



MEETING MINUTES

**Sustainable Lab Practices Working Group
NIH Environmental Management System (NEMS)
Wednesday, May 16, 2007
1:30 – 2:30 pm**

Meeting Objective(s):

- Identify targeted chemical outreach options and Green Chemical fact sheet
- Provide comment on the Labs Go Greener Fact Sheet
- Review status of Lab Standard Operating Procedures (SOP)
- Provide comments on the Recycling, Carpet Purchasing and Lab Moving SOPs
- Provide status update on the Lab Safety Refresher Training revision

Attendees:

Dr. Daniel Appella (NIDDK)
Claudia Gerwin (NINDS)
Tim Killian (Booz Allen)
Charlyn Lee (ORF)
Terry Leland (ORF)
Luanne Lukes (NCI)
Polly McCarty (ORS)

Kristen Peters (Booz Allen)
John Prom (ORF)
Andree Reuss (NINDS)
Ronda Sapp (NIDDK)
Minoo Shakoury-Elizeh (NIDDK)
Dawn Walker (NCI)
Don Wilson (ORF)

Minutes:

NEMS Update

Terry Leland provided an update on the NEMS. The NEMS Sustainability Management Team (SMT) meeting was held on Tuesday, May 15. The SMT is comprised of senior managers who over see the implementation of the NEMS, and the team meets quarterly. Charlyn Lee provided the SMT with an overview of the working group's activities and progress against objectives. In addition, the Office Practices Working Group provided an update on efforts to implement a green purchasing program, and the Sustainable Facilities Working Group provided information on the constructing more sustainable facilities. The SMT discussed several challenges currently facing all working groups, including increasing representation and management support. The full briefing presented to the SMT is provided in Attachment 1.

Status Review of Objectives

The status of lab-related NEMS objectives were reviewed (Attachment 2).

Charlyn Lee provided an update on the goals and objectives related to chemical waste. The proposed chemical inventory system is currently under review by CIT and awaiting approval. CIT is still considering the Vertere Inventory Manager or a new Oracle based system. This should be finalized in the next week. The pilot study should start in July 2007, and Ms. Lee is looking for 10 volunteer labs to participate in the study. The baseline report on unused chemicals should be complete in the next few weeks. Ms. Lee will brief the working group on the results of the baseline report during the next meeting.

Don Wilson provided an update on the objectives related to reducing medical pathological waste (MPW). DEP is trying to procure a tissue digester for on-site treatment of MPW. They are not looking at purchasing a tissue digester manufactured by PRI.

Wendy Rubin was unable to attend the meeting therefore no update was provided on the objectives related to radioactive waste.

Green Chemical Fact Sheet and Targeted Chemicals

Tim Killian provided the working group with an updated working draft of the green chemical procurement fact sheet (Attachment 3). This fact sheet is intended to help lab staff identify environmentally friendly lab products and chemicals. Mr. Killian suggested that the working group review the list of targeted chemicals provided by Mr. Wilson (Attachment 4) and identify a top 10 list of chemicals to target for reduction. The top 10 list would consist of the targeted chemicals used most frequently by NIH labs in the greatest quantities. The template of the Green Chemical Fact Sheet could be applied to create a fact sheet on minimizing purchasing and use of these 10 chemicals. Ms. Lee added that the baseline report on unused chemicals would support the identification of these 10 chemicals. Once the 10 chemicals are identified, the list should be distributed to the Lab Managers Interest Groups. The message needs to be targeted and stress the health and pollution impacts.

The working group provided the following comments on the fact sheet:

- First page: the reference to the redistillation of solvents be removed;
- Add information on new protocol for using alternatives;
- Include information on why these greener chemicals should be used, stressing health impact and tie to research.

Additional comments on the fact sheet and the targeted chemical list should be sent to Tim Killian (killian_timothy@bah.com).

Labs Go Greener Fact Sheet

Kristen Peters presented the NIH Labs Go Greener to the working group (Attachment 5). The working group indicated that this would be a useful tool. Ms. Lee provided a former flyer used by DEP regarding green labs that might offer additional points to add to the fact sheet. The working group reviewed the fact sheet and provided the following comments:

- Page 1, first paragraph: remove “everyone”
- Page 1, third paragraph: remove “will”
- Page 2: Remove the 9th bullet “Reuse spent solvents for initial rinses or general cleaning
- Page 2, Bullet 11: Reorder to “Reduce-Reuse-Recycle-Rebuy” and make the meaning of “Rebuy” more clear;
- Page 2: Add a bullet for purchasing computers and monitors meeting the EPEAT standards
- Page 2: Add a bullet regarding water and energy conservation
- Page 2: Add a bullet for general recycling of paper, plastic, glass, etc.

Please send any additional comments on the Labs Go Greener fact sheet to Kristen Peters (peters_kristen@bah.com).

In addition to the fact sheets, the working group suggested that targeted posters, email alerts, and reminder notifications are effective media for conveying information to lab employees.

Lab Managers Workgroup SOPs Update

Three new draft lab SOPs have been developed and were offered to the working group for comment (Attachment 6).

NIH Recycling

This SOP was based on the presentation delivered by Gareth Buckland at the Lab Managers Workgroup meeting in April 2007. Mr. Wilson indicated that DEP was contacting a new recycling contractor who could take all types of plastic as long as it did not contain any chemical or biological waste materials. Therefore, based on this new contracting opportunity the reference to the different plastic types may not be needed. The working group also provided the following comments:

- Under Paper Recycling, make it clear that White Office Paper and Mixed Paper may be commingled in bins;
- Under Mixed Paper, add 3-ring binders/lab notebooks;
- Add plastic bags to list of what can be recycled;

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- Under Toner Cartridges, mention the NIH donation activities and add a statement “Do Not Return to Manufacturer”;
 - State the DEP Recycling phone number earlier in the fact sheet, and make it stand out under the Additional Information section.

Mr. Killian will make the changes, and send to Mr. Wilson for his comments and edits.

Carpet Purchasing

The working group agreed that Mary Lee should be contact regarding her ability to procure low-VOC carpet and carpet manufactured with recovered/recycled materials. A comment was made that perhaps this SOP was better suited for the Sustainable Facilities Working Group. The SOP is too detailed for lab managers use. It should have Mary Lee’s contact information and stress carpet is not to be use in laboratories. Dawn Walker and Claudia Gerwin took responsibility for contacting Mary Lee to review the Carpet Purchasing SOP and stress the importance of procuring low-VOC or recovered/recycled content carpet.

Lab Closing and Moving Procedures

Mr. Killian indicated that this SOP was a work in progress, and that a meeting should be schedule between DEP, Safety (Polly McCarty), and Mr. Killan to discuss the SOP. The working group suggested limiting the scope of the SOP to lab moving procedures only, removing the reference to lab closure. The working group reviewed the SOP and provided the following comments:

- Add text regarding who to contact for the physical laboratory move;
- Add text suggesting that the new location be inventoried to see what equipment from the old laboratory would be needed;
- Verify that the Shared Resources Database is maintained and updated;
- Recommend emailing Lab Managers Listserv with to notify of any surpluses;
- Add text indicating that DEP should be notified 3-4 weeks before the move;
- Regarding MPW waste, remove reference to housekeeping collecting waste, change to indicate that lab staff will package and take waste to the designated area for pickup;
- Add more detail on moving radioactive materials;
- Under the Additional Information section, add a reference to 1) the Safety document “Moving Your Lab ... Safely” and 2) the Division of Radiation Safety Lab Clearance checklist.

Status of Lab Safety Refresher Training

Chuck Carroll is working with Suzanne Krall on updating the Lab Safety Refresher Training. It was suggested that employees should take the training this year so they may obtain an ID in the new safety system; if done through the new system this year, an employee will receive an automatic reminder next year.

Action Items:

Action Item	Responsible Person(s)	Due Date
1. Review list of targeted chemicals and Green Chemical Fact Sheet to identify a top 10 list of chemicals. Send comments to Tim Killian (killian_timothy@bah.com).	Workgroup	Friday, June 15
2. Incorporate comments on the draft SOPs presented at the meeting	Tim Killan	Friday, June 15
3. Follow-up with Charlyn Lee regarding baseline report in two weeks.	Kristen Peters	Friday, June 15
4. Provide debrief on unused chemical baseline report	Charlyn Lee	Wednesday, June 20
5. Contact Mary Lee regarding Carpet Purchasing SOP	Dawn Walker, Claudia Gerwin	Friday, June 15
6. Schedule meeting with Polly McCarty to discuss Lab Moving SOP	Tim Killan	Friday, June 15
7. Provide list of images needed for waste container poster	Kristen Peters	Friday, May 25
8. Provide new images to be incorporated on the waste container poster	Charlyn Lee	Friday, June 15
9. Send Don Wilson most recent version of the recycling reference poster	Kristen Peters	Friday, May 25

Next Meeting:

The next meeting is scheduled for Wednesday, June 20 from 1:30 to 2:30 PM in Building 31, 6C Room 7. **PLEASE NOTE THE CHANGE IN LOCATION.** The working group will identify the top 10 targeted chemicals and related outreach options and discuss the status of lab SOPs.



NEMS Working Group Updates

**NEMS Sustainability Management Team Meeting
May 15, 2007**



NEMS

To Protect the Future, Take Action Into Your Hands



Successes and Challenges

► Successes

- 2007 NIH Earth Day Celebration
- 2006-2007 Federal Electronics Recycling and Reuse Campaign Award
- Joined the Federal Electronics Challenge
- On target to meet all NEMS objectives
- Developed 6 fact sheets and 3 posters
- Published 3 NIH Record articles

► Challenges

- Membership
- Integration of Rockville sites
- Management Support





NEMS Sustainable Office Practices Working Group *Activities, Objectives and Progress*

**Raymond Dillon
dillonr@od.nih.gov**



To Protect the Future, Take Action Into Your Hands



NEMS Sustainable Office Practices Working Group

- ▶ *Mission:* To review office-related activities and identify ways to conduct these activities in a more environmentally sound manner
- ▶ Meeting since June 2006
- ▶ Diverse membership
 - Majority of Institutes, Centers and Offices represented
 - Administrative Officers, Project Officers, Budget Officers, Procurement Analysts, Budget Analysts, Contracting Officers, Property/Facility Managers, Environmental Specialists

NEMS Office-Related 5-Year Goals

- ▶ *Goal 1:* Implement the NIH Green Purchasing Program
- ▶ *Goal 2:* Increase green purchasing and recycling of computers
- ▶ *Goal 3:* Minimize the environmental impacts of office activities through policies, procedures, tools, and guidance

Goal 1: Implement the NIH Green Procurement Program

Objective	Progress Update
A. Identify green procurement source	Identified JWOD and GSA Advantage as sources
B. Develop outreach program	Developing: <ul style="list-style-type: none">▶ Fact sheets▶ Targeted e-mails▶ Training
C. Identify mechanism to track green procurement	Exploring usefulness and applicability of NLM tool for deployment NIH-wide
D. Green the NIH self-service stores	Working with JWOD to offer green products in stores and stock catalog
E. Green contracts and leases	Adding green language to: <ul style="list-style-type: none">▶ Cafeteria contracts▶ Custodial contracts▶ Commercial Leases

Goal 2: Increase green purchasing and recycling of computers

Objective	Progress Update
A. Join the Federal Electronics Challenge and establish goals	<ul style="list-style-type: none">▶ Joined in December 2006▶ Establishment of goals on hold until issuance of HHS electronics stewardship policy
B. Incorporate EPEAT standards in NITAAC ECSIII contract	Vendors notified of the new requirements
C. Increase electronics recycling	Ongoing

Goal 3: Minimize the environmental impacts of office activities

Objective	Progress Update
A. Document office activities with standard operating procedures (SOPs)	Developing SOPs for: <ul style="list-style-type: none">▶ Use of computers▶ Use of printers, copiers, and fax machines▶ Procurement of office supplies (including furniture and electronics)

Tools Under Development

- ▶ Green Procurement Source – JWOD or GSA Advantage
- ▶ Green Procurement Tracking Tool
- ▶ Outreach
 - Fact sheets
 - Web site
 - NIH Record articles
 - Training
- ▶ SOPs

Address: http://www.nems.nih.gov/aspects/nat_resources/programs/green_purchasing.cfm?origin=nat_resources

National Institutes of Health Environmental Management System
U. S. Department of Health and Human Services

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Natural Environment

Green Purchasing

The NIH Green Purchasing Program involves the selection and acquisition of products and services that most effectively minimize negative environmental impacts over their life cycle of manufacturing, transportation, use and recycling or disposal. Green purchasing involves procuring the following: Recycled content products; ENERGY STAR and energy-efficient products; Standby power devices; Alternative fuel vehicles/alternative fuels; Biobased products; and Non-ozone depleting substances. Green purchasing requirements apply to all Federal agencies and their contractors. The requirements pertain to simplified acquisitions and large purchases, as well as to both direct purchases of products and to support services contracts. These requirements also apply to Federal purchase cardholders and to micro-purchases.

The Green Purchasing Program helps NIH to: (1) Improve safety and health of our patients; (2) Reduce pollution and conserve natural resources and energy; (3) Develop new, more efficient products; (4) Stimulate new markets for recycled materials and create jobs and improve air stewardship; (5) Protect the research mission; (6) Provide potential cost savings; (7) Reduce Comply with environmental laws and regulations.

If you would like more information about this program, please contact [Ray Dillon](#)

NIH Environmental Management System (NEMS)
To Protect the Future, Take Action Into Your Hands

NIH Offices Go Greener

What is the NIH Goes Greener Campaign?

The NIH Goes Greener campaign is a challenge to all NIH employees and contractors to conduct their activities in a "greener" or more environmentally sound manner. The NIH is a leader in environmental stewardship, but we can do even better. Each of us must carefully consider the environmental impacts of our day-to-day activities and take actions to conduct these activities in a manner that minimizes our impacts.

What is the NEMS?

As part of our NIH Goes Greener campaign, we are implementing the NIH Environmental Management System (NEMS). The NEMS is a management tool that helps us identify our most pressing environmental issues, set goals to address those issues, and improve our environmental performance.

How can we improve our environmental performance? Only with your help. Do you know how your daily activities impact the environment? Do you take actions to reduce those impacts? Not sure how? The NEMS Sustainable Office Practices Working Group is developing procedures and tools on how to "green" office practices at the NIH. These will be posted at <http://www.nems.nih.gov/nat/offices.cfm> as they are developed.

Do my actions REALLY make a difference?

Yes! Our cumulative actions make NIH a leader in environmental stewardship. Thanks to your efforts, NIH has achieved:

- ▶ The participation of 5,300 employees in the Transfers Program.
- ▶ A recycling rate of approximately 50%. That means that 25,000 pounds of waste per day at NIH burned in the Montgomery County waste incinerator or buried in local landfills.
- ▶ A \$3,000 annual donation to NIH Charities from recycling our toner and inkjet cartridges.

For more information about the NEMS, contact Terry Leland, NEMS Coordinator: 301-496-7775, terryl@nhs.gov, www.nems.nih.gov

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NEMS Sustainable Lab Practices Working Group *Activities, Objectives and Progress*



To Protect the Future, Take Action Into Your Hands



NEMS Sustainable Lab Practices Working Group

- ▶ *Mission:* To review lab activities and identify ways to conduct these activities in a more environmentally sound manner
- ▶ Meeting since October 2006
- ▶ Members represent:
 - Clinical Center
 - NCI
 - NHGRI
 - NIDDK
 - NILBI
 - NINDS
 - OD (ORS & ORF)

NEMS Lab Goals

- ▶ *Goal 1:* Improve chemical management tools
- ▶ *Goal 2:* Reduce Disposal of Unused Chemicals by 30% by 2009
- ▶ *Goal 3:* Reduce Disposal Rates of NIH Target Chemicals
- ▶ *Goal 4:* Reduce Medical Waste Shipped for Off-Site Incineration by 75% by 2009
- ▶ *Goal 5:* Reduce off-site disposal of liquid scintillation vials
- ▶ *Goal 6:* Minimize the environmental impacts of lab activities through policies, procedures, tools, and guidance

Goal 1: Improve chemical waste management tools

Objective	Progress Update
A. Identify a chemical inventory system for a pilot study	<ul style="list-style-type: none">▶ Completed Business Prospectus and Project Charter w/CIT▶ Development of Vision Document in progress▶ Next step - evaluate solutions▶ The system will be piloted in approximately 10 volunteer labs

Goal 2: Reduce Disposal of Unused Chemicals by 30% by 2009

Objective	Progress Update
A. Generate baseline and develop strategy for reducing unused chemicals	<ul style="list-style-type: none">▶ Currently tracking unused chemicals in the NIH Waste Tracking and Management Information System (WTMIS)▶ Baseline report to be completed in June 2007

Goal 3: Reduce Disposal Rates of NIH Target Chemicals

Objective	Progress Update
A. Generate baseline and develop strategy to reduce disposal rates of target chemicals	<ul style="list-style-type: none">▶ Identified target chemicals▶ Currently tracking target chemicals in the NIH WTMIS▶ Baseline report to be completed in June 2007
B. Conduct feasibility study to identify opportunities to reduce lab equipment with mercury components	<ul style="list-style-type: none">▶ In progress

Goal 4: Reduce Medical Waste Shipped for Off-Site Incineration by 75% by 2009

Objective	Progress Update
A. Acquire on-site treatment equipment	▶ In negotiations with manufacturer of tissue digester

Goal 5: Reduce off-site disposal of liquid scintillation vials

Objective	Progress Update
A. Install system to treat vials when required building renovation is complete	<ul style="list-style-type: none">▶ System purchased▶ Identified location for system▶ Design for facility modifications in progress▶ Target date for construction completion – October 2007
B. Investigate potential for procuring treatment system for treating liquid waste at NIH	<ul style="list-style-type: none">▶ Proposal to be written

Goal 6: Minimize the environmental impacts of laboratory activities

Objective	Progress Update
A. Document lab activities with standard operating procedures (SOPs)	▶ Developed with the Lab Managers Interest Group
B. Revise and implemented Lab Safety Refresher Training	▶ Identified improvements ▶ Working with DOHS to incorporate revisions
C. Revise Waste Disposal Guide	▶ In progress

Tools Under Development

- ▶ Waste Disposal Guide
- ▶ Outreach
 - Fact sheets
 - Reference Posters
 - Website
 - NIH Record articles
 - Training

- ▶ SOPs





NEMS Sustainable Facilities Working Groups

Activities, Challenges, Opportunities

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To Protect the Future, Take Action Into Your Hands



What is sustainable or **green** facility design?

“To significantly reduce or eliminate the negative impact of buildings on the environment and on the building occupants, green building design and construction practices address:

- sustainable site planning,***
- safeguarding water and water efficiency,***
- energy efficiency,***
- conservation of materials and resources, and***
- indoor environmental quality.”***

---U.S. Green Building Council

NEMS Sustainable Facilities Working Groups

- ▶ **Mission:** Lead the development and implementation of plans to assess and improve the environmental performance of NIH facilities throughout their entire life cycle: siting, design, construction, leasing operation, alteration and decommissioning.
- ▶ **Meeting** for about four years.
- ▶ **Current Membership:**
 - Representatives of Office of Research Facilities
 - Includes NIH members of the HHS Sustainability Working Group

Implementation at NIH: Challenges

- ▶ **Requirements and guidance for specific sustainable design features and performance are not in the current or proposed NIH design and construction manuals**
 - Reluctance to require specific approaches
 - Misperception of significantly increased first costs
 - Lack of life cycle view
- ▶ **A Massive Task Ahead: Implementing the Existing Buildings Strategy**
 - Requires assessment of entire NIH facility inventory for compliance with MOU
 - How do we prioritize and fund improvements identified in the assessments?
 - How can required renovations be made in facilities that are in active use?
- ▶ **Lack of participation in NEMS Sustainable Facilities Working Groups**
 - Attendance and participation by ORF Divisions is declining
 - No involvement by facility users and scientific community
 - Potential consequences: goals and requirements may not be met or tracked; health and productivity losses; higher long term operating costs

Tools Under Development

- ▶ Guidance Documents to Supplement NIH Design Requirements Manual
- ▶ Draft Environmental Management Plans for Each Phase of the Facility Life Cycle:
 - Design and Construction
 - Leasing
 - Operation and Maintenance
 - Decommissioning
- ▶ Training Resources
 - Classes for Project Officers
 - Website
- ▶ SOPs for O&M



The screenshot shows the NEMS website interface. At the top, the address bar displays http://www.nems.nih.gov/aspects/sus_facilities/. The header includes the NEMS logo, the text "National Institutes of Health Environmental Management System", and the U.S. Department of Health and Human Services logo. A navigation bar contains links for Home, About NEMS, News, Contact Us, and FAQ, along with a search box. The main content area features a "Sustainable Facilities" section with a sub-header "To Protect the Future, Take Action Into Your Hands". Below this, there is a paragraph describing the mission: "Our mission is to conduct biomedical research that advances human health and well being. Most of this enterprise is conducted in facilities owned, operated or funded by the NIH. To be compatible with our mission these facilities must be designed and operated sustainably - in a manner that protects the environment and the health and safety of all occupants. We have initiated several major initiatives to ensure that new facilities are sustainably designed and constructed, and to begin the task of improving the sustainability of all existing facilities." A small image shows a person working in a laboratory. Below the paragraph, there is a section titled "Sustainable Facilities - Relationship to Our Health Mission" with a paragraph explaining the benefits of sustainable facilities: "Sustainably designed, constructed and operated facilities reduce impacts of our operations on the external environment. Improved indoor environmental conditions resulting from sustainable facilities are also highly associated with improved patient outcomes, employee health and productivity. Why? Americans typically spend an average of 18 hours per day indoors and recent studies indicate that indoor environments are more contaminated than outdoor environments. There are probably several reasons for this contamination. One major factor has been the significant increase in the use of synthetic organic chemicals in materials that are used in furniture, fabrics."

SMT's Role

- ▶ Identify additional working group representatives from institutes and centers
- ▶ Be aware of specific requirements
 - Green Purchasing
 - Use of energy efficient electronics and recycling
 - HHS Sustainable Facilities Implementation Plan and other mandates
- ▶ Require compliance with requirements through use of SOPs and tools – Are policies needed?
- ▶ Lead by example

Selected NEMS Objectives: Lab Activities

As of May 16, 2007

ENVIRONMENTAL ASPECT	5-YEAR GOAL	OBJECTIVE	LEAD	STATUS
Chemical Waste	1. Develop/Improve/ Update Program Management Tools.	a. Identify a chemical inventory system for a pilot study.	Charlyn Lee	DEP met with the IT group to discuss supporting the Vertére Inventory Manager system. The IT group is still evaluating Vertére and helping to identify other systems. Once the inventory system is acquired, a pilot will occur.
	2. Reduce Disposal of Unused Chemicals by 30% by 2009.	a. Generate baseline and develop strategy for reducing unused chemicals.	Charlyn Lee / David Mohammadi	David Mohammadi is working with a contractor to generate a baseline report on unused chemicals. The report should be complete in a few weeks.
	3. Reduce Disposal Rates of NIH Target Chemicals.	a. Generate baseline and develop strategy to reduce disposal rates of target chemicals.	Charlyn Lee	Awaiting baseline report.
		b. Conduct feasibility study to identify opportunities to reduce lab equipment with mercury components.	Charlyn Lee	Awaiting baseline report.
Medical Pathological Waste	1. Reduce Medical Waste Shipped for Off-Site Incineration by 75% by 2009.	a. Gain approval and funding for purchase of on-site treatment equipment.	Don Wilson	DEP is studying different technologies for on-site treatment, and two were identified: tissue digester and heat treatment process. The company that provides these technologies has declared bankruptcy but has been bought out, DEP is hoping to reinstate negotiations with the new company once production is back on-line.
		b. Initiate acquisition process for equipment.	Don Wilson	Awaiting purchase of equipment.
		c. Plan for educational outreach to train users of new sorting, labeling, and packaging procedures required for use of the new system.	Don Wilson	Awaiting purchase of equipment.

Selected NEMS Objectives: Lab Activities

As of May 16, 2007

ENVIRONMENTAL ASPECT	5-YEAR GOAL	OBJECTIVE	LEAD	STATUS
Radioactive Waste	1. Reduce off-site disposal of liquid scintillation vials	a. Install system to treat vials when required building renovation is complete.	Wendy Rubin	We met with the construction contractors to go over what needs to be done and show them the area where the machine will be installed. Construction will begin soon.
		b. Investigate potential for procuring treatment system for treating liquid at NIH.	Wendy Rubin	A proposal will be written and it will be reviewed by management for comments. This new procedure will take time to implement since it impacts multiple contracts and modifications may need to be done to contracts before it is put into practice. The due date of April 17 was not realistic.
NEMS Improvements	1. NEMS Deployment and Maintenance	a. Document Laboratory Procedures with SOPs	Dawn Walker	In progress.
		b. Revise and implemented Lab Safety Refresher Training	TBD	Comments and suggested improvements were collected during 2/21 meeting.
		c. Revise Waste Disposal Guide	Charlyn Lee and Don Wilson	In progress.

NIH Laboratory Green Chemical Fact Sheet

The NIH Department of Environmental Protection (DEP) has created this fact sheet to assist NIH laboratories in identifying and using “environmentally friendly” laboratory products and chemicals.

The following is a brief description of chemicals to avoid when planning laboratory experiments for research, analytical or instructional purposes:

- Eliminate or reduce the use of reactive chemicals, where possible, for both safety and hazardous waste reasons. If wastes from laboratory work are reactive, deactivate their reactive characteristic as part of the experiment.
- Eliminate or reduce the use of halogenated solvents, where possible. Many halogenated solvents are carcinogens or suspected carcinogens. If such solvents must be used, investigate redistillation to minimize disposal requirements.
- Eliminate or reduce the use of non-halogenated flammable solvents, where possible. Try to find nonflammable, biodegradable substitutes. If such solvents must be used, investigate redistillation to minimize disposal requirements.
- Reduce or eliminate the use of arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver where possible. If silver must be used, recover for reclamation.
- Eliminate or reduce the use of oxidizers, where possible.
- Eliminate or reduce the use of highly toxic chemicals, where possible. Refer to the following table.

Alternative environmentally preferable laboratory products that do not contain hazardous or highly toxic chemicals targeted are presented in the following table. In some cases, specific product options are included.

Laboratory Procedure	Instead of ...	Use ...	Specific Product Options
Glassware cleaning	<ul style="list-style-type: none"> • Chromic-sulfuric acid solutions • Alcoholic potassium hydroxide 	<ul style="list-style-type: none"> • Laboratory detergents • Enzymatic cleaners • Aqueous solvents 	<ul style="list-style-type: none"> • Alconox Lab Cleaner Powder • Pierce RBS 35 • FL 70 Concentrate Detergent • HaemoSol No Scrub Cleaner • Linbro 7X Lab Glass Cleaner • RBS35 General Purpose cleaner • Nochromix
Density determination	Methanol solution	Sugar water	
Organic synthesis	<ul style="list-style-type: none"> • Chromate ion • Ethyl ether 	<ul style="list-style-type: none"> • Hypochlorite ion • Methyl t-butyl ether 	
Qualitative test for heavy metals	Sulfide ion	Hydroxide ion	
Molecular weight determination by freezing point lowering methods	Benzene	Cyclohexane	
Temperature measurement	Mercury thermometers Mercury thermostats	<ul style="list-style-type: none"> • Red alcohol filled thermometers • Mineral spirit filled thermometers • Biodegradable green liquid thermometers • All metal thermometers • Digital thermistor/thermocouple • Electronic/Digital thermostats • Snap switch thermostats (e.g., open- or sealed-contact magnetic switch) 	

Pressure measurement	Mercury manometers	<ul style="list-style-type: none"> • Pressure transducers electronic pressure gauges • Oil-based manometers 	
Biocide solutions	Mercuric chloride	<ul style="list-style-type: none"> • Sodium hypochlorite 	
Storage of biological specimens	Formaldehyde	Ethanol or other preservatives	
In-phase change and freezing point depression	Acetamide	Stearic acid	
Qualitative test for halide ions	Carbon tetrachloride	Cyclohexane	
Measurement of vapor pressure-temperature by isoteniscope	Carbon tetrachloride	Isopropyl alcohol	
Acid-base experiments	<ul style="list-style-type: none"> • Conventional acids • Conventional bases 	<ul style="list-style-type: none"> • Vinegar • Ammonia 	
Nucleic acid gel stain	Ethidium bromide		<p>GelRed™ Precast Gel Stains</p> <p>Cybergreen/Cyberred</p>
Isolation and purification of DNA	Phenol chloroform		<ul style="list-style-type: none"> • Promega Corporation, Magic Preps • Stratagene, Lambda DNA Purification Kit
Radioactive tracer studies	Xylene or toluene based liquid scintillation cocktails	Nonhazardous proprietary liquid scintillation cocktails	<ul style="list-style-type: none"> • National Diagnostics

Clearing agents in histology	Xylene		• National Diagnostics
In phase change and freezing point depression	Acetamide	Stearic acid	
Polymer catalyst	Benzoyl peroxide	Lauryl peroxide	
Test for halide ions	Carbon tetrachloride	Cyclohexane	
Biological specimen storage	Formaldehyde Formalin	<ul style="list-style-type: none"> • Ethanol • “Formalernate” (Flinn Scientific) 	
Parts washers or other solvent processes	Halogenated solvents	Nonhalogenated solvents	
Heavy metals analysis	Sulfide ion	Hydroxide ion	
Kjedlahl digests	Mercury salts	Mercury-free catalysts (e.g., CuSO ₄ , TiO ₂ , K ₂)	
General substitutions	Benzene	Alcohol	
	Chloroform	1,1,1-trichloroethane	
	Carbon tetrachloride	1,1,1-trichloroethane 1,1,2-trichlorotrifluoroethane	
	Sodium dichromate	Sodium hypochlorite	
	Toluene	Simple alcohols and ketones	
	Wood’s metal	Onion’s Fusible alloy	

Preliminary List of NIH Target Chemicals

CASN	Chemical Name	Mandate Requirement	Ranking Group	Points	Comments
75-05-8	Acetonitrile	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
67-66-3	Chloroform	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
75-09-2	Dichloromethane	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
68-12-2	N,N-Dimethylformamide	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
872-50-4	N,-Methyl-2-pyrrolidone	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
110-54-3	n-Hexane	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
439-92-1	Lead	E.O. 13148 (TRI) Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan EPA NPEP Priority Chemical			Exceeded TRI Reporting threshold for 2005 due to building decommissioning/renovation work.
7439-92-1	Lead Compounds	E.O. 13148 (TRI) Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan EPA NPEP Priority Chemical			
67-56-1	Methanol	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
108-95-2	Phenol	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
127-18-4	Tetrachloroethylene	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
108-38-3	m-Xylene	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
1330-27-7	Xylene (mixed isomers)	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
88-89-1	Picric Acid	Made commitment to the MDE to target as a corrective action associated with the 5/05 Emergency Action			
	Chromium	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			

Preliminary List of NIH Target Chemicals

CASN	Chemical Name	Mandate Requirement	Ranking Group	Points	Comments
	Chromium Compounds	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan (include Hexavalent Chromium Compounds due to new OSHA Standard)			
7439-97-6	Mercury	E.O. 13148 (TRI) Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan EPA NPEP Priority Chemical			Exceeded TRI Reporting threshold for 2005 due to building decommissioning/renovation work.
	Mercury Compounds	E.O. 13148 (TRI) Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan EPA NPEP Priority Chemical			
1746-01-6	Dioxins/Furans and Dioxin Compounds	E.O. 13148 (TRI) EPA NPEP Priority Chemical			
	Atracine	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			
	Benzo(a) Anthracene	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			
	Benzo(a) Pyrene	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			
7440-43-9	Cadmium and	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			
	Cadmium Compounds	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			
	Chlorodane	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			Use banned at NIH
218-01-9	Chrysene	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			Not Used at NIH
7440-50-8	Copper	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			
206-44-0	Fluoranthene	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			Not Used at NIH
91-20-3	Naphthalene	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan EPA NPEP Priority Chemical			LSCs

Preliminary List of NIH Target Chemicals

CASN	Chemical Name	Mandate Requirement	Ranking Group	Points	Comments
	Tributyltin	Chesapeake Bay Toxics of Concern NIH Pollution Prevention Plan			Paints
120-82-1	1,2,4-Trichlorobenzene	EPA NPEP Priority Chemical			
95-94-3	1,2,4,5- Tetrachlorobenzene	EPA NPEP Priority Chemical			
95-95-4	2,4,5-Trichlorophenol	EPA NPEP Priority Chemical			
101-55-3	4-Bromophenyl phenyl ether	EPA NPEP Priority Chemical			
83-32-9	Acenaphthene	EPA NPEP Priority Chemical			
208-96-8	Acenaphthylene	EPA NPEP Priority Chemical			
120-12-7	Anthracene	EPA NPEP Priority Chemical			
191-24-2	Benzo(g,h,i)perylene	EPA NPEP Priority Chemical			
132-64-9	Dibenzofuran	EPA NPEP Priority Chemical			
959-98-8	Endosulfan, alpha	EPA NPEP Priority Chemical			
33213-65-9	Endosulfan, beta	EPA NPEP Priority Chemical			
86-73-7	Fluorene	EPA NPEP Priority Chemical			
76-44-8	Heptachlor	EPA NPEP Priority Chemical			
118-74-1	Hexachlorobenzene	EPA NPEP Priority Chemical			
87-68-3	Hexachlorobutadiene	EPA NPEP Priority Chemical			
58-89-9	Hexachlorocyclohexane	EPA NPEP Priority Chemical			
67-72-1	Hexachloroethane	EPA NPEP Priority Chemical			
72-43-5	Methoxychlor	EPA NPEP Priority Chemical			
40487-42-1	Pendimethalin	EPA NPEP Priority Chemical			
608-93-5	Pentachlorobenzene	EPA NPEP Priority Chemical			
82-68-8	Pentachloronitrobenzene (Quintozene)	EPA NPEP Priority Chemical			
87-86-5	Pentachlorophenol	EPA NPEP Priority Chemical			
85-01-8	Phenanthrene	EPA NPEP Priority Chemical			
1336-36-3	Polychlorinated biphenyls (PCBs)	E.O. 13148 (TRI) EPA NPEP Priority Chemical			Exceeded TRI Reporting threshold for 2005 due to disposal of leaking PCB transformer.
129-0-0	Pyrene	EPA NPEP Priority Chemical			
1582-09-8	Trifluralin	EPA NPEP Priority Chemical			
75-69-4	Trichlorofluoromethane (CFC-11)	E.O. 13148 (Class 1 ODS) NIH Pollution Prevention Plan			
75-71-8	Dichlorodifluoromethane (CFC-12)	E.O. 13148 (Class 1 ODS) NIH Pollution Prevention Plan			
76-13-1	1,1,2-Trichlorotrifluoroethane	E.O. 13148 (Class 1 ODS)			

Preliminary List of NIH Target Chemicals

CASN	Chemical Name	Mandate Requirement	Ranking Group	Points	Comments
	(CFC-113)	NIH Pollution Prevention Plan			
56-23-5	Carbon Tetrachloride	E.O. 13148 (Class 1 ODS) NIH Pollution Prevention Plan			
71-55-6	1,1,1-Trichloroethane	E.O. 13148 (Class 1 ODS) NIH Pollution Prevention Plan			
	Silver	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Silver Compounds	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Arsenic	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Arsenic Compounds	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Barium	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Barium Compounds	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Selenium	E.O. 13148 (TRI) NIH Pollution Prevention Plan			
	Selenium Compounds	E.O. 13148 (TRI) NIH Pollution Prevention Plan			



NIH Environmental Management System (NEMS)

To Protect the Future, Take Action Into Your Hands

NIH Labs Go Greener

What is the NIH Goes Greener Campaign?

The **NIH Goes Greener** campaign is a challenge to NIH employees and contractors to conduct their activities in a “greener” or more environmentally sound manner. In order to become a truly sustainable organization, everyone, we should all work together to minimize our impacts on the environment and become better stewards of our natural resources.

Many of the diseases that we research have been shown to have an environmental component. As a result, we recognize that NIH has a unique responsibility for ensuring that we all carefully consider the environmental impacts of our day to day activities.

What is the NEMS?

As part of our Go Greener campaign, we are implementing the NIH Environmental Management System (NEMS). The NEMS is a management tool that is helping us to identify our most pressing environmental issues and set goals to will move us to the next level of environmental stewardship.

The NEMS asks that everyone at NIH know how their daily activities impact the environment and take action to reduce those impacts. To help with this, the NEMS Sustainable Lab Practices Working Group is developing procedures and tools on how to “green” our activities. These tools will be posted at <http://www.nems.nih.gov/labs.cfm> as they are developed.

Do my actions REALLY make a difference?

Yes! Our cumulative actions make NIH a leader in environmental stewardship. Your efforts have resulted in:

- Over 99% reduction in the generation of radioactive and mixed wastes compared to the mid 1990s.
- Eliminating unnecessary uses of mercury at NIH facilities through our "Mad as a Hatter Campaign."
- 5,300 employees participating in the Transshare Program.
- Recycling approximately 50% of our trash last year. That means that 25,000 pounds of waste per day is *not* burned up in the Montgomery County waste incinerator or buried in local landfills.



For more information about the NEMS, contact:
Terry Leland, NEMS Coordinator, 301.496.7775, lelandt@mail.nih.gov
www.nems.nih.gov



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What can I do to make my lab greener?

Use guidance and tools when available and educate yourself on how to conduct your activities in ways with less environmental impact.

There are several actions you can take on a daily basis to help reduce your environmental impact. Some are listed below and more details can be found at the websites provided:

- ✓ Purchase chemicals in smallest quantities needed
- ✓ Use less toxic alternative chemicals
- ✓ Store chemicals properly to prevent leaks or spills
(<http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/>)
- ✓ Ensure wastes are disposed of in the proper container
(<http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/>)
- ✓ Do not use mercury-containing equipment
(<http://nomercury.nih.gov>)
- ✓ Design your experiments to use the minimum amount of chemicals possible
- ✓ When researching a new or alternative procedure, consider the amount of waste produced as a factor
- ✓ Reuse gel staining or destaining solutions
- ✓ Reuse spent solvents for initial rinses or general cleaning
- ✓ Reclaim and reuse solvents, metal-bearing waste and other chemicals where feasible
- ✓ Recycle ~ Reduce ~ Reuse ~ Rebuy
(<http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/recycling.htm>)
- ✓ Purchase Energy Star[®] equipment and enable energy savings features where possible

Also see the NIH Offices Go Greener fact sheet for more helpful tips.

I already take many of the actions listed here, how can I become more involved?

- Join the NIH Greenserve where employees can post environmental ideas and questions. Visit <https://list.nih.gov/archives/greenserve-l.html> to join.
- Visit www.nems.nih.gov for more information on the NEMS and NIH environmental programs.
- Join the NEMS Sustainable Lab Practices Working Group (Email: green@mail.nih.gov).
- Do you have a tip or information that will help the environment and can make NIH Go Greener? Send them to green@mail.nih.gov.



For more information about the NEMS, contact:
Terry Leland, NEMS Coordinator, 301.496.7775, lelandt@mail.nih.gov
www.nems.nih.gov



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NIH Standard Operating Procedure

CHAPTER: Miscellaneous Topics

SUBJECT: NIH Recycling Program

OBJECTIVE:

To provide guidance on what materials can be recycled, where materials can be recycled, and who to contact about recycling.

DESCRIPTION OF PROCESS:

What can be recycled at NIH?

The following materials can be recycled at NIH:

- Paper (White Office, Shredded, and Mixed)
- Aluminum Cans
- Plastic Bottles and Glass
- Cardboard
- Pipette Tip Racks
- Toner Cartridges

Paper Recycling

White Office Paper should be placed into the *white paper container* and includes:

- White paper (any color ink)
- Office stationary
- Copier paper
- White and green/white computer paper

Staples do not need to be removed prior to placement in the recycling container. White paper can be placed in the *mixed paper container* if a white paper container is not available.

Shredded Paper should be placed in clear plastic bags and left outside the lab for collection.

Mixed Paper should be placed into the *mixed paper container* and includes:

- Newspaper
- Magazines
- Envelopes
- Colored copier paper

- Manila folders
- Post-it notes
- Catalogs

Aluminum Cans, Plastic Bottles, and Glass

Empty non-aluminum cans, glass bottles (lids removed), and plastics identified as Type 1 (PETE) or Type 2 (HDPE) should be placed in the *Commingled Bins*.



Aluminum cans and foil, and other containers made of tin, steel or other metals should be placed in the *Commingled Bins*. Rinse drink and food cans prior to placement in the bin.

Cardboard

Cardboard and paperboard are to be stacked in the corridors or in the cardboard racks on the loading dock for collection.

Pipette Tip Racks

Polypropylene #5 pipette tip racks (all colors) can be recycled.



Toner Cartridges

Laser jet, ink jet, and copier cartridges are recycled at NIH.

RELATED SUBJECTS:

ADDITIONAL INFORMATION:

Recycling: For more information or to schedule a pickup, please call 301-496-7990.

Additional information is also provided on the NEMS web site:

<http://www.nems.nih.gov/aspects/waste/programs/recycling.cfm?origin=waste>

NIH Standard Operating Procedure

CHAPTER: Procurement

SUBJECT: Carpet, Purchasing New

OBJECTIVE:

To install new or replacement carpet in a NIH facility.

DESCRIPTION OF PROCESS:

The Office of Research Facilities (ORF) has a service for providing new carpet to NIH activities through contractors. The process is efficient and many carpet choices are available.

Place work request in Delpro (for info on Delpro, see XXXX)

When ORF has received and approved the work request, Mary Lee will provide information on the date and time a contractor will measure area.

Comment [TK1]: I am waiting to hear from Dawn Walker regarding a title we can use in lieu of a name.

Once Mary Lee receives a seaming diagram, she will contact you to make an appointment to see her in building 13 and choose a carpet. She has a selection of samples and books to view.

If the carpet selection is available, it will be delivered to NIH in approximately 7 working days. You will be notified of an installation time.

Some carpets are manufactured on demand or on a schedule and may take several weeks to arrive. If you have special requirements, Mary Lee can work with you.

If you have installed furniture, it is recommended that you have the furniture vendor arrange for moving furniture out before carpet installation. Similarly, if you have a large amount of freestanding furniture, it will be less expensive to have movers (see Moving-furniture or lab equipment) move your furniture before carpet installation.

Procure Low-VOC Carpet

NIH seeks to contribute to good indoor air quality during building operations, by specifying carpet products that have minimal chemical emissions and emit low or no volatile organic compounds (VOCs). All carpets installed at NIH facilities should be Carpet and Rug Industry (CRI) Green Label Plus certified and all carpet cushions should also be Green Labeled certified.

Recommended Recycled Materials Content for Carpet

EPA's recommends purchasing recycled fiber polyester carpet manufactured from PET (polyethylene terephthalate) which is recovered from plastic soft drink containers. EPA recommends that polyester carpet procured by NIH contain 25 to 100% recovered PET.

Recommended Recycled Materials Content for Carpet Cushion

When procuring carpet cushion made from bonded polyurethane, jute, synthetic fiber, and rubber, NIH shall purchase these items made with recovered materials. The EPA recommended total recovered material content ranges for these types of carpet cushions are shown in the table below.

Carpet Cushion Product	Recycled Material	Minimum Post-consumer Recycled Content
Bonded polyurethane	Old carpet cushion	15 - 50%
Jute	Burlap	40%
Synthetic fibers	Carpet fabrication scrap	100%
Rubber	Tire rubber	60 - 90%

RELATED SUBJECTS:

Safety, Procurement, Scientific Equipment Rental and Sales,

ADDITIONAL INFORMATION:

Green Purchasing: For more information on the NIH green purchasing program, visit the NEMS web site:

http://nems.nih.gov/aspects/nat_resources/programs/green_purchasing.cfm?origin=nat_resources

EPA Comprehensive Procurement Guidelines for Carpet: The EPA recycled content recommendations for polyester carpet are available at the following EPA web site:

<http://www.epa.gov/epaoswer/non-hw/procure/products/carpet.htm>

EPA Comprehensive Procurement Guidelines for Carpet Cushion: The EPA recycled content recommendations for carpet cushion are available at the following EPA web site:

<http://www.epa.gov/epaoswer/non-hw/procure/products/carpush.htm>

NIH Standard Operating Procedure

CHAPTER: ????

SUBJECT: Laboratory Closure and Move Procedures

OBJECTIVE:

To provide guidance on the procedures for moving chemicals from existing laboratories when laboratory groups undergo a physical move from one location to another.

To provide guidance regarding the procedures to ensure the proper removal of hazardous materials, wastes, and equipment ...

DESCRIPTION OF PROCESS:

Laboratory group move to new locations for a variety of reasons including but not limited to:

- Reassignment of Institute space within buildings; and
- Construction of new laboratory buildings on the main campus.

Equipment or supplies, biological, chemical or radioactive materials that have not been used for a long time or are no longer needed can be surplus or disposed of as waste.

The NIH Waste Disposal Guide provides guidance on the safe packaging and disposal procedures for chemical, radioactive, medical pathological (MPW), and general waste. Waste materials must not be abandoned in vacated labs or placed in corridors or other public areas.

Surplus equipment

Contact the **Personal Property Branch** regarding surplus unused or outdated equipment at (301) 496-5711.

You may also consider using the **Shared Resources Database** which facilitates the exchange of research resources between research labs. Any plastic ware, glassware, or equipment that are no longer needed or are unused may be listed and made available to the NIH labs. To list an available item, use the online Database at the following Web site: <http://dirs.info.nih.gov/resource.htm>.

Chemical Waste and Materials

Wastes and unwanted chemicals are separated from chemicals to be retained or moved. Contact the Chemical Waste Disposal Service (301-496-4710) and they will arrange for the removal and disposal of the excess chemicals and chemical waste. In addition, DEP will arrange for any non-waste chemicals to be moved to the new laboratory location.

Do not dispose of chemicals or chemical waste down sink drains.

Medical Pathological Wastes and Materials

Biological materials and potentially biohazardous materials to be moved between locations on the NIH Bethesda campus must be inventoried and packed. The materials must be properly labeled and packed to prevent spills or damage during transport. Contact your Occupational Health and Safety Specialist (301-496-2960) for more information on proper packaging, labeling, and moving methods.

Medical Pathological wastes should be packaged in MPW boxes, where they will be collected by housekeeping. DEP will arrange for the MPW to be delivered to the appropriate collection point and disposed of properly. Contact DEP at 301-496-7990.

Radioactive Waste and Materials

Radioactive materials must be inventoried, properly packed, and labeled before being moved within the NIH Bethesda campus to a new location. These materials must be packed to prevent spills or damage during transport.

Radioactive waste and materials to be discarded must be collected by the Radioactive Waste Disposal Service (301-496-4451).

RELATED SUBJECTS:

ADDITIONAL INFORMATION:

Waste Management: For more information or to schedule a pickup, please call 301-496-7990. Additional information is also provided on the NEMS web site:

<http://www.nems.nih.gov/aspects/waste/>

Waste Disposal Guide: The NIH Waste Disposal Guide is available at the following ORF Web site: <http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/>