



MEETING MINUTES

**Sustainable Lab Practices Working Group
NIH Environmental Management System (NEMS)
Wednesday, April 18, 2007
1:30 – 2:30 pm**

Meeting Objective(s):

- Review status of Lab Standard Operating Procedures (SOP)
- Discuss lab coat management issues
- Discuss lab closing procedures
- Collect feedback on Green Laboratory Chemical Procurement fact sheet
- Collect feedback on draft Recycling Reference Poster

Attendees:

Claudia Gerwin (NINDS)
Tim Killian (Booz Allen)
Sarah Kirk (NHGRI)
Terry Leland (ORF)
Kristen Peters (Booz Allen)

Andree Reuss (NINDS)
Ronda Sapp (NIDDK)
Minoo Shakoury-Elizeh (NIDDK)
Roger Weidner
Don Wilson (ORF)

Minutes:

NEMS Update

Terry Leland provided an update on the NEMS. The NIH Earth Day celebration is scheduled for April 26 from 10 AM to 2 PM. This event occurs on Bring Your Child to Work Day. There will be many activities, including tours, giveaways, and an awards presentation by Dr. Zerhouni. There will also be about 15-20 booths displaying such topics as recycling, composting, and energy conservation.

Status Review of Objectives

The status of lab-related NEMS objectives were reviewed (Attachment 1).

Don Wilson 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. Andree Ruess asked for more information about the goal to reduce disposal of NIH Target Chemicals. Labs are unaware of the chemicals that NIH is targeting. Kristen Peters took responsibility to follow-up with Charlyn Lee and request a list be provided during the next meeting so that the group can identify options for informing labs of these targeted chemicals.

Mr. 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. The manufacturer is just coming back on-line after going through a corporate buy-out. DEP recognizes that once a new system is procured that a new collection system will need to be deployed along with training.

Wendy Rubin was unable to attend the meeting but provided a written update on the objectives related to reducing off-site disposal of liquid scintillation vials. For the installation of vial treatment system (crusher), ORS has met with the construction contractors to review the system's needs and to identify the location where the machine will be installed; construction will begin soon. For the objective of procuring a system to treat scintillation liquid, a proposal will be written and the new procedure will take time to implement since it impact multiple contracts.

Mr. Wilson informed the group that no additional comments on the Waste Disposal Guide were received. DEP is updating the guide and wants to ensure it is useful to the labs. He asked for everyone to please review the Waste Disposal Guide (<http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/>) and send comments to Charlyn Lee (leecha@ors.od.nih.gov).

Lab Managers Workgroup SOPs Update

No new lab SOPs has been developed. Tim Killian continues to develop on the waste management SOP that has been reviewed by Dawn Walker and need to be reviewed by DEP. In addition, Mr Killian has reviewed the SOPs for office activities, which are being developed by the NEMS Office Practices Working Group; these will likely be incorporated in the Lab Managers Manual. The lab managers are identifying other SOPs that will need to written and will prioritize the SOPs that need to be drafted. The lab managers have identified two issues that will need to be addressed: (1) development of lab coat management procedures and (2) development of lab closing procedures. No clear, consistent procedures currently exist for either of these issues.

Lab Coat Management Procedures

The lack of a procedure on lab coat management has resulted in the unreliable practices for cleaning. Labs are now unable to have coats cleaned through the Clinical Center. Instead, multiple BPAs have been created for lab coat services. However, the services have not been economical or timely. Dawn Walker raised this issue in an email to Dr. Gottesman but only received an acknowledgement of the problem. The best solution would be a NIH-wide contract to support intramural research labs. Until this issue is resolved, a SOP for lab coat management is on hold.

Lab Closing Procedures

Safety procedures for closing a lab are define and not at issue. However, the access and property procedures differ depending on the institute or center. The lab managers would like to create a SOP for this topic. Mr. Wilson informed the group that the Division of Safety and Occupational Health provides guidelines on safely closing/moving a lab and it includes many of these concerns. He suggested contacting Miriam Frieman for more information. Claudia Gerwin took responsibility to identify the

lab closing procedures that are currently available; she will report back to the group at the next meeting.

Green Chemical Procurement Fact Sheet Review

Mr. Killian provided the working group with a working draft of the green chemical procurement fact sheet (Attachment 2). This fact sheet is intended to help lab staff identify environmentally friendly lab products and chemicals. The working group reviewed the fact sheet and provided the following comments:

- Page 1, first bullet: provide an example or definition of reactive chemicals.
- Page 1, second bullet: provide an example or definition of halogenated solvents.
- Page 1: add images
- Change title of first column in table to “Laboratory Activity”
- Group activities in the table by type of lab
- Add SYBR Green and SYBR Red as an alternative to ethidium bromide in the nucleic acid gel stain activity
- Add “histology” as an activity and includes alternatives to xylene, liquid scintillation cocktail, and picric acid.

Overall, the working group liked the fact sheet and suggested its table also be included in the Waste Disposal Guide. Also during the discussion, Minoo Shakoury-Elizeh told the group of her experience in getting misleading information on chemical compatibility and disposal. Mr. Wilson stated that the Waste Disposal Guide includes a chemical compatibility chart, which is also available online at http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/chem_compat.htm#segre. Mr. Wilson said that he would look into why misinformation was provided.

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

Recycling Reference Poster Review

During the last meeting, the working group reviewed a poster illustrating the different waste streams and the appropriate container in which to dispose of the wastes. The group requested a similar poster for the recycling. The working group reviewed A visual guide for what items are recyclable was created (see Attachment 3). The working group reviewed this reference poster and provided the following comments:

- Note that container labeled “white paper” can accepted mixed paper
- Create a “poster” for each separate container
- Replace glass bottle image
- Add media bottles as an image

Additional comments should be sent to Kristen Peters (peters_kristen@bah.com).

Action Items:

Action Item	Responsible Person(s)	Due Date
1. Review Waste Disposal Guide (http://orf.od.nih.gov/Environmental+Protection/Waste+Disposal/) and send comments to Charlyn Lee (leecha@ors.od.nih.gov)	Workgroup	Friday, May 11
2. Provide new images to be incorporated on the waste container poster	Charlyn Lee	Friday, May 11
3. Incorporate comments on the waste container poster and send second draft out for review and comments	Kristen Peters	Tuesday, May 15
4. Follow-up with Charlyn Lee regarding target chemical list request	Kristen Peters	Friday, April 27
5. Provided working group a list of target chemical for discussion in the next meeting	Charlyn Lee	Friday, May 11
6. Provide additional comments on the draft Green Chemical Procurement Fact Sheet to Tim Killian (killian_timothy@bah.com).	Working Group	Friday, May 11
7. Incorporate comments on the recycling reference poster and send second draft out for review and comments	Kristen Peters	Friday, May 11

Next Meeting:

The next meeting is scheduled for Wednesday, May 16 from 1:30 to 2:30 PM in Building 50 , Room 1328/1334. The working group will identify options for communicating target chemicals and discuss the status of lab SOPs.

Selected NEMS Objectives: Lab Activities

As of April 18, 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 April 18, 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
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	<ul style="list-style-type: none"> Red alcohol filled thermometers Mineral spirit filled thermometers Biodegradable green liquid thermometers All metal thermometers Digital thermistor/thermocouple 	
Pressure measurement	Mercury manometers	<ul style="list-style-type: none"> Pressure transducers electronic pressure gauges Oil-based manometers 	

Biocide solutions	Mercuric chloride	• 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 isotenscope	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???		GelRed™ Precast Gel Stains
Isolation and purification of DNA	Phenol chloroform		<ul style="list-style-type: none"> • Promega Corporation, Magic Preps • Stratagene, Lambda DNA Purification Kit