>
</tr>
<tr>
<td></td>
<td>PEOSHA</td>
<td>Follow up inspection in Camden for sidewalk</td>
<td>Citation abated</td>
</tr>
<tr>
<td></td>
<td>NJDEP</td>
<td>RCRA/TSDF inspection of ESB</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td>July</td>
<td>PEOSHA</td>
<td>Follow up inspection at Blueberry/Cranberry</td>
<td>All citations abated</td>
</tr>
<tr>
<td></td>
<td>PEOSHA</td>
<td>Follow up inspection at Camden FMS shops</td>
<td>All citations abated</td>
</tr>
<tr>
<td>August</td>
<td>PEOSHA</td>
<td>Employee complaint of unsafe working conditions in Gibbons</td>
<td>Citations issued for general safety hazards. All items abated</td>
</tr>
<tr>
<td>September</td>
<td>PEOSHA</td>
<td>Employee complaint of asbestos exposure in Gibbons</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td></td>
<td>NBHD</td>
<td>Employee complaint of mice in Parking Department</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td></td>
<td>Middlesex County Mosquito Commission</td>
<td>Site inspection of grounds on Livingston Campus</td>
<td>NO VIOLATIONS. Requested that we empty water from garbage containers stored on campus</td>
</tr>
<tr>
<td>October</td>
<td>NJDEP</td>
<td>Tour of ESB for Part B permit modification</td>
<td>All citations abated</td>
</tr>
<tr>
<td></td>
<td>NJDEP</td>
<td>Air compliance inspection Camden</td>
<td>Potential citation for fuel oil use. Waiting citation</td>
</tr>
<tr>
<td>November</td>
<td>PEOSHA</td>
<td>General inspection Snyder Farm</td>
<td>Citations issued for general safety hazards. All items abated</td>
</tr>
<tr>
<td></td>
<td>NJDEP</td>
<td>RCRA inspection for Camden Campus</td>
<td>NO VIOLATIONS</td>
</tr>
<tr>
<td>December</td>
<td>PEOSHA</td>
<td>Follow up inspection at Gibbons</td>
<td>All citations abated</td>
</tr>
</tbody>
</table>

Note: PEOSHA – New Jersey Public Employees’ Occupational Safety & Health Administration  
OSHA – Occupational Safety & Health Administration  
NJDEP – New Jersey Department of Environmental Protection  
DOT/FAA – Department of Transportation – Federal Aviation Administration  
NBHD – New Brunswick Health Department  
MCHD – Middlesex County Health Department
Environmental, Health and Safety Management System: Design a comprehensive Environmental, Health and Safety Management System for the University. This includes a revision of the policy statement for health, safety and environmental affairs and the existing committee structure.

Stormwater Management: Begin implementation of the NJDEP Phase II Stormwater Management requirements.

Incident Reduction: Continue to reduce accidents by instituting incident reduction programs.

Performance Measures: Identify and implement critical service performance measures.

Biological Safety and Radiation Safety Guides: Revise and distribute University Biological Safety and Radiation Safety Guides.


Busch Garage Groundwater: Conclude the remedial investigation of the Busch Garage groundwater site and submit the completed report to NJDEP.

VI. GOALS 2004

Completed 23 biosafety level 2 laboratory inspections
Participated in 24 Federal, State and County regulatory inspections
Performed 30 ergonomic evaluations
Conducted 46 indoor air quality investigations
Performed over 60 maintenance shop inspections
Conducted 90 x-ray and electron microscope inspections
Performed over 95 safety training sessions for over 3600 employees
Audited 105 Class 3b & 4 lasers used by 33 faculty members
Trained and fit-tested over 125 employees for respirators
Coordinated audiometric testing for 230 employees
Completed 259 asbestos abatement projects
Completed over 300 radiation survey meter calibrations

Recycled 500 tons of soil from UST removals
Conducted over 600 laboratory health and safety audits
Completed 668 radioactive waste pickups
Surveyed 920 fume hoods
Over 1,000 online training sessions logged
Conducted almost 1,000 radioactive material contamination surveys
Completed over 1,500 hazardous waste pickups
Delivered 2,200 packages of radioactive material
Performed 2,250 individual radiation laboratory inspections
Decayed and disposed of over 8,800 lbs of low-level radioactive waste
Disposed of 13,311 cu ft of regulated medical waste
Disposed of 155,000 lbs of hazardous waste

REHS FAST FACTS FOR 2003

Forklift Training at Blueberry/Cranberry Research Center
Hazardous Materials Training for REHS Staff
REHS
27 Road 1, Bldg. 4086
Livingston Campus
Piscataway, NJ 08854
Phone: 732-445-2550
Fax: 732-445-3109
http://rehs.rutgers.edu