

**COMPLIANCE ASSESSMENT -
SAFETY, HEALTH, AND THE ENVIRONMENT
(CASHE)**

FINAL REPORT

**DEPARTMENT OF THE INTERIOR
MAIN AND SOUTH INTERIOR BUILDINGS
WASHINGTON, DC**

Site Assessment Period:

January 22 – 25, 2007



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CASHE FINAL REPORT

DEPARTMENT OF THE INTERIOR
MAIN AND SOUTH INTERIOR BUILDINGS

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The Compliance Assessment - Safety, Health, and the Environment (CASHE) process was established to provide the Bureau of Land Management (BLM) with a proactive means of maintaining and sustaining compliance with Federal, State, and local environmental and hazardous materials safety regulations. The Department of the Interior is utilizing the CASHE process in evaluating compliance at its facilities.

This Final CASHE Report provides compliance information regarding onsite assessments conducted at selected DOI facilities. The draft report was submitted on January 26, 2007 to the DOI for review and comment.

Aarcher, Inc. performs ongoing compliance evaluations that include inspection and evaluation of portions of assessed facilities, and testing of selected equipment and electrical systems using hand-held equipment. Because these assessments are performed within limited timeframes and generally focused on areas and equipment identified by the client, only a limited sample of equipment, systems, buildings, and areas are evaluated or tested. This random testing is intended to provide an overall indication of problems or hazards and is not intended to provide a thorough examination or inventory of all hazards or compliance deficiencies. Therefore, Aarcher does not certify or guarantee that all hazards have been identified as a result of this effort or that issues identified are necessarily representative of the entire facility.

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MAIN AND SOUTH INTERIOR BUILDINGS

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Acronyms and Abbreviations

The following list provides a reference to acronyms and abbreviations used frequently in the CASHE process.

<u>Acronym/Abbreviation</u>	<u>Meaning</u>
AST	Aboveground Storage Tank
BMP	Best Management Practice
CASHE	Compliance Assessment - Safety, Health, and the Environment
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
FR	Federal Register
HAZCOM	Hazard Communication
HAZMAT	Hazardous Materials
HAZWOPER	Hazardous Waste Operations and Emergency Response
HM/HW POC	Hazardous Materials/Hazardous Waste Point of Contact
HW	Hazardous Waste
LQG	Large Quantity Generator
MCL	Maximum Contaminant Level
MSDS	Material Safety Data Sheet
NiCd	Nickel-Cadmium
OSHA	Occupational Safety and Health Act
PPE	Personal Protective Equipment
ppm	parts per million
RAC	Risk Assessment Code
RCRA	Resource Conservation and Recovery Act
SPCC	Spill Prevention, Control, and Countermeasures
SQG	Small Quantity Generator
TCLP	Toxicity Characteristic Leachate Procedure
TSDF	Treatment, Storage, and/or Disposal Facility
DOT	US Department of Transportation
EPA	US Environmental Protection Agency
UST	Underground Storage Tank
UFC	Uniform Fire Code

1.0 EXECUTIVE SUMMARY

This Executive Summary is provided for the buildings addressed in this Compliance Assessment – Safety, Health, and the Environment (CASHE) report. The summary identifies the most significant findings or key areas of regulatory deficiency.

The summary cross references a series of tables representing total number of findings by protocol. The tables do not provide a complete picture of compliance issues at assessed facilities. To gain an accurate understanding of compliance status, a careful review of the findings in Section 4.0 is necessary.

The elements of each table are provided in the following paragraphs.

- The **Finding Distribution** tables detail the number of findings by protocol and priority level. The Finding Distribution tables are divided into one for environmental and transportation protocols and one for safety protocols.
- The **High-Priority Findings** table lists all Class IB and Safety RAC 2 findings. The table provides the finding number, finding statement, and priority level or safety RAC.

Definitions of terms used in the Executive Summary and background on the CASHE program are included in Section 2.0, Introduction. Section 3.0, Scope, addresses the details specific to this particular CASHE.

1.1 Main and South Interior Buildings

The Compliance Assessment – Safety, Health, and the Environment (CASHE) was conducted at the Main and South Interior Buildings the week of January 22, 2007. The CASHE Team found personnel assigned to manage safety and environmental issues at the facilities to be knowledgeable and proactive in correcting known deficiencies. As is to be expected, regulatory deficiencies were identified by the CASHE Team and the following findings are of particular significance:

- Hazardous materials and hazardous wastes are not properly managed. Examples include incompatible materials stored together, flammable and combustible liquids stored outside flammable storage cabinets, improper hazardous waste disposal, and improper accumulation of universal waste and hazardous waste. See Section 4.0, Finding Numbers HAZMAT-07-002, HAZMAT-07-004, HWGEN-07-001, HWGEN-07-004, and HWGEN-07-005.
- Electrical hazards are present throughout the buildings. Examples include using extension cords, damaged cords, exposed energized electrical equipment, and the lack of an electrical safe work practices program. See Section 4.0, Finding Numbers ELEC-07-001, ELEC-07-003, ELEC-07-004, and ELEC-07-005.
- Environmental emergency planning has not been addressed at the facilities. An SPPC plan has not been prepared and Emergency Planning and Community Right-to-Know reporting has not been conducted. See Section 4.0, Finding Numbers SPCC-07-001 and SARA-07-001.

The following tables are not intended to provide the overall compliance status of assessed facilities. To gain an accurate understanding of the compliance issues at the assessed facilities, a careful review of the findings in Section 4.0 is necessary.

A summary of the number of findings identified by the CASHE Team at the Main and South Interior Buildings is included in Table 1.1-1.

Table 1.1-1: Finding Distribution

Environmental and Transportation Compliance Categories	Class I			Class II	Class III	Positive	Total
	A	B	C				
Air		1					1
Clean Water Act							0
Environmental Stewardship		1		3			4
Hazardous Materials/Waste Transporter			1				1
Hazardous Waste and Used Oil Generator		5	1		1		7
Hazardous Waste Minimization		2					2
Hazardous Waste Treatment, Storage, and Disposal Facility							
Infectious Wastes							
Pesticides							
Polychlorinated Biphenyls		1					1
Potable Water		2			1		3
Solid Waste							
Spill Prevention, Control and Countermeasures		1					1
Superfund Amendments and Reauthorization Act, Title III			1				1
Superfund /Emergency Planning							
Toxic Substances Control Act - Radon							
Underground Storage Tanks							
Wastewater							
Total	0	13	3	3	2	0	21

Table 1.1-1: Finding Distribution (concluded)

Safety Compliance Categories	RAC 1	RAC 2	RAC 3	RAC 4	Positive	Total
Building Code		1	1			2
Compressed Gas and Compressed Air Equipment				1		1
Electrical		3	4	1		8
Exit Routes, Emergency Action Plans, and Fire Prevention Plans			13	1		14
Fire Protection			4			4
General Environmental Controls		1				1
Hand and Portable Powered Tools		1				1
Hazardous Materials			6	2		8
Ionizing Radiation		1				1
Machines and Machine Guarding		1	5			6
Material Handling and Storage		3		1		4
Medical and First Aid			1			1
Motor Vehicle						
Nonionizing Radiation						
Occupational Health and Environmental Control		1				1
Personal Protective Equipment			1	2		3
Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms						
Toxic and Hazardous Substances			3	3		6
Walking-Working Surfaces		2	6			8
Welding, Cutting, and Brazing		2	2	1		5
Total		16	46	12		74

Table 1.1-2: High-Priority Findings

Finding Number	Finding	Priority Level	Safety RAC
AIR-07-001	Excess equipment containing refrigerant is stored at the facility.	Class IB	N/A
ES-07-001	The National Business Center (NBC) print shop is not receiving paper with a 30 % postconsumer recycled content and is using toxic cleaners on its equipment.	Class IB	N/A
HWGEN-07-001	There is no system in place for the proper disposal of hazardous waste generated at the Main and South Interior Buildings.	Class IB	N/A
HWGEN-07-002	Hazardous waste is treated without a permit in the Main Interior Building.	Class IB	N/A
HWGEN-07-004	Spent fluorescent lamp tubes are accumulated improperly at the MIB and SIB.	Class IB	N/A
HWGEN-07-005	Significant quantities of uncharacterized potentially hazardous waste has accumulated at the MIB and SIB.	Class IB	N/A
HWGEN-07-007	Expired epinephrine is discarded improperly in the MIB Health Clinic (Room 7045).	Class IB	N/A
HWMIN-07-001	Excess and expired shelf-life hazardous materials are stored at the MIB and SIB.	Class IB	N/A
HWMIN-07-002	Replacement mercury thermometers and switches are installed in mechanical spaces and the central plant in the Main and South Interior Buildings.	Class IB	N/A
PCB-07-001	Light ballasts and capacitors containing PCBs are located in the Main Interior Building.	Class IB	N/A
PW-07-002	Backflow preventors installed on water lines in the Main and South Interior Buildings are not tested annually.	Class IB	N/A
PW-07-003	Hose bibs are not equipped with vacuum breakers to prevent contaminated water from being drawn into the drinking water piping.	Class IB	N/A
SPCC-07-001	A Spill Prevention, Control and Countermeasures (SPCC) plan has not been prepared for the MIB.	Class IB	N/A

Table 1.1-2: High-Priority Findings (concluded)

Finding Number	Finding	Priority Level	Safety RAC
BCODE-07-001	The MIB and SIB have fire-resistant walls with unprotected openings, reducing their fire resistance performance.	N/A	RAC 2
ELEC-07-004	Exposed energized electrical equipment is present at the Main and South Interior Buildings.	N/A	RAC 2
ELEC-07-005	An electrical safe work practices program has not been instituted.	N/A	RAC 2
ELEC-07-008	Exposed energized electrical equipment is present in rooms accessible to unqualified personnel and electrical safe work practices are not being followed.	N/A	RAC 2
GEC-07-001	NBC personnel enter confined spaces that have not been evaluated for hazards, and warning signs are not posted on all confined spaces.	N/A	RAC 2
TOOL-07-001	Compressed air above 30 psi is used for cleaning in the MIB.	N/A	RAC 2
RAD-07-001	The security screening and mail checking X-Ray machines are not certified.	N/A	RAC 2
MGUARD-07-002	Woodworking equipment at the MIB is not equipped with all required safety devices	N/A	RAC 2
MHS-07-002	No evidence was found to document that the underhung hoist trolley cranes and their components located in the MIB mezzanine and central plant were tested to their rated load capacity prior to initial use.	N/A	RAC 2
MHS-07-003	The load limit is not indicated on the I-beams holding the hoist trolley in the MIB mezzanine or on the two hoist trolleys in the central plant basement.	N/A	RAC 2
: MHS-07-004	The required frequent and periodic inspection of hoist components is not performed on the underhung hoist trolley cranes in the MIB mezzanine and central plant.	N/A	RAC 2
OHEC-07-001	Annual safety inspections of all work areas in the Main and South Interior Buildings do not appear to be performed or documented.	N/A	RAC 2
WWS-07-002	A fall protection program has not been instituted	N/A	RAC 2
WWS-07-007	Unguarded sprinkler heads in the library pose a hazard to individuals.	N/A	RAC 2
WCB-07-003	Oxygen, acetylene, and other compressed gas cylinders are not stored properly in the Main and South Interior Buildings.	N/A	RAC 2
WCB-07-005	Arc welders in use at the MIB are damaged.	N/A	RAC 2

2.0 INTRODUCTION

This section addresses the objectives of the CASHE program. It also describes regulatory coverage and follow-up actions to be taken by assessed facilities.

2.1 Background

The results of Compliance Assessment – Safety, Health, and the Environment (CASHE) audits allow managers to identify and correct environmental, transportation, and safety issues at their facilities, thereby identifying conditions that pose a threat to the environment, to the public, or to DOI employees. To be useful to managers, each CASHE must meet the following objectives:

- Evaluate the effectiveness of existing environmental and hazardous material management and training systems to ensure sustained compliance;
- Recommend solutions and identify the resources needed to correct compliance issues;
- Facilitate planning and budgeting for corrective actions;
- Increase the environmental and hazardous material safety awareness of all employees;
- Ensure that the DOI maintains its environmental leadership position within the Federal Government; and
- Enable DOI to minimize potential liabilities.

2.2 Regulatory Coverage

This assessment addresses the protocols listed in Table 2.2-1, 22 of which are included in the CASHE Protocol Manual. The CASHE Protocol Manual provides regulatory guidance and details regarding the CASHE assessments. The 22 protocols included in the manual (indicated with an “*” in the following table) provide detailed discussions of regulatory requirements and their applicability to typical DOI facilities.

Table 2.2-1: CASHE Protocols

Environmental and Transportation	Occupational Safety and Health Act
<ul style="list-style-type: none"> ▪ Air * ▪ Clean Water Act ▪ Environmental Stewardship ▪ Hazardous Materials/Hazardous Waste Transporter * ▪ Hazardous Waste and Used Oil Generator * ▪ Hazardous Waste Minimization * ▪ Hazardous Waste Treatment, Storage, and Disposal Facility * ▪ Infectious Waste * ▪ Pesticides * ▪ Polychlorinated Biphenyls * ▪ Potable Water * ▪ Solid Waste * ▪ Spill Prevention, Control, and Countermeasures * ▪ Superfund Amendments and Reauthorization Act, Title III * ▪ Superfund/Emergency Planning * ▪ Toxic Substances Control Act * ▪ Underground Storage Tanks * ▪ Wastewater * 	<ul style="list-style-type: none"> ▪ Building Code ▪ Compressed Gas and Compressed Air Equipment ▪ Electrical ▪ Exit Routes, Emergency Action Plans, and Fire Prevention Plans* ▪ Fire Protection ▪ General Environmental Controls ▪ Hand and Portable Powered Tools ▪ Hazardous Materials * ▪ Ionizing Radiation ▪ Machines and Machine Guarding ▪ Material Handling and Storage * ▪ Medical and First Aid ▪ Motor Vehicle ▪ Nonionizing Radiation ▪ Occupational Health and Environmental Control ▪ Personal Protective Equipment ▪ Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms ▪ Toxic and Hazardous Substances (includes Hazard Communication* and Asbestos*) ▪ Walking-Working Surfaces ▪ Welding, Cutting, and Brazing *

[**Note:** Asterisks (*) indicate that the protocol is included in the CASHE Protocol Manual.]

2.3 Documents Researched

A review of relevant documentation typically reveals information that is not available to assessors conducting only a visual inspection of a facility. Documents are reviewed for historical compliance issues, communication with Federal, State, and local regulators, hazardous materials procurement practices, waste testing and disposal practices, water sampling results, and campground use data. When available and relevant, the items listed in Table 2.3-1 were reviewed by the CASHE Team to gain a complete understanding of facility operations and compliance status.

Table 2.3-1: Key Documents Reviewed by Compliance Category

Compliance Category	Key Documents Reviewed (when applicable)
Air	<ul style="list-style-type: none"> ▪ Air pollution emission notifications
Asbestos	<ul style="list-style-type: none"> ▪ Asbestos inventories ▪ Asbestos management and abatement plans
Exit Routes, Emergency Action Plans, and Fire Prevention Plans	<ul style="list-style-type: none"> ▪ Employee emergency plan ▪ Fire prevention plan ▪ Fire Marshall inspection reports
Hazard Communication Standard	<ul style="list-style-type: none"> ▪ MSDSs ▪ Procurement records ▪ Written HAZCOM program
Hazardous Materials	<ul style="list-style-type: none"> ▪ Reports of past spills and leaks ▪ Safety operations
Hazardous Material/Waste Transporter	<ul style="list-style-type: none"> ▪ Hazardous waste manifests ▪ Hazardous waste generation logs
Hazardous Waste and Used Oil Generator	<ul style="list-style-type: none"> ▪ Facility operations procedures ▪ Hazardous waste generation logs ▪ Hazardous waste manifests ▪ Hazardous waste accumulation records
Hazardous Waste Minimization	<ul style="list-style-type: none"> ▪ Hazardous waste minimization program ▪ Procurement records
Hazardous Waste Treatment, Storage, and Disposal Facilities	<ul style="list-style-type: none"> ▪ Hazardous waste storage area inspection logs
Infectious Waste	<ul style="list-style-type: none"> ▪ Sharps accumulation procedures
Polychlorinated biphenyls	<ul style="list-style-type: none"> ▪ PCB testing results ▪ Transformers testing records
Pesticides	<ul style="list-style-type: none"> ▪ Pesticide applicator certification ▪ Pesticide application records ▪ Pesticide application procedures
Potable Water	<ul style="list-style-type: none"> ▪ Backflow preventor testing ▪ Water testing records ▪ Water testing procedures
Solid Waste	<ul style="list-style-type: none"> ▪ Nonhazardous waste determinations ▪ Solid waste collection procedures ▪ Solid waste collection contracts
Spill Prevention, Control, and Countermeasures	<ul style="list-style-type: none"> ▪ SPCC plan ▪ Spill records
Superfund Amendments and Reauthorization Act, Title III	<ul style="list-style-type: none"> ▪ Inventory of extremely toxic materials ▪ Reporting records

Table 2.3-1: Key Documents Reviewed by Compliance Category (concluded)

Compliance Category	Key Documents Reviewed (when applicable)
Superfund/Emergency Planning	<ul style="list-style-type: none"> ▪ Procurement records ▪ Notifications to local emergency response and planning organizations
Toxic Substances Control Act	<ul style="list-style-type: none"> ▪ Inventory of toxic material storage ▪ Radon testing results
Underground Storage Tanks	<ul style="list-style-type: none"> ▪ Spill and leak reports ▪ UST installation records and registration ▪ UST filling procedures ▪ UST closure procedures and letters
Wastewater	<ul style="list-style-type: none"> ▪ NPDES and SPDES permits ▪ Reports of discharges

2.4 Follow-Up Procedure

During the outbrief at the Main Interior Building, those in attendance were presented with a copy of the draft report. The draft report included a description of each finding condition, corrective action alternatives, a reference to the protocol that addressed each deficiency, and regulatory citations.

Using the draft report as a tool, the DOI personnel were asked to prepare a Corrective Action Plan to guide the completion of selected corrective actions. The assignment of corrective action responsibilities and the preparation of the Corrective Action Plan is necessary to ensure that positive corrective actions are initiated promptly and to demonstrate management's commitment to quickly correct deficiencies. Documentation of management's commitment to correcting deficiencies identified during this assessment is important for both the DOI facility personnel and the public.

In addition to the CASHE Team's ongoing research, the draft report underwent technical review by the BLM CASHE Program Lead. During this review period, DOI personnel had the opportunity to state which corrective actions were selected, indicate what actions had been completed, and provide documentation supporting any disagreement with the accuracy or applicability of any finding. DOI personnel were also able to provide comments regarding cost information, points of contact, and other finding information. These comments were reviewed by Archer and incorporated into this report, as appropriate.

3.0 SCOPE

The CASHE for the Main and South Interior Buildings was conducted during the period of January 22 through January 25, 2007. This section of the report provides information specific to this assessment.

3.1 DOI Participants and Primary Contacts

Ian Rosenblum assisted the CASHE Team in coordinating the audit, arranging interviews, providing documentation, and ensuring a successful CASHE. The information provided by Mr. Rosenblum was key in preparing this report.

3.2 CASHE Team

The CASHE Team consisted of the BLM CASHE Program Lead and two Archer assessors. Brief descriptions of Archer CASHE Team members' credentials are provided in this section.

Ken Morin, Bureau of Land Management, CASHE Program Lead
ken_morin@blm.gov; 303-236-6418

Craig Schwartz, Archer, Inc., Lead CASHE Auditor
cschwartz@archerinc.com; 410-897-9100

Craig Schwartz has a B.S. in Land Planning and is in the process of earning an M.S. in Environmental Engineering. Craig is a former CASHE Program Manager and has been an active CASHE Team member since 1993. Craig performed the six pilot CASHE assessments; developed the CASHE Protocol Manual in conjunction with BLM; and has conducted approximately 20 CASHE audits in 15 states, visiting hundreds of BLM facilities. Craig has more than 15 years experience assisting Federal facilities, including military installations, in complying with environmental regulations. Craig is a Certified Hazardous Material Manager (CHMM) at the Master Level; a Corps of Engineers Wetland Delineator; and a State-certified Commercial Pesticide Manager (Maryland Department of Agriculture). Craig is the President of Archer and is based in the Headquarters office located in Annapolis, Maryland.

Robert Rusczek, Archer, Inc., CASHE Auditor
413-599-0151

Robert (Bob) A. Rusczek is a Certified Industrial Hygienist and Certified Safety Professional. Bob has a Bachelor of Science degree from Colorado State University in Environmental Health, and a Master of Science Degree from the University of Michigan in Industrial Health. Bob has over 25 years of safety and industrial hygiene experience. He was an OSHA Safety and Health Compliance Officer and managed safety and health at two chemical manufacturing and research facilities. Bob has been a safety consultant for the last 15 years, specializing in compliance audits. He also currently manages safety at manufacturing facilities on a part-time contract basis.

3.3 Assessed Facilities and Activities

During the assessment, the CASHE Team inspected all office areas, auditoriums, and internal storage areas. Table 3.3-1 contains a list of the facilities and activities included in this CASHE assessment.

Table 3.3-1: Assessment Coverage

<u>Main Interior Building</u>	<u>South Interior Building</u>
Basement Mechanical Rooms and Central Plant	Mechanical Room and Central Plant
Basement Fan Rooms	Fire Pump Room
Emergency Generator	Snack Bar
Sump Room	Guard Area
Rachael Carson Rooms	Custodial Room and Closets
John Muir Room	OSM Computer Room
Transformer Vaults	Auditorium
Garage Exhaust	Watch Office
Trash	Attic
Parking Areas	Emergency Generator
Elevator Pits	
Custodial Areas	
Paint Storage Room	
Electric Room	
Valve Room	
Switchboard Room	
Auditorium	
Library	
Museum	
Server Room	
Print Plant	
Mail Services	
Loading Dock	
Wire Closets	
Public Areas	
Security Operational Areas	
Conference Rooms	
Mechanical Floor (M Floor) – all wings	

3.4 State and Local Regulatory Review

The CASHE Protocol Manual and findings presented in this report are based largely on Federal environmental, transportation, and safety regulations. Executive Orders, BLM guidance, and Federal agency regulatory interpretations are used to supplement the CASHE Team’s regulatory interpretations.

In other instances, a finding is based on State or local regulations that are more stringent than Federal regulations. For example, a state may have more stringent hazardous waste regulations, drinking water monitoring requirements, and wastewater permitting processes; and a municipality may have specific pretreatment standards for a washrack. [Note: Every state has requirements related to preventing the backflow of contaminated water into a drinking water supply. Those regulations are not highlighted in this section; however, state-specific regulatory citations (i.e., driving references) are provided in Section 4.0 for all backflow-related Potable Water findings.] With the exception of backflow-related Potable Water findings, there are no findings in this report driven by State regulations.

4.0 FACILITY FINDINGS

The Main and South Interior Buildings were assessed with consideration given to 36 major categories of environmental, transportation, and OSHA compliance. As described in Section 2.0, the CASHE Team conducted interviews, document reviews, and facility inspections to identify exemplary conditions, and to identify conditions requiring modification.

This section contains the findings identified during onsite assessments conducted for the DOI during the period of January 22 to 25, 2007. After the assessment, Archer's technical staff conducted additional research of each finding to verify applicability and accuracy. The findings in this report reflect the results of this research. Within each subsection, environmental and transportation findings are segregated from safety findings.

Each finding in this report cites the appropriate regulations relating to the noncompliance, suggests corrective actions, and provides additional discussion. The data elements reported for each finding are defined as they appear on the finding sheets.

Protocol - The name of the protocol that addresses the identified deficiency.

Finding Number - The unique code assigned to the findings (Protocol Abbreviation - Assessment Year - Sequential Number).

Repeat Finding - An indication (Yes or No) of whether the finding is the same circumstance as a finding in the previous CASHE (e.g., the same table saw is still missing its blade guard). By definition, a repeat finding is a recurring issue.

Recurring Issue - An indication (Yes or No) of whether the finding is a recurring issue from the previous CASHE. A recurring issue finding addresses the same noncompliance as from the previous CASHE, including those under differing circumstances. For example, on the previous CASHE, the shop's table saw was not equipped with a manual restart switch; during this CASHE, a band saw without a manual restart switch was identified. By definition, a repeat finding is a recurring issue.

Finding - A concise description of the identified compliance deficiency.

Priority Level - Categorizes the finding based on the corresponding requirement. The priority level is only used for environmental and transportation protocol findings. The CASHE Team classified each environmental and transportation protocol finding from the following list. See "Safety RAC" for a description of how OSHA protocol findings are categorized.

- **Class I: Out of Compliance** - This classification is for direct violations of a Federal, State, or local regulation; a signed Federal Facility Compliance Agreement; an inspection report or Notice of Violation (NOV) issued by a regulatory authority or Executive Order.
 - **Class IA: Significant** - Requires immediate attention. Significant deficiencies pose, or have a high likelihood to pose, a direct and immediate threat to the environment
 - **Class IB: Major** - Requires action, but not necessarily immediate action. Major deficiencies may pose a direct threat to human health, safety, the environment.
 - **Class IC: Minor** - Administrative in nature, even though they may result in a notice of violation. Class IC findings may also include temporary or occasional instances of noncompliance.

- **Class II: To be Out of Compliance** - This classification is when actions are needed to meet established or proposed standards with a compliance deadline in the immediate or near future.
- **Class III: Best Management Practice** - This classification is for actions that are not in violation of any current or pending regulatory requirement, but pose a threat to the environment or the health and safety of BLM personnel. These actions should be corrected to prevent future noncompliance, to reduce the threat of environmental contamination and to demonstrate leadership in protection of personnel and the environment.
- **Positive** - This classification is for proactive actions that exceed regulatory requirements. This classification may also be used to identify practices that are required, but are unusual among DOI facilities.

Safety RAC - The Risk Assessment Code (RAC) assigned to all safety findings. RACs are based on the BLM Manual Handbook 1112-I – Safety and Health Management.

RISK ASSESSMENT CODE MATRIX			HAZARD PROBABILITY				
			Frequent	Likely	Occasional	Seldom	Unlikely
			A	B	C	D	E
SEVERITY	Catastrophic	I	RAC 1		RAC 2		RAC 3
	Critical	II	RAC 2			RAC 3	RAC 4
	Marginal	III	RAC 2	RAC 3			
	Negligible	IV	RAC 3				

SEVERITY	EFFECT
I. Catastrophic	Death or permanent disability, system loss, major property damage.
II. Critical	Permanent partial disability, temporary total disability in excess of 3 months, major system damage, significant property damage.
III. Marginal	Minor injury, lost workday accident, compensable injury/illness, minor system damage, minor property damage.
IV. Negligible	First aid or minor medical treatment, minor system damage.

HAZARD PROBABILITY	
[Note: Experience and exposure affect probability of occurrence]	
A. Frequent Individual employee or item All employees or items	Occurs often in career/equipment service life Continuously experienced
B. Likely Individual employee or item All employees or items	Occurs several times in career/equipment service life Occurs frequently
C. Occasional Individual employee or item All employees or items	Occurs sometime in career/equipment service life Occurs sporadically or expected several times in service life
D. Seldom Individual employee or item All employees or items	Possibility of occurrence in career/equipment service life Occurrence remote or expected sometime in service life
E. Unlikely Individual employee or item All employees or items	Assumed will not occur in career/equipment service life Occurrence possible, not probable; expected rarely

Positive - This classification is for proactive actions that exceed regulatory requirements. This classification may also be used to identify practices that are required, but are unusual among DOI facilities.

Discussion - A description of the conditions that existed during the assessment, detailed regulatory guidance, and guidance on implementing recommendations provided by the CASHE Team.

Recommendation - Corrective actions suggested by the CASHE Team based on the specific conditions at the facility, costs, and regulatory requirements. Alternative recommendations are provided, when practical. For those findings where more than one recommendation is provided, the DOI normally selects one and provides that selection to the CASHE Team with its comments on the draft report.

Driving Reference(s) - The specific section of the regulation, Executive Order number, OSHA interpretation letter, or other documentation that drives the non-compliance.

Point(s) of Contact - The name or names of the person(s) who are acting as point(s) of contact (POC) for the corrective action. DOI provided the POC in their comments to the draft report.

Status of Corrective Action - An indication of finding status, such as, complete, date of scheduled completion, and notes regarding funding requests and planning efforts. DOI provided information regarding status with their comments on the draft report.

Section 4.0

**Department of the Interior
Main and South Interior Buildings
Washington, DC**

Assessment Dates
January 22 through 25, 2007

5.0 PRELIMINARY FINDINGS

**Main Interior Building
1849 C Street, N.W.
Washington DC 20240**

***Assessment Dates*
January 22 - 25, 2007**

**South Interior Building
1951 Constitution Avenue, NW
Washington DC 20240**

***Assessment Date*
January 22, 2007**

AIR**Finding Number: AIR-07-001**

Finding: Excess equipment containing refrigerant is stored at the facility.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Refrigerators, air conditioner window units, and compressor units are stored in many mechanical areas of both SIB and MIB. Following are example storage locations:

- SIB M Floor (out-of-service refrigerator)
- MIB M Floor (3 West section) (five out-of-service window air conditioning units)
- MIB central plant (compressor removed from a refrigerator)
- MIB alterations shop (Room B142) (out-of-service refrigerator in the break room)
- MIB south mechanical room (Room B002) (out-of-service ice maker, two small refrigerators, and three window air conditioning units)
- Storage room under the MIB "A Ramp" (two out-of-service air conditioning units)
- Storage area under the MIB "B Ramp" (two out-of-service refrigerators)
- MIB sump room (11 out-of-service air conditioning units)

Venting refrigerant into the environment has been prohibited since June 14, 1993. The Clean Air Act also specifically prohibits the disposal of any appliance known to contain CFCs. Disposal is defined in the regulations as the discharge, deposit, dumping, or placing of any discarded appliance into or on any land or water; the disassembly of any appliance for discharge, deposit, dumping or placing of its discarded component parts into or on any land or water; or the disassembly of any appliance for reuse of its component parts. National Business Center (NBC) personnel reportedly are trained and certified to perform refrigerant recovery.

The regulations also stipulate that no person may recover refrigerant unless that person has recovery equipment that complies with 40 CFR 82.158 and is certified in accordance with 40 CFR 82.162. The local landfill may have a certified CFC recovery operation on site.

Recommendation: Capture refrigerant from all out-of-service equipment and mark the equipment to not that the refrigerant has been removed.

Driving Reference(s): 40 CFR 82.152 – definition of disposal
40 CFR 82.154(a) - refrigerant release prohibition
40 CFR 82.154(f) - refrigerant recovery
40 CFR 82.162 – recovery equipment operator certification

Point(s) of Contact: Kurt W. Nordstrom

Status of Corrective Action: Completed on March 16, 2007. All refrigerant was captured and the equipment marked, as recommended. The window air conditioning units were recycled as scrap metal. One refrigerator was recharged and returned to service.

ENVIRONMENTAL STEWARDSHIP - ES**Finding Number: ES-07-001**

Finding: The National Business Center (NBC) print shop is not receiving paper with a 30 % postconsumer recycled content and is using toxic cleaners on its equipment.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: The NBC print shop orders paper to be used in printers, copiers, and fax machines in the Main and South Interior Buildings. The most recent shipment of Xerox paper received (six pallets) has zero percent recycled content. Paper purchased by all Federal agencies, bureaus, and office must contain not less than 30% post-consumer recycled content. Print Shop personnel contacted Xerox during the audit and verified that they had ordered recycled content paper, but Xerox sent the wrong paper.

A toxic cleaner, Ancolite Glaze Cleaner, is used to remove the glaze from printing equipment in the shop. The cleaner is a flammable liquid, a mixture of toluene and acetone. Toluene and acetone are very toxic solvents. The product warning label states not to breathe the vapors and to wear a mask, protective eyewear, and gloves. The shop had a very strong solvent odor from an open container of the solvent. The Print Shop also has a container of E100 Rubber Rejuvenator a combustible solvent. Its label states that it is free of chlorinated hydrocarbons, toluene, xylene, and glycol ethers. Shop personnel state the E100 product works, but not as well as the Ancolite Glaze Cleaner.

EPA under its Comprehensive Procurement Guidelines (CPG) program has designated products with recycled content recommendation in eight categories:

- Construction Products (e.g., insulation, carpet, concrete, roofing materials)
- Landscaping Products (e.g., plastic landscaping timbers and posts)
- Nonpaper Office Products (e.g., binders, office furniture, toner cartridges)
- Paper and Paper Products (e.g., printer/copy paper, envelopes, bath tissue, paper towels)
- Park and Recreation Products (e.g., benches, picnic tables, fencing)
- Transportation Products (e.g., parking stops, traffic barricades, traffic cones)
- Vehicular Products (e.g., engine coolants, re-refined lubricating oils)
- Miscellaneous Products (e.g., bike racks, drums, absorbents)

It is positively noted that the NBC has required its janitorial contractor to purchase paper products and cleaners that meet the CPG requirements. In addition, it is using bio-diesel fuel in its emergency generator at the Main Interior Building and plans on doing so at the South Interior Building. The National Business Center's (NBC) efforts are a "roll-model" for all bureaus within the Department.

The CPG program is part of EPA's continuing effort to promote the use of materials recovered from solid waste. Buying recycled-content products ensures that the materials collected in recycling programs will be used again in the manufacture of new products. The CPG program is authorized by Congress under Section 6002 of the Resource Conservation and Recovery Act (RCRA) and Executive Order 13101. EPA is required to designate products that are or can be made with recovered materials, and to recommend practices for buying these products. Once a product is designated, procuring agencies are required to purchase it with the highest recovered material content level practicable. In 1995, EPA issued the first CPG which covered EPA's original 5 procurement guidelines and added 19 products. The first CPG update (CPG II), published in November of 1997, designated an additional 12 items. A second CPG update (CPG III), published in January 2000, designated an additional 18 items. A third CPG update (CPG IV), published in April 2004, designated an additional seven items and revised three existing item designations.

The CPG requirements of RCRA section 6002 apply to such procuring agencies only when procuring designated items where the price of the item exceeds \$10,000 or the quantity of the item purchased in the previous year exceeded \$10,000. The \$10,000 threshold applies to all purchases made by an entire agency rather than regional or local offices (e.g., Department of the Interior, Department of Defense, etc). Most Federal agencies exceed the \$10,000 threshold for all EPA designated items.

The complete list of designed products and their recycled content specification can be found at: <http://www.epa.gov/epaoswer/non-hw/procure/products.htm>. Suppliers of those products can be found at: <http://www.epa.gov/epaoswer/non-hw/procure/database.htm>. The GSA Advantage website allows for searches for products that are: CPG compliant, environmentally friendly, non-toxic, recycled content products, and items manufactured from minority firms and groups. Use the following link to access the GSA Advantage site: <http://www.gsadvantage.gov/advgsa/advantage/search>

The CASHE Team did not attempt to identify all products purchased by the NBC for which CPG or environmentally preferable products are required to be purchased. This finding is intended to educate the National Business Center of the requirement to purchase "green" products, the benefits that may be gained by purchasing them, and sources from which they may be purchased.

A new Executive Order 13423, "Strengthening Federal Environmental, Energy, and Transportation Management" signed by President Bush on January 24, 2007 requires Federal agencies to lead by example in advancing the nation's energy security and environmental performance by achieving these goals:

- **VEHICLES:** Increase purchase of alternative fuel, hybrid, and plug-in hybrid vehicles when commercially available.
- **PETROLEUM CONSERVATION:** Reduce petroleum consumption in fleet vehicles by 2% annually through 2015.
- **ALTERNATIVE FUEL USE:** Increase alternative fuel consumption at least 10% annually.
- **ENERGY EFFICIENCY:** Reduce energy intensity 30% by 2015.
- **GREENHOUSE GASES:** Reduce greenhouse gas emissions through reduction of energy intensity by 3% annually or 30% by 2015.
- **RENEWABLE POWER:** At least 50% of current renewable energy purchases must come from new renewable sources (in service after January 1, 1999).
- **BUILDING PERFORMANCE:** Construct or renovate buildings in accordance with sustainability strategies, including resource conservation, reduction, and use; siting; and indoor environmental quality.
- **WATER CONSERVATION:** Reduce water consumption intensity by 2% annually through 2015.

- **PROCUREMENT:** Expand purchases of environmentally-sound goods and services, including biobased products.
- **POLLUTION PREVENTION:** Reduce use of chemicals and toxic materials and purchase lower risk chemicals and toxic materials from top priority list.
- **ELECTRONICS MANAGEMENT:** Annually, 95% of electronic products
- purchased must meet Electronic Product Environmental Assessment Tool standards where applicable; enable Energy Star® features on 100% of computers and monitors; and reuse, donate, sell, or recycle 100% of electronic products using environmentally sound management practices.
- **ENVIRONMENTAL MANAGEMENT SYSTEMS:** By 2010, increase to at least 2,500 the number of Federal operations that implement environmental management systems, up from about 1,000 today.

The Executive Order consolidates and strengthens five executive orders and two memorandums of understanding and establishes new and updated goals, practices, and reporting requirements for environmental, energy, and transportation performance and accountability.

The new EO also requires the Office of Management and Budget (OMB) in conjunction with the Office of Federal Environmental Executive to track all Federal agencies progress in complying with its directives. The new scorecard issued in January 2006 by OMB in support of the President's Management Agenda (PMA) is called Environmental Stewardship. Senior managers through the Federal Government are familiar with the phrase "Going to Green" because all Federal agencies are rated quarterly on their progress related to the implementation of the PMA. The PMA has five major elements. The Environmental Stewardship scorecard is a component of the Budget and Performance Integration element. The Environmental Stewardship scorecard complements the new EO and is intended to facilitate achievement of environmental goals.

The OMB Environmental Stewardship scorecard requirement requires Agencies/Field Offices to purchase and use recycled content and "environmentally preferable" products and services. Specifically, each executive agency must incorporate waste prevention and recycling in daily operations and work to increase and expand markets for "recovered materials" through greater federal government preference and demand for such products. The scorecard requirements were developed to work with the aligning requirements from the new EO, in which agencies developed their strategic specific plans. The OFEE has developed a web site to use as reference (<http://www.ofee.gov/gp>) in the development of those plans.

In addition, the Department of the Interior (DOI) has developed The Strategic Plan for Greening the Department of the Interior Through Waste Prevention, Recycling, and Federal Acquisition. DOI has established in the plan green procurement goals for the purchase of products that have the highest percentage of recovered materials practicable as required by EO 13101. Strategies are outlined to promote environmental considerations into all levels of procurement and are applicable to any facility employee having the authority to make purchases. DOI has focused this effort particularly on products designated by the Environmental Protection Agency (EPA) in the CPG.

One of the benefits of purchasing environmentally preferable products is compliance with OSHA regulations. Employee storage of the flammable and combustible liquids, even when closed, in the Print Shop in an office cabinet is a safety violation. OSHA regulations require that all flammable and combustible liquids in an office occupancy be stored in a flammable storage cabinet. Flammable storage cabinets isolate flammable liquids and protect both personnel and property in the event of fire. Therefore, all the containers of flammable and combustible liquids used in the Print Shop are required to be stored in flammable storage cabinets.

The NBC industrial hygienist reported to the CASHE Team that return air duct in the Print Shop had to be blocked because of employee complaints about the solvent odor. Finding “green” cleaners to replace the flammable and combustible solvents currently in use will eliminate fire safety and employee health concerns.

The importance of purchasing of green products must be understood by all NBC employees. Reviewing acquisitions for green product purchasing must be performed annually to ensure success in the OMB scorecard. As new materials are brought in, personnel changes occur, and operations change, the green purchasing process must be considered to reflect product updates and personnel training opportunities.

Recommendation: **A)** Educate employees on the CPG program, the recycled content products available under program, availability of green cleaning products, and the importance of and requirement to purchase environmentally preferable products; **B)** Assign the procurement staff with the responsibility of reviewing purchases and their compliance with the CPG; **C)** Evaluate and switch to green cleaners for maintenance of equipment in the print shop; and **D)** Prior to acceptable of future paper product deliveries ensure it has at least 30% post-consumer recycled content.

Driving Reference(s): Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management signed January 24, 2007
FAR – Part 23 (Subpart 23.7) Use of recovered materials
RCRA 6002 – Affirmative Procurement
EPA Facilities Manual, Volume 2

Point(s) of Contact: Gary Dixon

Status of Corrective Action: Our Creative Communications team now orders only paper that meets the prescribed guidelines for post-consumer content. The Ancolite Glaze Cleaner was removed from the MIB on March 9, 2007 via the GSA hazardous materials contractor.

ENVIRONMENTAL STEWARDSHIP - ES

Finding Number: ES-07-002

Finding: A written Environmental Management System (EMS) has not been developed for the Office of the Secretary, National Business Center (NBC).

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class II

Discussion: While the NBC has some the Environmental Management System (EMS) elements, there is no comprehensive EMS program in place. The CASHE Team identified a few of the necessary requirements that an EMS requires, such as the purchasing of environmentally preferable products and energy efficient electronic equipment, installation of energy savings devices (e.g., occupancy sensors) and recycling of paper and cardboard.

It is Departmental policy that bureaus and facilities implement EMS at all appropriate facilities based on facility size, complexity, and the environmental aspects of facility operations.

According to the written Environmental Management System from the Department Manual (DM) 515 section 4.4 the NBC EMS must include the following:

- 1) Senior management review, approval and support of the EMS;
- 2) Compliance with applicable federal, state, and local environmental requirements;
- 3) Timely correction of problems as a result of environmental or EMS audit findings and budget requests for the same;
- 4) Promotion of sound environmental practices such as pollution prevention and waste reduction, environmental auditing, and the use of environmentally preferable products;
- 5) Promotion of continuous improvement in environmental performance, including areas not subject to regulation, through goal-setting, performance measurement and training;
- 6) Communication of environmental performance in policies, programs, and services both internally and externally; and
- 7) Periodic monitoring and tracking of EMS performance.

The new EO signed by President Bush on January 24, 2007 clarifies that EMS is not just a facility based system. It requires, the head of each agency to “implement within the agency environmental management systems (EMS) at **all appropriate organizational levels** to ensure (i) use of EMS as the primary management approach for addressing environmental aspects of internal agency operations and activities, including environmental aspects of energy and transportation functions, (ii) establishment of agency objectives and targets to ensure implementation of this order, and (iii) collection, analysis, and reporting of information to measure performance in the implementation of this order”.

The new EO also requires the Office of Management and Budget (OMB) in conjunction with the Office of Federal Environmental Executive to track all Federal agencies progress in complying with its directives. The new scorecard issued in January 2006 by OMB in support of the President's Management Agenda (PMA) is called Environmental Stewardship. Senior managers through the Federal Government are familiar with the phrase "Going to Green" because all Federal agencies are rated quarterly on their progress related to the implementation of the PMA. The PMA has five major elements. The Environmental Stewardship scorecard is a component of the Budget and Performance Integration element. The Environmental Stewardship scorecard complements the new EO and is intended to facilitate achievement of environmental goals. In addition, the Office of Management and Budget (OMB) in conjunction with the Council on Environmental Quality (CEQ) sent a letter to the heads of all federal agencies emphasizing the importance of developing an Environmental Management System (EMS).

The President's Management Agenda calls for the government to be results-oriented and market based. EMS when implemented will result in the NBC having reduced impact on the environment. The EMS must address all agencies and their facilities. Reviewing the EMS annually will ensure it addresses changing operations.

Recommendation: **A)** Develop and implement an EMS that includes all required information and train employees on its content; and **B)** Review the EMS annually to ensure it remains current and addresses all operations; and **C)** Revise the plan as necessary to ensure continual improvement.

Driving Reference(s): Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management signed January 24, 2007, Section 3(b)
Office of Business and Management (OMB) Environmental Scorecard
Departmental Manual 515 DM 4 (October 02, 2002) – Section 4.4
OMB Memorandum on EMS to the Heads of Departments and Agencies,
April 11, 2006

Point(s) of Contact: Ian Rosenblum

Status of Corrective Action: Currently conducting baseline environmental audits at DOI facilities, which will be an integral part of our EMS. We began requesting funding in FY01 and finally received partial funding in FY06 to conduct the audits. Have contracted with BLM to perform audits at our Denver, Washington, and Anchorage facilities in FY07. Received additional funding in FY07 to conduct audits at our northern VA, Boise, Sacramento, Atlanta, and Arizona locations. Plan to contract again with BLM to conduct these audits. Have requested funding in the annual budget request to develop and implement an EMS, and anticipate this being completed in FY11 (assuming funding is received).

ENVIRONMENTAL STEWARDSHIP - ES**Finding Number: ES-07-003**

Finding: A written Green Purchasing Plan (GPP) has not been developed for the National Business Center (NBC).

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class II

Discussion: While the NBC is purchasing biodiesel for its generators and requires its janitorial contractor to purchase recycled content paper products and green cleaning supplies, there is no comprehensive program or plan in place to expand the green purchasing requirements mandated by a new Office of Management and Budget (OMB) scorecard that is used to grade Federal agencies' performance related to "greening the government." Additional details on the Environmental Stewardship scorecard are provided later in this discussion.

The plan is to be prepared to ensure that the agency has a strategy in place to implement the President's Management Agenda, and comply with Executive Order (EO) 13101, and the Department of the Interior's Strategic Plan for Greening the Department of the Interior Through Waste Prevention, Recycling, and Federal Acquisition.

Preparation of a GPP requirement is intended to provide direction for acquiring recycled content products and "environmentally preferable" products and services. The intended outcome is the consideration of "green" products becomes part of all employees' normal purchasing practice, along with product safety, price, performance, and availability.

Consideration of environmental goals should begin early in any acquisition process and recognize the importance of pollution prevention. Specifically, each executive agency must incorporate waste prevention and recycling in daily operations and work to increase and expand markets for "recovered materials" through greater federal government preference and demand for such products. The consideration of life cycle costs associated with a product (e.g., maintenance, energy, disposal costs) is one way of incorporating environmental goals into the acquisition process.

The Federal government spends a significant amount of money each year on goods and services and is considered one of the largest purchasers in the world. As a result of its huge purchasing power the Federal Government can stimulate the marketplace to produce "green" products.

The Environmental Protection Agency has prepared guidance for development of a GPP. This guidance has five guiding principles and is designed to help executive agencies meet the Environmental Stewardship scorecard objectives on the purchase of environmentally preferable or "green" products and services. This guidance provides a broad framework of items to consider for environmentally preferable purchasing and plan development. The EPA has extensive information on their web site (www.epa.gov/epp/pubs/guidance/finalguidance.htm) to use for further guidance.

All Federal agencies are required by the new EO to use of sustainable environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products, and use of paper of at least 30 percent post-consumer fiber content. In addition, OMB issued, in January 2006, a new Environmental Stewardship scorecard in support of the President's Management Agenda (PMA). Senior managers through the Federal Government are familiar with the phrase "Going to Green" because all Federal agencies are rated quarterly on their progress related to the implementation of the PMA. The PMA has five major elements. The Environmental Stewardship scorecard is a component of the Budget and Performance Integration element. The recently issued Environmental Stewardship scorecard complements the EO and is intended to facilitate achievement of environmental goals.

The PMA is managed through the Presidential Management Council (PMC) and OMB. The President's Council on Environmental Quality (CEQ) and OMB work with Federal agencies to clearly define goals for environmental success as they align with the PMA. The development of standards for success is to measure an agency's level of completion as it relates to their goals. The OMB oversees the scorecards and assesses the agency's progress against the deliverables. OMB works with agencies to select specific programs and determine their objectives as they relate to the PMA. Additional information on the PMA may be obtained at www.whitehouse.gov.

The PMA calls for the government to be results-oriented and market based. Therefore, through each agency/facility actively implementing a GPP, the government will have a reduced impact on the environment. Reviewing the plan annually will ensure it addresses changing facility operations.

The Environmental Stewardship scorecard has five standards for success. One of those standards requires that all Federal Departments have a comprehensive written green purchasing plan (GPP). The CASHE Team was provided a rough draft copy of a GPP prepared by Govworks. In reviewing the document most of the required elements for a GPP are addressed. The draft GPP refers to an Affirmative Procurement Coordinator responsible for its implementation and annual review of the goals in the plan. The NBC does not have anyone designated with this responsibility. Also, the draft GPP does not address credit card purchases. The final GPP will need to emphasize that all product purchase decisions need to be green decisions. This concept is similar to the traditional considerations of cost and safety of a product prior to purchasing. The purchasing of recycled material and environmentally preferable products must apply to all aspects of an agency's mission including, but not limited to its business practices, operations acquisitions, maintenance practices, and construction activities.

The Environmental Stewardship scorecard specifically requires the GPP to address procurement of the following "green" products:

- Recycled content products (i.e., copy paper containing at least 30 percent of postconsumer material);
- Energy- and water-efficient products (e.g., electronic office products - fax and copy machines that have sleep modes or shutdown power saving devices; water-efficient products – water-efficient full-sized washing machines use 18-25 gallons of water per load compared to the 40 gallons used by a traditional machine, water efficient dishwashers and waterless urinals are other examples).
- Alternative fuel vehicles/alternative fuels (e.g., fuel grade ethanol, hi performance biodiesel, and additives to boost octane of petro-diesel);
- Environmentally preferable products (e.g., janitorial products – glass cleaners, floor cleaning products, and disinfectants; landscaping products - fertilizers, mulching products, and composite landscape timbers; building construction products – bricks and tiles, furnishings made from recycled material, gypsum wallboard, and wallpaper paste; and maintenance products – 100 percent soy-based motor oil, bio-degradable lubricating and hydraulic oils, 2-cycle engine oil, and multipurpose machinery grease).

In addition, all agencies must do the following:

- Demonstrate compliance with the OMB scorecards in representative acquisitions (e.g., construction, operation and maintenance, and office supplies);
- Perform annual audits of procurement activities; and
- Develop corrective actions plans to address issues found during audits.

The Office of the Federal Environmental Executive (<http://www.ofee.gov/gp/gplinks.html>) web site has guidance on how to develop a green purchasing program and an example of the green purchasing procurement strategy from the Department of Defense (DOD).

Recommendation: **A)** Review the draft GPP prepared by GovWorks; **B)** Designate an Affirmative Procurement Coordinator; **C)** Modify the GPP prepared by GovWorks to address NBC issues and include all credit card holders in the plan; **D)** Train employees on its content and implement the plan; and **E)** Review the program annually to ensure it remains current and addresses all operations at all facilities.

Driving Reference(s): Office of Management and Budget (OMB) Environmental Scorecard Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, Section 2(d)
Strategic Plan for Greening the Department of the Interior Through Waste Prevention, Recycling and Federal Acquisition
Resource Conservation Recovery Act (RCRA) Section 6002

Point(s) of Contact: Jennie Caissie

Status of Corrective Action: GovWorks has drafted a green procurement policy and handbook. The NBC Senior Leadership Team was briefed during the latter part of August 2006 and instructed the GovWorks Greening Coordinator (Jennie Caissie) to continue with the effort. She is continuing to refine the draft green procurement policy and handbook, and we anticipate completion of the policy in CY07 and the handbook in CY07 or CY08.

ENVIRONMENTAL STEWARDSHIP - ES**Finding Number: ES-07-004**

Finding: The National Business Center (NBC) does not have a sustainability program for electronic stewardship.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class II

Discussion: Agencies are required to have a program or plan in place for the sustainable purchase, operation, and disposal of electronics. The Office of Management and Budget (OMB) in conjunction with the EPA have issued in January 2006 a new Environmental Stewardship scorecard in support of the President's Management Agenda (PMA). One of the elements in this scorecard requires development and implementation of an electronic sustainability program.

The following elements are required for an electronic sustainability program:

- 1) procedures for purchasing electronic equipment
- 2) promoting the purchase, operation, and use of electronic products
- 3) using end-of-life strategies consistent with the MOU on Electronics Stewardship of Federal Electronic Assets (November 15, 2004).

The recently issued Environmental Stewardship scorecard complements the new EO signed by President Bush on January 24, 2007. The federal government is the largest purchaser of electronics in the world. Electronic devices such as computers, faxes, scanners, copiers, cameras, VCR's and cellular phone have an impact on the environment as a result of being manufactured, used, and discarded. As a matter of fact, of the 1.8 million federal employees that have an office personal computer, the 3-year computer lifecycle is equal to discarding approximately 10,000 computers each week. More information can be found on the following websites: <http://www.ofee.gov/es/es.htm> and <http://www.productstewardship.net>. Both sites provide guidance and helpful tools with evaluating office electronic equipment and meeting environmental requirements.

Recommendation: **A)** Develop an electronic sustainability design program; **B)** Communicate and train employees on its content; and **C)** Review the program to ensure it remains current and addresses all NBC operations; and **D)** Implement the program at all NBC facilities.

Driving Reference(s): MOU – Improving the Environmental Management of Federal Electronic Assets
Federal Electronics Challenge
MOU – Promoting Sustainable Environmental Stewardship of Federal Electronic Assets
Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management, Section 2(d)

Point(s) of Contact: Ian Rosenblum

Status of Corrective Action: The Department will be developing a Sustainability Program for Electronic Stewardship and, when it is developed, the NBC will implement it. The formal Sustainability Program is scheduled to be implemented by September 2008. The Departmental Electronic Stewardship Plan is expected to be promulgated in July 2007. The NBC uses a DOI IT contract to purchase computers. The NBC is participating in the DOI Electronics Stewardship Task Force. We have representatives from Property, Acquisitions, IT, and Environmental on the task force.

HAZARDOUS MATERIALS/WASTE TRANSPORTER - HMTRAN**Finding Number: HMTRAN-07-001**

Finding: No NBC personnel have received DOT training required to sign hazardous waste shipping manifests.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IC

Discussion: Significant quantities of excess hazardous materials and hazardous waste have accumulated at the MIB and SIB. This waste can only be removed from the facility by a licensed hazardous waste transporter, and a uniform hazardous waste manifest must be prepared. The NBC representative that signs this manifest(s) must be trained as described below. No NBC employee in the MIB or SIB has received this training.

Federal DOT regulation 49 CFR Part 172 applies to “each person who offers a hazardous material for transportation” and to transporters of hazardous materials [49 CFR 172.3(a)]. Anyone who signs a hazardous waste manifest “offers” a hazardous material for transportation. DOT regulations require that all HAZMAT employees initially be trained on the topics specified in 49 CFR 172.704(a) and (b), and be provided refresher training every 3 years. Employees hired on or before July 2, 1993 were to receive the initial training prior to October 1, 1993. Employees hired after July 2, 1993 are to receive training within 90 days of hire. The DOT has a training center in Oklahoma City that offers a 3-day course on hazardous waste manifest preparation.

Each employee is to receive training on DOT hazard communication and transportation standards specific to job function (e.g., preparing or reviewing manifests). Each employee is to receive safety training, including emergency response information as discussed in 49 CFR 172, Subpart G; self-protection training; and training in accident prevention while handling packages of hazardous materials.

Records of current training, including the last 3 years, must be retained by the employer for as long as the HAZMAT employee is employed, and for 90 days after the employees termination date. These records must include the following: **1)** the employee’s name; **2)** the most recent training completion date; **3)** a description, copy, or the location of training materials used to meet the DOT training requirements; **4)** the name and address of the person providing the training; and **5)** certification that the employee has been properly trained and tested in accordance with 49 CFR 172, Subpart H.

Recommendation: **A)** Designate a person(s) who will prepare or review/approve hazardous waste manifests; **B)** Ensure that the designated person(s) attend training that addresses DOT requirements for shipping hazardous materials; **C)** Budget for and schedule refresher training every 3 years; and **D)** Maintain records documenting this training.

Driving Reference(s): 49 CFR 172.704(c)(1) - initial training
49 CFR 172.704(c)(2) - refresher training
49 CFR 172.704(d) - record keeping

Point(s) of Contact: Ian Rosenblum

Status of Corrective Action: Currently identifying local training opportunities for at least two members of the facilities staff. Scheduled for completion in December 2007. One of these persons will be designated as the primary individual responsible for preparing or reviewing/approving hazardous waste manifests, the other will be designated as the alternate. Refresher training for these individuals will be occurring at least once every 3 years. Scheduled for completion in December 2007.

HAZARDOUS WASTE GENERATOR - HWGEN**Finding Number: HWGEN-07-001**

Finding: There is no system in place for the proper disposal of hazardous waste generated at the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Hazardous waste is generated in the MIB and SIB as a result of painting, equipment and systems repairs, cleaning, equipment maintenance, and other operations. For example, approximately 10 gallons of thinners and strippers are stored in the MIB paint room. This materials will eventually become hazardous wastes when use for brush cleaning or stripping.

Although both the MIB and SIB have been issued hazardous waste generator identification numbers, it appears that no hazardous waste has been disposed of under the numbers in years. Additionally, the CASHE Team found no evidence to indicate that a formal system for the proper disposal of hazardous waste or unneeded hazardous materials has been established and communicated to employees.

The hazardous waste generator status of the MIB and SIB has not been documented; however, based on observations of building maintenance and other waste-generating activities, it appears that these facilities are normally classified as a conditionally exempt small quantity generators (CESQGs). While this generator status alleviates many hazardous waste management requirements, certain requirements still apply.

A facility's generator status classification can change from month to month depending on the amount of hazardous waste it generates or accumulates. Fluctuations in the quantities and types of hazardous waste generated at the facility require that a hazardous waste generation log be consistently maintained. The log allows personnel assigned to manage hazardous materials and wastes to identify potential hazardous waste minimization opportunities and to identify months during which the facility's generator status changes. For example, during any month where hazardous waste generation exceeds 100 kg per month, significant additional handling and disposal requirements apply.

Hazardous waste regulations [40 CFR 261.2(f)] state that a generator who claims their hazardous waste is conditionally exempt must have documentation to prove it meets the terms of the exemption. The documentation is to confirm that the generator's monthly hazardous waste generation rate is less than the CESQG quantity limits.

Recommendation: **A)** Designate someone as the lead for management and disposal of hazardous waste and excess hazardous materials ("HAZMAT Coordinator"); **B)** Provide the designated HAZMAT Coordinator with training in shipping (so he/she can sign manifests) and hazardous waste regulations; **C)** Establish an area at the MIB and SIB (under the control of the HAZMAT Coordinator) for centralized storage and management of hazardous waste and excess hazardous materials; **D)** Maintain a hazardous waste accumulation log; and **E)** Instruct all employees and contractors in procedures for turning-in excess hazardous materials and hazardous wastes.

Driving Reference(s): 40 CFR 261.2(f) – documenting CESQG generator status

Point(s) of Contact: Gary Peacock

Status of Corrective Action: A written policy for the management, storage, and proper disposal of hazardous materials and waste will be developed and implemented by December 28, 2007. This policy will address each of the recommendations, and will be used by NBC personnel and contractors working in the Interior Complex. Implementation will include communication with employees and formal training.

HAZARDOUS WASTE GENERATOR - HWGEN**Finding Number:** HWGEN-07-002**Finding:** Hazardous waste is treated without a permit in the Main Interior Building.**Repeat Finding:** N/A**Recurring Issue:** N/A**Priority Level:** Class IB

Discussion: Two open 1-gallon containers of Apexior™ “Number 3,” a flammable liquid, are located in a trash can. These containers contain approximately 2 inches of fluid, which is drying. Most empty containers may be discarded as regular trash; however, containers that are not completely empty must be managed as potentially hazardous waste. In the MIB alterations shop (Room B142), a 1-gallon container of combustible oil-based paint, nearly full, is drying in the container along with paint rollers. In the MIB valve room (Room B628), a 1-gallon container is stored open with thinner and brushes, allowing the thinner to evaporate.

EPA and the District of Columbia consider evaporating hazardous waste the unpermitted “treatment” of hazardous waste, unless specifically authorized. Specifically, the RCRA definition of treatment includes changing the physical, chemical, or biological character or composition of any hazardous waste to render it safer, non-hazardous, less hazardous, or reduced in volume [40 CFR 260.10]. Before conducting onsite treatment of hazardous waste, regardless of generator status, all facilities are required to obtain a RCRA Part B permit or be “permitted, licensed, or registered by the State.” Neither the MIB nor SIB is permitted by EPA or the State to treat hazardous waste.

Both the MIB and SIB are normally classified as conditionally-exempt small-quantity generators (CESQGs). The requirement for CESQGs to receive authorization to treat or dispose of hazardous waste on site is discussed in a letter EPA wrote to the Michigan Department of Natural Resources (MDNR) in response to its question on whether a CESQG needs a permit to treat its waste on site. The EPA letter clarified that CESQGs must be permitted, licensed, or registered by a state agency to treat or dispose of hazardous waste on site. EPA stated that it would consider an exchange of letters between the regulator and the CESQG to be an appropriate means of permitting onsite treatment or disposal of CESQG hazardous waste. The letter clarified that offsite facilities must also be permitted, licensed, or registered to treat or dispose of CESQG hazardous waste. EPA required that state governments provide a mechanism to evaluate the risk posed to the environment when considering authorizing CESQGs to treat or dispose of hazardous waste on site.

In addition to EPA prohibitions on evaporating hazardous waste, OSHA prohibits evaporating flammable and combustible liquids because the vapors pose fire and health hazards. Containers of flammable and combustible liquids must be kept in closed containers when not in use.

The CASHE Team often observes used paint thinner evaporating at Federal facilities. Paint thinner can be reused several times. After brushes or paint guns are cleaned, the used thinner can be poured back into its original properly labeled container. When the used paint thinner has too much paint residue in it to be effective, the container of spent thinner should be turned in to the HAZMAT Coordinator for proper disposal.

Recommendation: **A)** Instruct all employees to turn in hazardous waste and excess hazardous materials to a designated HAZMAT Coordinator for proper disposal; and **B)** Establish a method of ensuring that excess hazardous material owned by contractors is removed from the facility.

Driving Reference(s): 40 CFR 261.5(g)(3)(iv) – CESQG hazardous waste treatment and disposal
EPA letter of October 9, 1986 to Ms. Peck MDNR
29 CFR 1910.106(e)(2)(iv)(a) - open containers

Point(s) of Contact: Ken Tunney

Status of Corrective Action: The policy being developed (see HWGEN-07-001) also will include instructions to employees and method(s) of ensuring that excess hazardous materials owned by contractors are removed from our facilities. We also will work with our acquisitions staff to ensure there is appropriate language in all contract documents. Scheduled for completion on December 28, 2007.

The materials in the first discussion paragraph (above) were removed from the building on March 9, 2007, using a GSA hazardous materials contractor.

HAZARDOUS WASTE GENERATOR - HWGEN**Finding Number: HWGEN-07-003**

Finding: No handling procedures have been established for waste uninterrupted power supply (UPS) units generated from use with personal computers.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class III

Discussion: The CASHE Team identified four UPS units in the MIB Floor (1 East Section) that are no longer usable and will be excessed. Computer UPS battery back-up units (lead-acid batteries) are a universal hazardous waste subject to reduced regulation if recycled. If not recycled, spent batteries must be disposed of as hazardous waste.

Small quantity handlers may accumulate universal waste for up to one year from the date of generation, unless the handler can document that the waste is accumulated solely for the purpose of facilitating recovery, treatment, or disposal. Universal hazardous waste, such as lead-acid batteries, must be labeled to indicate when the waste was generated (e.g., label the accumulation container with the date the first battery was placed in the container, or label the battery with the date it was determined to be waste). Additional methods (e.g., inventory systems) can also be used to demonstrate that universal hazardous waste has been stored for less than 1 year.

Information regarding vendors and free recycling services can be obtained from the Rechargeable Battery Recycling Corporation (RBRC), a nonprofit organization. Many vendors (e.g., Radio Shack, Wal-Mart, Sears) participate in this recycling program and will accept spent batteries. The RBRC also accepts and recycles nickel metal hydride, lithium ion, and small sealed lead rechargeable batteries. The RBRC has established a toll-free number (1-800-8BATTERY) and a website (www.rbrc.com) that can be used to find a local vendor who will accept spent batteries.

Recommendation: **A)** Assign a person in the MIB and SIB with the responsibility of accepting spent batteries; **B)** Instruct all employees on procedure for turning in spent lead-acid batteries; and **C)** Post the accumulation start date on the box used to collect batteries or on each battery as it is added to the box and ensure that they are not accumulated for more than 1 year before they are turned in to a recycler.

Driving Reference(s): 40 CFR 261.5(g)(3)(vii) - universal waste handling for CESQGS
40 CFR 273 - universal waste management
40 CFR 273.15 – storage limits for universal waste

Point(s) of Contact: Gary Peacock, Sandy Rainbolt, Maurice Banks, and J. Mike Mason

Status of Corrective Action: The policy being developed (see HWGEN-07-001) also will include instructions to employees and procedures for processing spent lead-acid batteries. The occupant organizations that use lead-acid batteries in our buildings have been advised that, effective May 3, 2007, spent batteries must be marked or tagged with the date each was removed from service. Scheduled for completion on December 28, 2007.

HAZARDOUS WASTE GENERATOR - HWGEN**Finding Number:** HWGEN-07-004**Finding:** Spent fluorescent lamp tubes are accumulated improperly at the MIB and SIB.**Repeat Finding:** N/A**Recurring Issue:** N/A**Priority Level:** Class IB

Discussion: Fluorescent lamp tubes are generated throughout all areas of the Main and South Interior Buildings. A fluorescent lamp crusher was purchased more than 1 year ago, but has not been placed into service, due to changing District of Columbia regulations applicable to its use. As a result, hundreds of spent fluorescent lamp tubes have accumulated in several areas of the audited facilities. This waste is not labeled as universal waste and many spent lamp tubes are not protected from damage. Smaller collections of spent lamp tubes exist in most mechanical spaces. Following are selected examples of spent fluorescent lamp tube storage locations:

- SIB attic (seven fluorescent tubes are stored leaning against a wall near the cooling tower access room and one in the telecommunications room, unprotected, unlabeled)
- MIB M Floor (1 East section) (approximately 85 boxes of four-foot lamp tubes, some unprotected, unlabeled)
- MIB F-12-2 air handling room (approximately 20 boxes of spent lamp tubes, labeled only "RECYCLE")
- MIB Room B015 (approximately 15 boxes of spent lamp tubes, unlabeled)

EPA classifies materials containing more than 0.2 mg/L of mercury as hazardous waste, as measured by the Toxicity Characterization Leachate Procedure (TCLP) test. Mercury is used in fluorescent lamp tubes to excite the phosphor crystals that coat the inside of the tube. The phosphor absorbs the mercury over time; therefore, manufacturers must include enough mercury to ensure that the lamp does not burn out prematurely. The most common fluorescent lamp tube used, the T-12, contains 23 milligrams of mercury, and is a hazardous waste when no longer in use.

EPA classifies fluorescent lamp tubes as universal waste. Universal wastes generated by Small and Large Quantity Generators are exempt from full regulation by EPA's hazardous waste regulations and not counted toward hazardous waste generator status thresholds, if they are recycled and managed in full compliance with the alternative universal waste requirements. Therefore, all facilities should manage spent fluorescent lamp tubes as universal waste to reduce the total quantity of hazardous waste used in determining its generator status and potentially prevent the facility from becoming subject to more stringent regulations.

The CASHE Team contacted a representative of the District of Columbia environmental regulatory agency. Crushing spent fluorescent lamp tubes is permitted using appropriate equipment and adhering to all employee exposure safety precautions. However, crushed fluorescent lamps can no longer be managed under the more flexible universal waste standards. MIB personnel must evaluate the benefits of the alternative universal waste management standards versus the convenience of in-house lamp crushing. [Note: The District representative noted that the restrictions on managing crushed lamps as universal waste may be changing in the future.]

As addressed in a separate finding, the MIB and SIB are believed to normally be classified a conditionally exempt small quantity generators (CESQGs); however, the quantities of excess hazardous materials and accumulated hazardous wastes at these facilities may temporarily cause them to be re-categorized as Small Quantity Generators or Large Quantity Generators.

There is a common misperception that CESQG facilities can indiscriminately dispose of hazardous waste to landfills. Local landfills may not be permitted to accept fluorescent tubes from sources other than a household (i.e., from CESQGs). DOI facilities that are CESQGs must contact receiving landfills to determine if the landfills are permitted (and willing) to receive waste fluorescent tubes from CESQGs.

Spent fluorescent lamp tubes should be stored in their original box, and the box should be stored in a protected location. Spent fluorescent tubes should be placed back in the original box because the packaging provides protection from breakage. Each lamp or a container or package in which such lamps are contained must be labeled or marked clearly with one of the following phrases: "UNIVERSAL WASTE – LAMPS(S)," or "WASTE LAMP(S)," or "USED LAMP(S)".

As a safety concern, when fluorescent lamp tubes are broken, most of the mercury turns from a gas into a liquid; however, some of the aerosolized mercury may be released into the atmosphere. Mercury is a poison that affects the central nervous system and may cause dermatitis, tremors, and mental disturbances. Personnel conducting the cleanup of a broken fluorescent lamp need to wear appropriate respiratory protection because mercury vapors are toxic. Because the MIB does not have personnel qualified to perform mercury cleanup operations, this task may have to be contracted. Cleanup materials from a mercury spill must be managed as hazardous waste.

Several Executive Orders require Department facilities to implement pollution prevention practices. The 1990 Pollution Prevention Act defines pollution prevention as any practice that reduces the amount of any hazardous substance, pollutant, or contaminant entering waste streams or otherwise reaching the environment. Therefore, regardless of hazardous waste generator status, recycling and/or substitution of low-mercury lamp tubes is recommended.

Low-mercury fluorescent lamp tubes pose much less of a safety or health concern. A chemical buffer is used to slow the phosphor's absorption of the mercury, which decreases the amount of mercury needed without decreasing the life of the tube. Hazardous waste characterization testing of these tubes shows that they do not exceed hazardous waste toxicity limits, and are therefore, not a hazardous waste.

There are several companies that sell pre-addressed, postage-paid shipping tubes for spent fluorescent tubes. Once full, the tubes are sent to a recycling facility. Shipping tubes are available in sizes to accommodate different length tubes. Sylvania is one company that provides this service (www.sylvania.com). Its RECYCLEPAK program ships supplies to and from the generating facility, and processes all documentation, including certificates of recycling.

Recommendation: **A)** Collect all unboxed fluorescent lamp tubes and place them in boxes to protect them from breaking; **B)** Label all boxes of spent fluorescent lamp tubes as "UNIVERSAL WASTE – LAMPS(S)," "WASTE LAMP(S)," or "USED LAMP(S)"; **C)** Contract for the removal and recycling of all accumulated spent lamp tubes; **D)** Consider contracting for recycling services; **E)** Begin the transition to low-mercury tubes; and **F)** Educate all personnel who perform maintenance activities on the proper storage and disposal of spent fluorescent lamp tubes.

Driving Reference(s): 40 CFR 273.8(a)(2) – CESQG waste handling
40 CFR 273.11 – treatment (crushing) prohibited
40 CFR 273.13 – universal waste management
40 CFR 273.14(e) – labeling of waste lamps
40 CFR 273.16 – employee training
40 CFR 273.17 – response to releases
Executive Order 12856 - pollution prevention program requirement

Point(s) of Contact: Ken Tunney

Status of Corrective Action: The spent fluorescent lamps (noted above) were collected, placed in properly labeled shipping containers and removed from the building on March 9, 2007, using a GSA hazardous materials contractor. Our new policy on the management and disposal of hazardous waste will address and/or include requirements for recommendations A, B, and F. Scheduled for completion on December 28, 2007. Low-mercury fluorescent lamp tubes have been used in both buildings for more than 2 years.

HAZARDOUS WASTE GENERATOR - HWGEN**Finding Number: HWGEN-07-005**

Finding: Significant quantities of uncharacterized potentially hazardous waste has accumulated at the MIB and SIB.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Several containers in various mechanical spaces are unlabeled and their contents are unknown. Following are examples of locations where uncharacterized wastes or unknown hazardous materials are stored:

- SIB M Floor (5-gallon plastic bucket containing a solidified white material);
- SIB attic (19th Street Cage) (two 1-gallon unlabeled containers in a shopping cart behind a flammable storage cabinet);
- SIB central plant near the elevator control room (one 5-gallon AidCo™ container leaking a viscous green liquid);
- SIB central plant near the south wall (one 5-gallon plastic container leaking a viscous green liquid);
- SIB central plant near the refrigerator (one 5-gallon plastic container stored open with approximately 2-gallons of unknown green liquid)
- MIB central plant (out-of-service parts washer containing unknown solvent)
- MIB central plant near tank T-1-5 (approximately twenty 30-gallon and 55-gallon drums (mis-labeled as refrigerants) and approximately 23 5-gallon plastic containers)
- MIB room labeled "F-12-2" in the parking garage (full 55-gallon open top drum with unknown contents)(drum is adjacent to the fluorescent lamp crushing unit)
- MIB parking garage (sump in floor near column S11 contains grease, oil, and water)

All waste streams (i.e., refuse that has the potential to exhibit hazardous characteristics), including aerosol cans, contaminated precipitation (i.e., water) and waste paint, must be characterized in accordance with 40 CFR 262.11 prior to disposal. Proper characterization of all waste streams, either through testing or "user knowledge" (e.g., gathering information from MSDSs), is necessary to determine the facility's generator status, to identify proper waste management and disposal techniques, and to meet Federal and State regulations.

A hazardous waste inspector could consider all of the containers hazardous waste because no one is certain what is in the containers and, even if the contents are known, they are not stored as if they have any value.

Recommendation: **A)** Determine the hazardous constituents of all waste by using knowledge of the waste or by testing the waste prior to disposal; **B)** Initiate the disposal of the waste according to the waste determination; and **C)** Inform facility personnel to contact the NBC HAZMAT Coordinator whenever waste is generated to initiate proper disposal of hazardous waste.

Driving Reference(s): 40 CFR 261.5(g)(1) - waste determination
40 CFR 262.11 - waste determination

Point(s) of Contact: Ken Tunney

Status of Corrective Action: The parts cleaning solvent was recycled and placed in proper storage on February 22, 2007. Scheduled to find an acceptable, environmentally friendly replacement for the solvent by May 15, 2007. With the exception of the potentially hazardous material in the garage sump pit (near column S-11), the remaining items were removed from the MIB on March 9, 2007, and the SIB on March 10, 2007, by the GSA hazardous material contractor. The material in the garage sump will be tested before May 31, 2007, to identify its composition and hazardous waste classification and disposed in an appropriate manner. Our new policy (see HWGEN-07-001) will include instructions for facility personnel to contact the HAZMAT Coordinator whenever waste is generated that we may ensure proper storage and initiate timely disposal.

HAZARDOUS WASTE GENERATOR - HWGEN

Finding Number: HWGEN-07-006

Finding: Used oil is accumulated in two unlabeled 5-gallon containers in MIB elevator pit #3 (Room B028).

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IC

Discussion: Used oil is generated during elevator maintenance and repair. The used oil is removed from the MIB by the elevator contractor. While in the building; however, the containers must be properly labeled.

All used oil that is intended for recycling must be accumulated and stored in containers that are labeled "USED OIL" and not "WASTE OIL." The term "WASTE OIL" is reserved for generators that intend to dispose of oil, not offer it for recycling. Any oil intended for disposal must be handled as hazardous waste. Because the Department promotes recycling and transfers all used oil to recyclers, all used oil accumulation containers must be labeled "USED OIL."

Recommendation: Label all used oil accumulation containers "USED OIL."

Driving Reference(s): 40 CFR 279.22(c)(1) - used oil labeling

Point(s) of Contact: Ken Tunney

Status of Corrective Action: These materials were removed from the building on March 9, 2007, using the GSA hazardous materials contractor. On March 12, 2007, our employees and on-site contractors were instructed to label all used oil accumulation-containers "USED OIL," and our new policy (see HWGEN-07-001) which will be written and implemented on or before December 28, 2007, will include this labeling requirement, as well.

HAZARDOUS WASTE GENERATOR - HWGEN**Finding Number:** HWGEN-07-007**Finding:** Expired epinephrine is discarded improperly in the MIB Health Clinic (Room 7045).**Repeat Finding:** N/A**Recurring Issue:** N/A**Priority Level:** Class IB

Discussion: Small vials of epinephrine are stored in the Health Clinic. During the interview with the nurse at the time of the audit, the CASHE Team was informed that expired vials of epinephrine are added to the sharps containers for incineration. Because unused epinephrine is a P-listed hazardous waste, it must be managed as a hazardous waste.

Hazardous waste should not be mixed with nonhazardous waste. Materials that are, or contain, listed hazardous wastes (e.g., acetone, formaldehyde, and toluene) are subject to the mixture rule. "Listed" means these solvents are identified by name in 40 CFR 261.30, Subpart D, Lists of Hazardous Wastes and are subject to the mixture rule. The mixture rule states that any solid waste becomes a hazardous waste when mixed with a listed hazardous waste. For example, a nonhazardous waste material with a drop of a listed waste, such as epinephrine, is a hazardous waste. The hazardous waste identification number for epinephrine is P042.

Recommendation: Develop a standardized procedure for the disposal of waste epinephrine.**Driving Reference(s):** 40 CFR 262.34 – hazardous waste accumulation
40 CFR 261.3(b)(2) – mixture rule**Point(s) of Contact:** Barbara Hayden, RN**Status of Corrective Action:** Completed on February 9, 2007. The FOH written procedures were modified to require the return of epinephrine to a supplier 2 months before the expiration date.

HAZARDOUS WASTE MINIMIZATION - HWMIN**Finding Number:** HWMIN-07-001**Finding:** Excess and expired shelf-life hazardous materials are stored at the MIB and SIB.**Repeat Finding:** N/A**Recurring Issue:** N/A**Priority Level:** Class IB**Discussion:** The CASHE Team identified hundreds of gallons of excess hazardous materials at the MIB and SIB. Following are selected example locations:

- Flammable storage cabinet outdoors in the SIB parking area, where the products will freeze and become unusable (one 1-quart can of enamel paint and two 5-gallon containers of latex paint);
- Cooling tower access room in the SIB M Floor (one 1-gallon container of galvanizing compound and one 1-quart container of Conquest™ rust converter);
- Storage shelves in the SIB attic (M Floor) (three 1-quart containers of 3M™ primer);
- SIB attic (19th Street cage) flammable storage cabinet (three 1-gallon containers of Lenmar™ component coating [the label indicates the use of respiratory protection when using this material, there is no respiratory protection program in place at either facility], 20 1-gallon containers of enamel paint, five containers stored open, and several containers dried solid);
- Along the west wall of the SIB central plant (R75 refrigerant in a 20-pound tank [all systems at this facility currently use R123 refrigerant], an unknown amount and type of refrigerant in a small gas cylinder, one 1-gallon container labeled “Z.R.C. COLD GALVONIZING COMPOUND,” one 5-gallon container of lubricating hydraulic fluid, one 5-gallon container of water-based stain killer, and two 1-gallon containers of DuraClad™ oil-based (alkaline) black paint);
- Near elevator control room in the SIB central plant (one 5-gallon container of AidCo™ coil brightener corrosive, one 15-gallon metal container labeled “USED OIL,” one 20-gallon metal container labeled “USED OIL,” one 5-gallon container of paint thinner, one 5-gallon container of mineral spirits stored open, two 20-gallon containers of R113 refrigerant [all systems at this facility currently use R123 refrigerant], one 5-gallon container of enamel paint [label indicates a manufacturers date of May 1989], two 20-gallon containers of R11 refrigerant [all systems at this facility currently use R123 refrigerant], one 1-gallon container of Duron™ DuraClad metal primer labeled “FOR PROFESSIONAL USE” and “NOT FOR RESIDENTIAL USE”);
- Along the south wall of the SIB central plant (one 100-pound container of R113 refrigerant [all systems at this facility currently use R123 refrigerant], two 5-gallon containers of hydrochloric acid, five 5-gallon containers of mineral refrigerant oil labeled “FOR USE WITH CFC 11,” one 30-gallon container labeled “FREON 11,” two 5-gallon containers of Mobile™ oil labeled “HEAVY MEDIUM,” and one 5-gallon container of York™ oil);
- MIB M Floor (2 West Section) (approximately ten 1-pint to 1-quart containers of glues, lubricants, and adhesives); in the MIB M Floor (2 West Section) (one 5-gallon container of yellow paint labeled “FOR PROFESSIONAL USE ONLY”);
- MIB central plant (eight 1-gallon containers of degreasing solvent [the solvent contains methylene chloride and perchloroethylene], nine 55-gallon drums of refrigerants, oils, and antifreeze, one 5 gallon container of corrosive sodium hydroxide, and one leaking 5-gallon container of oil);
- MIB central plant compressed gas cage (R-12 refrigerant cylinders);

- MIB central plant flammable storage cabinet (one 5-gallon container of floor paint [the label indicates a manufacturers date of 1982, and a flash-point of 100° F], one 5-gallon container of enamel paint, and 18 1-gallon cans of combustible paint);
- SIB cooling towers (GE Betz™ “Continuum AEC225” and “Spectrus NX114” stored outdoors in freezing temperatures – MSDS for this material states “protect from freezing”)
- Flammable storage cabinet in the MIB central plant (near air handling unit F-32-1)(5 gallons of floor sealer dated June 1987; 5 gallons of combustible enamel dated May 1989; and 25 1-gallon containers of combustible aluminum and latex paint)
- Storage room under MIB “A Ramp” (55-gallon white drum, 55-gallon black drum, 5 gallons of combustible bituminous coating, two 5-gallon containers of corrosive coil cleaner, 5 gallons of orange degreaser, and 5 gallons of 20% sodium hydroxide)
- MIB parking garage (approximately 10-pound propane cylinder labeled “GSA” and dated August 1969)
- MIB valve room (Room B-628) (approximately 120 1-gallon cans of paint)
- Flammable storage cabinet in the MIB parking garage (near column G-19) (approximately 20 containers of excess adhesives, paints, and aerosols believed to be from the alterations shop)
- MIB parking garage cages (outdated and unused carbon dioxide fire extinguisher on a wheeled cart)
- Elevator pit #3 at the MIB (B028) (six 5-gallon containers of lubricants)
- MIB north elevator room (20 gallons of old oil)

The CASHE Team recommends the MIB and SIB sponsor a “Hazardous Materials Amnesty Day” as a day designated for the collection and removal of excess hazardous materials. On this day, personnel turn in materials that will not be used in the near future (e.g., within 1 year). Other personnel with immediate needs can claim collected materials. The remaining excess materials are donated to other facilities, State agencies, private companies, schools, or other legitimate users. The MIB and SIB HAZMAT Coordinator must consider hazardous materials that are not usable or that cannot be donated readily as waste, and must characterize and disposed of the waste appropriately.

If the MIB or SIB generate more than 100 kg (220 pounds) of hazardous waste in a single month (e.g., through disposal of accumulated excess materials), the facility will become temporarily regulated as a Small Quantity Generator (SQG) or Large Quantity Generator (LQG) and must follow all applicable accumulation, transportation, and disposal regulations.

Improper storage of hazardous materials is a major cause of hazardous waste generation. In order to reduce the amount of hazardous waste generated, facilities must ensure that materials are not exposed to extreme temperatures. Containers of flammable and combustible liquids, along with other heat-sensitive materials, should be protected from exposure to heat. Excessive heat can cause these materials to vaporize and the pressure exerted can cause containers to bulge. This type of damage to the container can cause flammable or combustible vapors and liquids to escape from the containers, posing a serious safety problem. Storing materials such as paint and batteries in unheated areas can cause these materials to freeze and/or crack rendering them unusable, and therefore, waste.

Materials that are considered “abandoned” are classified as solid waste under Federal regulations (40 CFR 261.2). For example, a RCRA inspector would consider unlabeled containers of hazardous materials, with contents unknown, as abandoned wastes because they are not being treated as if they have value. Solid waste that exhibits any of the hazardous characteristics described in 40 CFR 261 Subpart C or listed in Subpart D is classified as hazardous waste. Therefore, expired hazardous materials, such as lead paint, become regulated as hazardous waste when they become abandoned. Generation of such hazardous waste should be avoided.

Hazardous materials that are purchased in bulk often expire or become unusable, the facility should discontinue such purchases. Bulk containers also tend to become labeling problems because the labels fall off or fade out before the contents are completely used. If facility personnel cannot identify the contents of a bulk container, the MIB and SIB must perform costly analysis to determine whether it can use the product or how to dispose of it properly.

Several Executive Orders require Department of the Interior facilities to implement pollution prevention practices. The 1990 Pollution Prevention Act defines pollution prevention as any practice that reduces the amount of any hazardous substance, pollutant, or contaminant entering waste streams or otherwise reaching the environment. Executive Order 12856 required Federal facilities to develop pollution prevention programs. Federal regulations require SQGs to sign a statement on hazardous waste manifests certifying that the hazardous waste generator has “made a good faith effort” to minimize the amount of hazardous waste generated.

Common hazardous waste pollution prevention techniques include **1)** source reduction through process or equipment modifications that reduce or eliminate the generation of hazardous waste; **2)** source reduction through material substitution; **3)** improving inventory control to reduce the amount of material expiring on the shelf; and **4)** recycling/reuse.

Recommendation: **A)** Establish an annual “Hazardous Materials Amnesty Day,” organized by the MIB and SIB HAZMAT Coordinator; **B)** Inform all personnel to promptly return excess materials to the vendor for credit whenever possible (e.g., when planned projects are canceled); **C)** Attempt to donate excess hazardous materials to other Federal facilities, State agencies, schools, or other legitimate users who have an immediate use for the material; and **D)** Dispose of excess materials for which a legitimate user could not be found as a hazardous waste; and **E)** Provide the HAZMAT Coordinator with a storage area (e.g., a flammable storage cabinet in the flammable storage room) where excess hazardous materials can be safely stored awaiting redistribution or disposal.

Driving Reference(s): Executive Order 12856 - pollution prevention program requirement
40 CFR 262 - Appendix Manifest Certification

Point(s) of Contact: Ken Tunney

Status of Corrective Action: The NBC will make its HAZMAT Coordinator available to assist occupants and facilitate the removal of their hazardous materials and waste from the Main and South Interior Buildings. Our new policy will address recommendations B, C, D, and E. Scheduled for completion by December 28, 2007.

With the exception of the 10-pound propane cylinder labeled “GSA,” all the items listed were removed from the MIB on March 9, 2007, and the SIB on March 10, 2007, by the GSA hazardous materials contractor. Proper disposal of the propane tank is scheduled for completion by June 8, 2007.

HAZARDOUS WASTE MINIMIZATION - HWMIN**Finding Number: HWMIN-07-002**

Finding: Replacement mercury thermometers and switches are installed in mechanical spaces and the central plant in the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Mercury is commonly used in thermometers and switches, and is not released unless this equipment is damaged or disposed. The availability of alcohol-based thermometers and electronic switches presents an opportunity to eliminate this potential source of mercury releases in the workplace. No initiative to replace existing mercury-containing equipment or policy regarding the installation of new mercury-containing equipment has been established for the Department, and any damaged thermometers or switches in mechanical areas are replaced with new equipment that contains mercury. New mercury switches are in storage in the MIB central plant.

Several Executive Orders require Department facilities to implement pollution prevention and greening practices. As defined by the 1990 Pollution Prevention Act, pollution prevention is any practice that reduces the amount of any hazardous substance, pollutant, or contaminant entering waste streams or otherwise reaching the environment. Executive Order 12856 required Federal facilities to develop pollution prevention programs. Federal regulations require SQGs and LQGs to sign a statement on hazardous waste manifests certifying that the hazardous waste generator has "made a good faith effort" to minimize the amount of hazardous waste generated.

Executive Order 13148 directed EPA to convene and chair an Interagency Environmental Leadership Workgroup to develop a list of fifteen priority chemicals. Federal facilities were to reduce the use of these chemicals by at least 50% by December 31, 2006. To date, the workgroup has identified the following five of the fifteen priority chemicals: mercury, cadmium, lead, naphthalene, and polychlorinated biphenyls (PCBs). Each of these chemicals is also a Priority Chemical (PC).

The National Partnership for Environmental Priorities Program (NPEP) has tools for identifying mercury-containing items, inventorying them, properly disposing of them, and replacing them with environmentally preferable items. The link to the "Mercury Challenge" website is <http://www.epa.gov/epaoswer/hazwaste/minimize/mercchall.htm>.

All Federal agencies are required by EO 13101 "Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition" to purchase a wide variety of "green" products. The Office of Management and Budget (OMB) in conjunction with the EPA issued in January 2006 a new Environmental Stewardship scorecard in support of the President's Management Agenda (PMA). Senior managers through the Federal Government are familiar with the phrase "Going to Green" because all Federal agencies are rated quarterly on their progress related to the implementation of the PMA. The PMA has five major elements. The Environmental Stewardship scorecard is a component of the Budget and Performance Integration element. The recently issued Environmental Stewardship scorecard complements EO 13101 and is intended to facilitate achievement of environmental goals.

Recommendation: **A)** Ensure that all new and replacement thermometers and switches installed in Department facilities are mercury-free; and **B)** Ensure that only mercury-free equipment is installed in modernized spaces.

Driving Reference(s): Executive Order 12856 - pollution prevention program requirement
40 CFR 262 - Appendix Manifest Certification
EO 13101 - Greening the Government Through Waste Prevention, Recycling,
and Federal Acquisition
EO 13148 – Environmental Management Systems

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: The Mercoid™ switches in use are enveloped in a metal casing with a see-through window which makes them much less vulnerable to accidental breakage than are most devices that contain mercury. NBC knows of no known replacement devices that will work in facility applications. As the MIB Modernization project progresses, the equipment that now uses these devices is being replaced. The MIB Modernization project is scheduled for completion in FY 2012. We plan to replace the other thermometers (i.e., those that are not Mercoid™) with suitable substitutes by November 30, 2007.

POLYCHLORINATED BIPHENYLS - PCB**Finding Number: PCB-07-001**

Finding: Light ballasts and capacitors containing PCBs are located in the Main Interior Building.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Fluorescent light ballasts are equipped with a small capacitor that may contain a high concentration of PCBs (i.e., greater than 90% PCBs). Federal regulations prohibit ballasts manufactured after 1979 from containing PCBs and require that those ballasts manufactured after 1979 be labeled "NO PCBs." In the experience of the BLM CASHE Program Lead, every older ballasts not labeled "NO PCBs" that he has had tested, contained PCBs. Therefore, all ballasts that are not labeled "NO PCBs" should be assumed to contain PCBs to avoid the expense of testing. The analytical cost for testing a substance to determine if it contains PCBs is approximately \$100.

Boxes of failed ballasts removed from lighting fixtures are stored in the MIB mezzanine and MIB alterations shop. The CASHE Team did a cursory scan of failed ballasts stored in several boxes in the MIB M Floor and did not find any that potentially contain PCBs. A quick scan of the box of failed ballasts in the MIB alterations ship identified at least three PCB-containing ballasts. Approximately 19 capacitors are also stored on a shelf in the spare parts room near the entrance of the MIB central plant. Many of these capacitors are dated prior to 1979. None of them are labeled "NO PCBs" and are therefore assumed to contain PCBs.

Disposal of fluorescent light ballasts or capacitors that contain PCBs and are not leaking is not regulated by TSCA, but is regulated under CERCLA. Small PCB capacitors that are not leaking (total volume of less than 1,639 cm³/100 cubic inches) may be disposed of as any other solid waste subject to the CERCLA reportable quantity (RQ) limit of one pound, as well as State and local regulations [40 CFR 761.60(b)(2)(ii)]. CERCLA requires anyone who releases a hazardous substance to the environment above its RQ must report that release to the National Response Center (NRC).

The disposal of approximately 12 to 16 ballasts is equivalent to a release of 1 pound or more of PCBs (the RQ for PCBs) and is subject to reporting to the National Response Center (NRC). Dumping and disposing of hazardous substances are considered releases under CERCLA [40 CFR 302.3]. Building owners who dispose of PCB-containing ballasts in a dumpster or local landfill above the RQ must report this release of PCBs to the environment.

Fifteen states prohibit the disposal of PCB ballasts in sanitary landfills, even if they are not leaking. Fifteen additional states have special provisions for disposing of PCB ballasts. The District of Columbia has not promulgated regulations regarding PCB disposal, therefore guidance provided by EPA Region III is to be followed. As of December 30, 1994, EPA PCB regulations allow building owners to dispose of non-leaking PCB Small Capacitors as municipal solid waste.

Until specific disposal requirements for non-leaking PCB ballasts are established by regulation, Region III recommends that no more than 25 intact and non-leaking PCB ballasts be disposed within a 1-year time period (starting from the date when the first fluorescent light ballast is removed from service and transported) in a facility which is permitted, licensed, or registered by a State to manage municipal or industrial solid waste (i.e., landfill). Waste PCB ballasts should be packed in a lined, steel drum containing an absorbent material. Disposal of PCBs as municipal or industrial solid waste is subject to CERCLA reportable quantity requirements promulgated at 40 C.F.R. § 302.6, as discuss above.

In accordance with TSCA regulations, leaking ballasts must be handled and disposed of in the same manner as other PCB waste.

Due to the age of the MIB and SIB, additional PCB light ballasts and capacitors will continue to be removed/found by maintenance personnel and the modernization contractor. Whether the Main Interior Building modernization contractor segregates PCB light ballasts from non-PCB ones was not determined by the CASHE Team. There are numerous companies across the country that specialize in the recycling of metal from light ballasts and the proper disposal of their PCBs, if any. This type of disposal is preferred, as it is environmentally preferable to disposal of PCBs in municipal landfills.

In addition to environmental benefits of removing PCBs from the buildings, replacing the existing PCB light ballasts will have economic benefits. Replacing old PCB light ballasts with electronic ballasts using T-8 25 watt lamps instead of T-12 40 watt lamp tubes will reduce energy consumption by 25 %. Energy conservation audits at BLM facilities indicate that the payback period for relamping projects (e.g., installation of electronic ballasts using T-8 lamps) is less than 5 years.

Recommendation: **A)** Determine if the modernization contractor is segregating PCB light ballasts from the fluorescent lamp fixtures it removes and is properly disposing of them; **B)** If the modernization contractor is not segregating PCB light ballasts, require that this be done and either pay the contractor for their disposal or issue a contract for proper disposal; **C)** Identify old equipment that is scheduled for removal under the modernization contract and remove PCB capacitors for proper disposal prior to equipment removal; **D)** Inform all appropriate modernization and in-house personnel of management and disposal procedures (e.g., where to accumulate/store waste ballasts or capacitors awaiting proper disposal); **E)** Mark all ballasts and capacitors with the date they were removed from service and store them in appropriate packagings to contain any potential leakage and mark the packagings with the PCB warning label and **F)** Properly dispose of all PCB ballasts and capacitors.

Driving Reference(s): 40 CFR 761.40(c)(1) - M_L marking requirement
40 CFR 761.60(b)(2)(ii) - fluorescent light ballasts

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: The MIB Modernization project is under the administrative and operational control of GSA. The specifications for the project require the contractor to dispose of all hazardous materials in an appropriate manner, and is monitored by GSA's onsite CQM contractor.

Staff has been instructed to mark all ballasts and capacitors that may contain PCBs with the date they were removed from service, and to store them in appropriate packagings to contain any potential leakage and to mark the packagings with the PCB warning label. It is extremely unlikely that there are light ballasts containing PCBs still in service in either of the buildings, and unlikely that there are PCB-containing capacitors still in service. The small number of ballasts and capacitors that were identified during the audit were removed from the building on March 9, 2007, by the GSA hazardous materials contractor. Our new policy (see HWGEN-07-001) will address these requirements.

POTABLE WATER - PW**Finding Number: PW-07-001**

Finding: A formal preventative maintenance schedule and record are not maintained for the water treatment systems in the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class III

Discussion: Water treatment devices were found in the following locations:

- Water filter on line to ice machine in the SIB break room
- Water filter on line to ice machine in MIB John Muir Conference Room
- A series of water filters with ultraviolet radiation (UV) disinfection located in the MIB M Floor (1 West section). They system was installed in November 2004, and there is no indication that it has been serviced since that time.

The CASHE Team is aware that there are additional water treatment systems (e.g., Secretary's kitchen) in use in the MIB and SIB. This finding is also applicable to those treatment systems.

The most commonly used water filters are manufactured by Everpure and Aquapure. A water treatment system must be serviced on a routine schedule to ensure that the unit does not become a breeding habitat for heterotrophic bacteria. Most water filter systems use carbon which is an excellent breeding ground for bacteria after it becomes clogged with sediment. EPA regulations on point-of-use treatment systems prohibit the installation of point-of-use treatment systems for bacteriological contamination because routine maintenance of those systems is not typically performed and, therefore, long-term reliability is questionable at best. The point-of-entry regulations specifically require that the design of those systems address the possibility of increased heterotrophic bacteria in water treated by carbon filters. [Note: The treatment systems in use are not technically point-of-use treatment systems; therefore, the point-of-entry regulations are not applicable, but they are referenced as a best management practice.]

Water filter manufacturers typically recommend maintenance schedules for equipment and filters typically have labels that specify replacement frequency. The recommended maintenance schedules must be adhered to keep the filters from clogging, maintain the treatment efficiency of the system, and ensure that the treatment system does not become a source of microbiological contaminants. The CASHE Team researched the web site for the Everpure "Insurince" water filter, which is specifically designed for ice machines (filter model #9612-21). The cartridge has a place to write the installation date. Below that date the filter itself states, "Replace cartridge no later than one year after cartridge installation date above." However, the "operating tips" provided on the technical sheets for this filter state, "Change cartridge on a regular six month preventative maintenance schedule." The Aquapure web site also recommends filter changes every 6 months.

A filtration and ultraviolet radiation (UV) disinfection water treatment system is installed in the mezzanine above the Secretary's wing. This treatment system consists of a 10 micron carbon filter, five micron sediment filter, and a UV lamp for disinfection. The unit is marked, "Change UV Lamp every 12 months." The Pura web site recommends one a year or more frequent filter cartridge changes.

The District of Columbia's drinking water provided is microbiologically safe because it is disinfected. However, chlorine disinfectant dissipates over time, particularly if the water is stored for a period of time (e.g., a holiday weekend). There is the potential for the treatment system to become microbiologically contaminated if not maintained properly because the filters accumulate sediment that may harbor bacteria. If the chlorine residual in the treatment system drops below 0.2 mg/L, bacteria in the sediment could reproduce in the filters resulting in the contamination of water that passes through them.

Inspection and maintenance tags are posted on fire extinguishers, vehicle windshields (oil change stickers), and a wide range of equipment to remind personnel to service the equipment. Posting a maintenance record/schedule on the cabinet doors under the sink where the treatment system is located will help ensure that the treatment system is adequately maintained as it will be easily seen by employees accessing the storage beneath the sink. The Everpure filter has a space on which to write the installed date.

Recommendations: **A)** Contact the water treatment systems manufacturers to obtain their recommendations on replacement of filter cartridges and other components; **B)** Establish a formal maintenance record/schedule based on manufacturers' recommendations for each water treatment system in use and post it inside the cabinet where each treatment system is located; and **C)** Mark the installation date on all filters.

Driving Reference(s): 40 CFR 141.100(d)(2) – increase in heterotrophic bacteria from carbon filters
Safe Drinking Water Act Amendments of 1996, Section 1412(b)(4)(E) –
prohibition of point-of-use treatment for bacteriological contaminants

Point(s) of Contact: Ken Tunney

Status of Corrective Action: The filters were changed in February 2007. The preventative maintenance requirement (annual, per manufacturer's guidelines) was added to our automated preventative-maintenance program on March 1, 2007. Replacement filters (or their cartridge housings) are being marked to show the date of the last filter change.

POTABLE WATER - PW**Finding Number: PW-07-002**

Finding: Backflow preventors installed on water lines in the Main and South Interior Buildings are not tested annually.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Backflow preventors were found throughout the MIB and SIB by the CASHE Team. Following are locations where backflow devices were observed:

- SIB fire pump room on fire protection supply and lawn irrigation system
- SIB central plant (reduced pressure backflow preventor in the upper piping, without a drain to collect water that is release when backflow is sensed)
- Chilled water piping in wings in MIB modernized wings
- Chilled water piping along the back wall of the MIB central plant (three locations reduced pressure backflow preventors)
- MIB central plant (three reduce pressure backflow preventors)

None of the backflow preventors had tags on them indicating when they were last inspected, although several have tags indicating when they were installed. As an example, the reduced pressure backflow preventors in the central plant had tags noting they were installed on February 20, 2002.

There are probably other backflow preventors in MIB and SIB in addition to those identified by the CASHE Team. Backflow preventors could not be found on water lines supplying fire protection water. Backflow preventors are required on the water that supplies the fire protection sprinkler systems because its piping is not approved for potable water and the water is stagnant in the piping.

When a water line breaks, the rapid pressure change causes water to be drawn from other parts of the distribution system. For example, backflow of stagnant water from the sprinkler system into the drinking water lines can occur during a line break. The District of Columbia has enacted regulatory requirements to prevent the backflow of contaminants that may be hazardous to human health into drinking water supplies.

The District requires that backflow preventors be tested annually by a certified tester. The required annual fire sprinkler system inspection and testing could be combined with the backflow preventor (see the related Fire Protection finding for details on the fire sprinkler system testing). Records of the installation and testing of backflow prevention devices must generally be kept for at least 3 years.

Aarcher contacted Mr. Lee (202.787.2395) with the District of Columbia Water and Sewer Authority (DCWASA) about the installation and maintenance of backflow preventors. Mr. Lee stated that backflow prevention devices are required for separating interior domestic potable water sources from fire protection services and other cross connections. He also confirmed that the DCWASA Office of Backflow Prevention Devices does not have a "grandfather clause," that exempts older buildings from this requirement.

When a water line breaks, the rapid pressure change causes water to be drawn from other parts of the distribution system. For example, backflow of stagnant water from the sprinkler system into the drinking water lines can occur during a line break.

Cross connections (e.g., between the fire protection sprinkler system or lawn irrigation systems and drinking water) typically require testable backflow prevention devices, such as double-check valve assemblies, that are professionally installed.

Recommendation: **A)** Determine if the fire protection water supply piping in the MIB has a backflow preventor on it and, if not, include its installation in the modernization contract; **B)** Inventory all backflow preventors in the MIB and SIB; **C)** Establish an annual preventative maintenance requirement to contract for their annual testing of all backflow preventors and repair of those that fail; and **D)** Require that a tag be placed on each backflow preventor to document its successful testing.

Driving Reference(s): Title 21 DCMR 5401.1 - District of Columbia Water and Sanitation regulations

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Scheduled for completion by October 1, 2007. All backflow preventors in the Interior Complex will be identified and catalogued to ensure that each is included in our equipment maintenance program, if/as required by GSA. Annual testing by a qualified person/firm will include tagging each device to document successful testing.

POTABLE WATER - PW**Finding Number: PW-07-003**

Finding: Hose bibs are not equipped with vacuum breakers to prevent contaminated water from being drawn into the drinking water piping.

Repeat Finding: N/A

Recurring Issue: N/A

Priority Level: Class IB

Discussion: Hose bids at the MIB and SIB are not equipped with vacuum breakers. As an example, several hose bibs in the SIB central plant are not equipped with vacuum breakers. One of the hose bibs had a garden hose connected to it. Hose bibs in the modernization wings have vacuum breakers incorporated as an integral part of the tap. The CASHE Team has been told that the SIB is not included in the current modernization effort.

When a water line breaks, the rapid pressure change causes water to be drawn from other parts of the distribution system. Backflow of contaminated water into the drinking water lines can occur during a line break if, for example, a hose is submerged in a bucket of dirty water. The State has enacted regulatory requirements to prevent the backflow of contaminants that may be hazardous to human health into drinking water supplies.

Vacuum breakers can be purchased that screw into the threads of yard hydrants and hose bibs. A flap inside the device prevents potentially contaminated water from back flowing into the water system. This flap retains water which can freeze, causing outdoor hydrants or hose bibs to crack. Arrowhead Brass Products makes a vacuum breaker with a self-draining feature. The Arrowhead Brass Products vacuum breaker (#59ABP) is available at local plumbing or hardware stores. Information is also available at www.arrowheadbrass.com by following the links to products and vacuum breakers. This vacuum breaker costs approximately \$13.00.

Recommendation: Purchase, stock, and install vacuum breakers for installation by maintenance personnel in the mechanical rooms of the Main and South Interior Buildings.

Driving Reference(s): Title 21 DCMR 5401.1 - District of Columbia Water and Sanitation regulations

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Completed on April 19, 2007.

SPILL PREVENTION CONTROL AND COUNTERMEASURES – SPCC**Finding Number: SPCC-07-001**

Finding: A Spill Prevention, Control and Countermeasures (SPCC) plan has not been prepared for the MIB.

Repeat Finding: No

Recurring Issue: No

Priority Level: Class IB

Discussion: The oil-filled operational equipment (transformers) and aboveground biodiesel storage tank at MIB triggers the requirement for an SPCC plan. Transformers and oil storage tanks in operation at the MIB include, but are not limited to, the following:

- MIB 7th Floor (6 West) – two transformers each containing 219 gallons of oil (MIB is planning to install two more transformers in this location)
- MIB 7th Floor (3 East) – four transformers each containing 219 gallons of oil
- MIB Parking Garage (Room B621) - four transformers each containing 324 gallons of oil
- MIB Parking Garage (Room B625) – 500-gallon tank of biodiesel for the emergency generator
- MIB Basement (near entrance to Central Plant) – two transformers of unknown capacity
- Reservoirs for elevator hydraulic fluid – applicable if fluid storage capacity is 55 gallons or more

SPCC regulations apply to facilities that have an aggregate aboveground storage capacity of 1,320 gallons or more of oil in containers with a volume of 55 gallons or greater, or have the capacity to store more than 42,000 gallons of oil in underground storage tanks and, due to location, could reasonably be expected to discharge oil in “harmful quantities” to “navigable waters” of the United States. The definition of oil includes petroleum, fuel oil, synthetic and mineral oils, sludge, and grease.

Transformers and elevator hydraulic fluid reservoirs are regulated as oil-filled operational equipment under SPCC regulations and must be included in determining SPCC applicability, if they contain more than 55 gallons of oil (e.g., mineral oil, hydraulic fluid). In a July 17, 2002 Final Rule, EPA states that “we proposed that certain facilities having equipment containing oil that is used for operational purposes, such as electrical transformers, would not have to comply with secondary containment requirements and certain other provisions...because such facilities are not bulk storage facilities... we have amended [the SPCC regulations] to clarify that using oil, for example operationally, may subject a facility to SPCC jurisdiction.” EPA further explains that it has “specifically excluded oil-filled electrical, operating, or manufacturing equipment from the definition [of a bulk storage container and that] ...facilities with equipment containing oil for ancillary purposes are not required to provide the secondary containment required for bulk storage facilities ...Oil-filled equipment must meet other SPCC requirements, for example, the general requirements of this part, including [the requirement to] provide appropriate containment and/or diversionary structures to prevent discharged oil from reaching a navigable watercourse.”

In other words, transformers containing more than 55 gallons of mineral oil must be included when determining whether a facility is subject to SPCC regulations, but secondary containment structures (e.g., berms) are not required, provided adequate means of responding to spills are provided (e.g., spill kits). Further, in its *SPCC Guidance for Regional Inspectors* (Version 1.0; November 28, 2005), EPA recognizes that secondary containment may be impracticable for oil-filled equipment (e.g., vaulted transformers, hydraulic units associated with elevators/lifts, pad-mounted transformers at customer sites, and oil-filled cable systems).

The 500-gallon biodiesel tank is considered a “vaulted tank,” and is regulated as an aboveground tank under SPCC regulations. Underground storage tanks regulated by 40 CFR 280 are exempt from SPCC regulations; however, vaulted tanks are not regulated under 40 CFR 280. In accordance with the July 17, 2002 Final Rule by EPA (67 FR 47061), “vaulted tanks are [not exempted from SPCC regulations because these tanks are] generally excluded from the scope of 40 CFR part 280, [which excludes] ‘storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.’” These tanks might reasonably experience a discharge as described in 40 CFR 112.1(b). Therefore, it is reasonable that they be within the scope of [the SPCC regulations]. Merely because these tanks are the subject of local fire and safety regulations does not guarantee that there will be adequate environmental protection to prevent a discharge...because that is not the purpose of those regulations. Such codes may provide lesser protection than [SPCC regulations].”

SPCC regulations apply to facilities storing more than the prescribed quantities of oil and that due to location, could reasonably be expected to discharge oil in “harmful quantities” to “navigable waters” of the United States. The oil in transformers, the biodiesel tank, and any other containers at the MIB are stored inside the building, where a discharge to navigable waters is unlikely. The owner or operator of each facility is responsible for determining the potential for a discharge from his/her facility, and EPA has provided guidance in its *SPCC Guidance for Regional Inspectors*, Section 2.4.2, Reasonable Expectation of Discharge (Version 1.0; November 28, 2005). In this guidance, EPA states that “the rule does not define the term ‘reasonably be expected.’ According to §112.1(d)(1)(i), this determination must be based solely upon consideration of the geographical and locational aspects of the facility [emphasis added]. An owner or operator should consider the location of the facility in relation to a stream, ditch, gully, or storm sewer; the volume of material likely to be spilled; drainage patterns; and soil conditions. An owner or operator may not consider constructed features, such as dikes, equipment, or other manmade structures that prevent, contain, hinder, or restrain a discharge as described in §112.1(b), when making this decision.” The walls, basement construction, and other features of the MIB building are manmade structures, and the facility is located near stormwater drainage structures and approximately 3,000 feet from the Potomac River.

To attempt to demonstrate and document that the facility is not subject to SPCC regulations based on facility features or location, EPA concurrence would be necessary. The CASHE Team has officially requested an interpretation of the applicability of SPCC regulations to the facility, given the positioning of the transformers and tank within the building from EPA Region 3. The request does not include any mention of BLM, the Department, or the facility. Any response will be forwarded to NBC by the BLM CASHE Program Lead.

The term “navigable waters” has been broadly defined by Federal regulations to include all interstate waters; intrastate lakes, rivers and streams that are used by interstate travelers or from which fish or shellfish are taken and sold interstate; and tributaries of these waters, including wetlands, and gullies or arroyos that are dry most of the time. The Potomac River and its tributaries constitute navigable waters. Any discharges to stormwater drainage systems leading to these tributaries also constitute discharges to navigable water.

SPCC requirements include developing and implementing an SPCC plan that adequately describes the facility and how the facility complies with 40 CFR 112. In addition, if the facility has greater than 10,000 gallons of petroleum, oil, or lubricants stored aboveground at the facility or has had a single spill greater than 1,000 gallons or two spills exceeding 42 gallons each within a 12-month period for 3 years prior to the SPCC plan certification date, the plan must be reviewed and certified by a licensed professional engineer (PE). If the facility stores less than 10,000 gallons of petroleum, oil, or lubricants, has not had a spill greater than 1,000 gallons or two spills exceeding 42 gallons each in the previous 3 years, the facility may prepare, self-certify, and implement an SPCC plan without a PE certification.

Facilities subject to SPCC regulations that were in operation prior to August 16, 2002, that have not prepared and implemented a plan in full compliance with 40 CFR 112 are in violation of SPCC plan requirements. New facilities and SPCC facilities with compliant plans must update and implement these plans in accordance with new regulations.

In July 2002, EPA published amended Oil Pollution Prevention regulations promulgated under authority of the Clean Water Act. The updated regulations revised SPCC applicability and amended SPCC plan requirements, among other modifications. The regulations have undergone multiple updates, as a result the compliance dates have been extended. As the regulation currently stands, a facility that was in operation prior to August 16, 2002 and that had prepared and fully implemented an SPCC plan, must update and implement its plan no later than July 1, 2009. New facilities subject to SPCC regulations must prepare and implement a plan before becoming operational. The plan must be reviewed every 5 years and the facility owner must certify that the plan review is conducted. A plan required to be certified by a PE must be recertified by a PE only if technical amendments are made.

The SPCC regulations provide temporary alternatives for those facilities that are unable to fully comply with the regulations at the time the SPCC plan is written and certified. If the owner of an SPCC facility requests an extension, the EPA Regional Administrator may authorize an extension for the full implementation of the plan or any amendment of the plan beyond the time permitted. The written request must include an explanation of the cause for the delay, the aspect of the plan affected by the delay, actions being taken to minimize or mitigate the delay, and a proposed time schedule for the implementation of corrective actions.

The SPCC plan must be prepared in accordance with good engineering practices and must include or address the following information:

- 1) A discussion of the facility's conformance with the SPCC requirements.
- 2) A description of the physical layout of the facility, including a facility diagram that denotes the location and contents of each container (including completely buried tanks, transfer stations, transformers, and connecting pipes). In accordance with the July 17, 2002 SPCC Final Rule, transformers containing 55 gallons or more of oil are covered by these regulations, but are not considered bulk containers for constructed secondary containment requirements (i.e., not covered by 40 CFR 112.8(c)). As stated previously, this means that transformers containing more than 55 gallons of mineral oil must be included when determining whether a facility is subject to SPCC regulations, but secondary containment structures (e.g., berms) are not required, provided adequate means of responding to spills are provided (e.g., spill kits).

- 3) Discharge prevention measures, discharge and drainage controls, and containment and/or diversionary structures or equipment to prevent a discharge. At a minimum, one of the following prevention systems, or equivalent, must be employed at potential spill sites: sorbent materials (e.g., spill kit); dikes, berms, or retaining walls (including double-walled tanks); curbing; culverting, gutters, or other drainage; or diversion or retention ponds. Secondary containment for all bulk storage containers (i.e., ASTs, 55-gallon drums) sufficient to contain capacity of largest single container and sufficient freeboard for precipitation. Diked areas must be sufficiently impervious to contain discharge oil.
- 4) Countermeasures for discharge discovery, response, and cleanup (for the facility's capability and those that might be required from a contractor).
- 5) Contact list and phone numbers of the facility response coordinator, National Response Center, cleanup contractors with whom the facility has a contract for response, and all Federal, State, and local agencies who must be contacted in case of a discharge.
- 6) Information to enable a person reporting a discharge to relay details and information required in 40 CFR 112.7(a)(4). [**Note:** If the facility has a response plan developed in accordance with 40 CFR 112.20, the response plan should contain this detail and it is not required to be repeated in the SPCC plan.]
- 7) Procedures that will be used when a discharge occurs. These procedures must be described in a way that will be readily usable in an emergency. [**Note:** If the facility has a response plan developed in accordance with 40 CFR 112.20, the response plan should contain this detail and it is not required to be repeated in the SPCC plan.]
- 8) A prediction of the direction, flow rate, and total quantity of oil that could be discharged from the facility as a result of each major equipment failure.
- 9) Written procedures for inspections and tests. [**Note:** Records of inspections and tests must be kept with the SPCC plan for a minimum of 3 years.]
- 10) Designation of the person, who reports to facility management, that is accountable for discharge prevention; and a description of the annual training program for oil-handling personnel (including training on operation and maintenance of equipment to prevent discharges; discharge protocols; applicable pollution control laws, rules, and regulations; general facility operations; and the contents of the facility SPCC plan).
- 11) A description of facility security. The regulations require SPCC facilities to be fully fenced and locked, and to have guarded entrance gates when the facility is unattended. Lighting must be provided to assist in discovering discharges that occur during dark hours and to deter acts of vandalism that may cause discharge. [**Note:** The plan may deviate from the security requirement, pursuant to 40 CFR 112.7(a)(2) if equivalent environmental protection by some other means is provided. The plan must state the reason for the deviation, details on alternative methods, and a description of how the facility will achieve equivalent environmental protection.]
- 12) A complete discussion of conformance with other requirements, such as OSHA and NFPA, additional effective discharge prevention and containment procedures, or any applicable State rules, regulations, and guidelines.

The SPCC plan must also address additional facilities or procedures, methods, or equipment not yet fully operational, the plan must discuss these items in separate paragraphs, and must explain separately the details of installation and operational start-up. A schedule for implementation of those measures is required in the SPCC plan.

SPCC Plans must be reviewed every 5 years. This review must be documented by a signature page in the SPCC plan. All revisions that involve technical amendments (i.e., equipment or significant operational changes) must be certified by a registered PE. All amendments are to be implemented as quickly as practicable, but no later than 6 months following preparation of the amendment. All SPCC plans must be consistent with any additional, more stringent State and local requirements for the management of oil storage tanks and the prevention of discharges to waters of the State. A copy of the SPCC plan must be maintained at the facility if it is attended at least 4 hours per day.

If a facility is reasonably expected to cause substantial harm to the environment by discharging into or on navigable waters, it must fully comply with 40 CFR 112.20, and must develop a facility response plan in addition to an SPCC plan. A facility can determine whether or not it is expected to cause substantial harm to the environment from a discharge by filling out the "Substantial Harm Criteria" questionnaire of 40 CFR 112, Appendix C, Attachment CII. A copy of this questionnaire must be included in the SPCC plan by all facilities that answer "NO" to any question, even if they are not expected to cause substantial harm to the environment from a discharge.

A complete inventory of oil-containing equipment at the SIB has not been compiled; however, a 1,000-gallon diesel tank for the SIB emergency generator, combined with only two of the transformers in use at MIB, may cause the SIB to become a regulated SIB facility. This finding and discussion apply to the SIB also, if 1,320 gallons or more of oil are stored in containers and operational equipment with individual capacity of at least 55 gallons.

Recommendation: **A)** Perform a complete inventory of all tanks, containers, and operational equipment (e.g., transformers, elevator and escalator hydraulic equipment) with individual oil storage capacities of 55 gallons or more, noting the oil type, volume, and location for both the MIB and SIB; **B)** Consult with EPA Region 3 on whether the biodiesel tank, transformers, and elevator and escalator hydraulic fluid within the MIB and SIB are within the scope of the SPCC Regulations [**Note:** The CASHE Team has requested guidance from EPA Region 3 on whether containers and operational equipment within a building are subject to SPCC regulations, but those questions do not identify DOI, BLM, or the MIB or SIB buildings. Any guidance received will be provide to the NBC by the BLM CASHE Program Lead.]; and **C)** Implement the guidance and direction received from EPA including the preparation and implementation of an SPCC plan that addresses all required elements, if necessary.

Driving Reference(s): 40 CFR 110.3 – harmful quantities
40 CFR 112.1(d)(2)(i) and (ii) – general applicability
40 CFR 112.2 – definitions
40 CFR 112.3 – requirements to prepare and implement SPCC plan
40 CFR 112.3(d) – PE certification
40 CFR 112.3(f) – extension of time
40 CFR 112.5 – SPCC plan amendments (3 years)
40 CFR 112.7 – SPCC plan general requirements
40 CFR 112.7(a)(2) – plan deviations
40 CFR 112.20 – facility response
67 Federal Register 47054 - electrical facilities and other operational users of oil (transformers)
SPCC Guidance for Regional Inspectors, Section 2.5.1 – capacity thresholds (transformers)

Point(s) of Contact: Gary Peacock and Ken Tunney

Status of Corrective Action: Plan to complete an inventory of all containers and operational equipment that contain 55 gallons or more of oil by May 29, 2007. We plan to have an SPCC Plan in place and operational by October 31, 2007.

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT, TITLE III - SARA**Finding Number: SARA-06-001**

Finding: NBC has not informed the District of Columbia Emergency Management Agency that it is storing lead-acid batteries, and potentially other hazardous materials, above the hazardous chemical reporting threshold in EPA's Emergency Planning and Community Right-to-Know regulations.

Repeat Finding: No

Recurring Issue: No

Priority Level: Class IC

Discussion: The MIB uses lead-acid batteries for a variety of purposes. The CASHE Team identified lead-acid batteries in the following locations (this list is not a complete inventory and the NBC must perform a thorough inventory to accurately report on the quantity and location of its lead-acid batteries and other hazardous materials):

- MIB 7th Floor (6 East), battery backup for phone system – 216 battery cells in an “MGE UPS Systems” unit labeled “COMET” with a sticker inside the cabinet stating the weight is 3,164 pounds
- MIB 7th Floor (“SPP” Room) – 20 lead-acid batteries for phone system
- MIB 7th Floor – 8 lead-acid batteries on cart in main corridor across from pillar A-35
- MIB Parking Garage, Room B623 – 20 lead-acid batteries

The above list is not an all inclusive list of lead-acid batteries found at the MIB. It is intended only to illustrate that, at a minimum, the MIB has enough lead-acid batteries to be subject to EPCRA reporting requirements. NBC must perform an inventory of all lead-acid batteries stored/used in the MIB and SIB. The CASHE Team observed lead-acid batteries being used in a variety of ways during the audit, including but not limited to the following:

- backup power supply for computers, phones, and emergency lighting
- floor cleaning equipment used by janitorial contractor
- forklifts

Lead-acid batteries contain lead and sulfuric acid. Sulfuric acid is an extremely hazardous substance (EHS) under Section 302 of Emergency Planning and Community Right-to-Know Act (EPCRA), and has a Threshold Planning Quantity (TPQ) and a Reportable Quantity of 1,000 pounds. Lead-acid batteries also contain lead, which is considered a hazardous substance but not an EHS and, therefore, has a higher TPQ of 10,000 pounds. The reporting requirements for sulfuric acid is the same for wet and gel cell lead-acid batteries. Appendix A to Part 355 (Emergency Planning and Notification) lists EHSs, and sulfuric acid is specifically listed by its Chemical Abstract System (CAS) and physical state is not relevant.

EPCRA is Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and is also referred to as SARA Title III. EPCRA was the United States congressional response to serious chemical incidents that occurred in Bhopal, India and Institute, West Virginia, in the two years prior to its enactment. The incident in Bhopal resulted in 2,000 immediate fatalities with thousands more dying of related illness. While the accident in West Virginia caused no fatalities, the circumstances were similar and aroused concern.

EPCRA is designed to provide all levels of government and the public with information required to plan for a chemical incident. The law was meant as a starting point for a dialogue between community representatives, emergency response personnel, and industry. The purpose of the Act is to increase public knowledge and access to hazards in their community, and encourage and support emergency planning and response.

EPCRA requires each state to establish a state emergency response commission (SERC), to designate local emergency planning districts, and to appoint a local emergency planning committee (LEPC) for each district. In the District of Columbia, these are the same agency. The contact in the District of Columbia is the Emergency Management Agency (DCEMA):

Current Administrator: Chris Voss (202-727-6161)
DC Emergency Management Agency
2720 Martin Luther King Jr. Avenue, SE
Second Floor
Washington, DC 20032

Industries are required to provide the government with information about their activities with hazardous and toxic chemicals. The SERC and the LEPC use the information in their emergency planning activities and make it available to the public. These regulations are commonly referred to as “Community Right-to-Know” requirements.

EPCRA has four major provisions:

- Emergency planning
- Emergency release notification
- Hazardous chemical storage reporting requirements
- Toxic chemical release inventory

The reporting requirements of EPCRA were put in place by Congress to provide communities information regarding hazardous chemicals in their neighborhoods and to provide emergency responders information regarding the hazards they must face in an emergency at the site. Each of these reporting requirements are discussed in more detail below.

Reporting Requirements

Section 302 Reporting Requirements: Under Section 302, facilities storing EHSs over the TPQ are required to notify the DCEMA. In general, this is done by submitting a letter or memo to the DCEMA stating that the facility stores one or more EHS substances.

Sulfuric acid (component of lead-acid batteries) is an EHS under Section 302 of EPCRA. The reporting threshold under Section 302 for sulfuric acid is 1,000 pounds.

Section 311 reporting requirements: Federal regulations require that a facility submit an MSDS to the DCEMA for each hazardous chemical present at the facility at **any time during the previous calendar year** in amounts equal to or greater than 10,000 pounds (or 4,540 kg). The same must also be done for EHSs present in an amount greater than or equal to 500 pounds (227 kg) or the TPQ, whichever is lower. The notifications were to have been submitted on or before October 17, 1990 (or within 3 months after the facility became subject to this regulation). [Note: “Hazardous chemical” is defined in SARA regulations as chemicals for which OSHA requires an MSDS. OSHA’s HAZCOM Standard, 29 CFR 1910.1200, defines a hazardous chemical as any chemical that is a physical or health hazard.]

No special forms are needed under Section 311 requirements. Section 311 requires facilities that have MSDSs for chemicals held above certain quantities to submit either copies of their MSDSs or a list of MSDS chemicals to the DCEMA and local fire department. The facility owner/operator must simply compile all of the MSDSs for chemicals that are above the reporting thresholds and submit copies of the MSDSs to the DCEMA and local fire department. If the facility owner or operator chooses to submit a list of MSDS chemicals, the list must include the chemical or common name of each substance and must identify the applicable hazard categories. These hazard categories are:

- Immediate (acute) health hazard;
- Delayed (chronic) health hazard;
- Fire hazard;
- Sudden release of pressure hazard; and
- Reactive hazard.

Facilities must submit MSDSs or a list of MSDSs chemicals within 3 months after they start using a chemical or increase the quantity to exceed the thresholds.

The threshold levels for reporting hazardous chemicals are as follows:

- the TPQ or 500 pounds at any one time, whichever is less for EHS;
- 10,000 pounds at any one time for hazardous substances.

For EHSs, the reporting threshold is the TPQ or 500 pounds, whichever is lower. The TPQ for sulfuric acid is 1,000 pounds; therefore, the Section 311 reporting threshold for sulfuric acid is 500 pounds.

Section 312 reporting requirements: In addition to submitting MSDSs for all hazardous materials stored at the facility in amounts greater than, or equal to, 10,000 pounds or its TPQ, the NBC must also submit a Tier I form annually. The Tier I form was required as of March 1, 1991 and addresses all hazardous chemicals present at the facility at any one time during the preceding calendar year in amounts equal to, or greater than, 10,000 pounds or its TPQ.

For EHSs, the annual Tier I/II reporting threshold is the TPQ or 500 pounds, whichever is lower. The TPQ for sulfuric acid is 1,000 pounds; therefore, the Tier II reporting threshold for sulfuric acid is 500 pounds. Facilities must notify immediately (and follow-up in writing) the DCEMA if there is a release to the environment of a hazardous substance over its minimum reportable quantity. In addition, if the weight of all of the reportable batteries exceeds 10,000 pounds, then these batteries must be listed on the form separately from the sulfuric acid.

An example of EPA's Tier I form is provided in 40 CFR 370.40(b). General information regarding the physical and health hazards associated with the hazardous chemicals, their maximum and average daily amount, and their general locations are required on this one-page form. [**Note:** The regulations allow the facility to submit a Tier II form in lieu of the Tier I. The Tier II form, provided in 40 CFR 370.41(b), includes more detailed information than the Tier I, such as storage location. The Tier II form is only required when requested by the DCEMA or fire department.]

Because many SERCs have added requirements or incorporated the Federal contents in their own forms, Tier I/II forms should be obtained from the DCEMA.

Section 313 – Toxic Release Inventory

Section 313 (commonly referred to as the Toxic Release Inventory or TRI) requires certain facilities to complete a Toxic Chemical Release Inventory Form annually for specified chemicals. Certain businesses are required to submit reports each year on the amounts of EPCRA section 313 chemicals their facilities release into the environment (either routinely or as a result of accidents), or otherwise managed as waste. The form must be submitted to EPA and the State on July 1 of each year and cover releases and other waste management of toxic chemicals that occurred during the preceding calendar year. In addition, the Pollution Prevention Act of 1990 requires collection of information on source reduction, recycling, and treatment.

The DCEMA must make the hazardous chemical inventory and accidental release information submitted by local facilities available to the public.

For 2005, sulfuric acid (CAS#7664-93-9) must be reported under Section 313 only if it is an aerosol form. In 1995, EPA deleted non-aerosol forms of sulfuric acid from the list of toxic chemicals subject to section 313 based on EPA's review of the available data on the health and environmental effects of sulfuric acid.

Calculating the Amount of Sulfuric Acid in a Battery

A rule-of-thumb used by regulatory agencies is that an average car battery contains approximately 5 pounds of sulfuric acid.

The amount of sulfuric acid in a battery can be calculated using the volume of battery electrolyte (sulfuric acid solution), density of the electrolyte (lbs/gallon), and the percent (%) concentration of sulfuric acid in the electrolyte. This information may be available from the manufacturer or MSDS. The amount of sulfuric acid in the battery can be calculated using the following equation:

$$\text{Sulfuric acid (pounds)} = \text{gallons of electrolyte} \times \text{density of electrolyte} \times \% \text{ sulfuric acid}$$

If the necessary data is not available, a typical estimate of sulfuric acid content in car-sized batteries is 18% of the battery's weight. The amount of lead is 70% of the battery's weight.

Reporting a Release

EPCRA requires facilities to notify DCEMA of releases of hazardous substances and extremely hazardous substances when the release equals or exceeds the reportable quantity. Facilities must notify immediately (and follow-up in writing) the DCEMA if there is a release to the environment of a hazardous substance over its minimum reportable quantity. This notification will activate emergency plans. The reportable quantity for sulfuric acid is 1,000 pounds.

Failure to Report Hazardous Substances over the Reporting Threshold

Lead-acid batteries are a potential fire source. Emergency response personnel that attempt to suppress a fire in a building containing large quantities of lead-acid batteries or other EHSs must be made aware of the presence of sulfuric acid and other EHSs. EPCRA is the regulatory process by which emergency personnel can plan for such emergencies.

In October 2002, a USDA Forest Service forest in New Hampshire received a compliance violation from EPA for failure to report lead-acid batteries stored in quantities exceeding the TPQ. EPA observed the presence of 97 car batteries (5 pounds of sulfuric acid each), 19 snowmobile batteries (3 pounds of sulfuric acid each), and two heavy-duty batteries (32 pounds of sulfuric acid each) throughout the Forest ("facility"), with a total of sulfuric acid more than 100 pounds over the 500-pound TPQ.

The CASHE Team observed 284 batteries at MIB. Using the “rule of thumb” that each battery contains 5 pounds of sulfuric acid, the MIB is storing at least 1,420 pounds of an EHS, well over the 500-pound reporting limit.

EPCRA Section 325 allows civil and administrative penalties ranging up to \$10,000-\$75,000 per violation or per day per violation when facilities fail to comply with the reporting requirements. Criminal penalties up to \$50,000 or 5 years in prison apply to any person who knowingly and willfully fails to provide emergency release notification.

Consumer Product Reporting Exemption

There is a Consumer Product Exemption to Tier II reporting. To meet this exemption, the battery must meet either one of the following criteria:

- 1) Must be used for only personal, family, or household purposes at the facility; *or*
- 2) Must be labeled in accordance with the regulations of the Consumer Product Safety Commission (CPSC) and be packaged (prior to installation) for sale to consumers.

Small batteries in personal computers and other office equipment will also usually meet the criteria for the exemption. In general, the following types of batteries are not consumer products (i.e., not available to the general public) and therefore are not covered by this exemption:

- large batteries in a building (such as those used for power backup systems for telecommunications, computer systems, and lighting)
- large batteries in electric forklifts

For a facility that has a fleet of vehicles, the exemption can be met if the car batteries are bought from a manufacturer who sells the same product to the general public (i.e., who meets the CPSC labeling requirements).

Other Hazardous Chemicals

Because lead is an OSHA hazardous chemical, it has a reporting threshold of 10,000 pounds. Additional hazardous chemicals the CASHE Team observed at the MIB and SIB that may exceed the 10,000 pound reporting threshold include the following:

- Refrigerants
- Hydraulic oil
- Lead in lead-acid batteries
- Gasoline
- Biodiesel

Recommendation: **A)** Conduct an inventory of lead-acid batteries, biodiesel, other bulk fuel, and other hazardous materials to determine what hazardous materials are present in EPCRA-reportable quantities in the MIB and SIB, noting the hazardous material, its size, and location; [**Note:** Marking the location on a floor plan is also recommended because emergency responders will likely ask for this information.]; **B)** Calculate the amount of sulfuric acid and lead contained in the lead-acid batteries stored throughout the facility (including back-up batteries for computer, phones, emergency lighting; forklift batteries; on stored batteries, and in-use in equipment such as battery powered floor cleaners used by the janitorial contractor); **C)** Contact the DC Emergency Management Agency to report storage of hazardous materials in excess of EPCRA reporting requirements (e.g., 14,000 pounds of biodiesel and sulfuric acid in quantities greater than 1,000 pounds, lead in quantities greater than 10,000 pounds) and obtain a Tier I/II form; **D)** Submit Tier I/II form to the DC Emergency Management Agency for sulfuric acid, lead, and other EPCRA-reportable hazardous materials; and **E)** Submit the Tier I/II form annually.

Driving Reference(s): 40 CFR 370.20(b) – minimum threshold levels
40 CFR 370.21 - MSDS reporting
40 CFR 370.21(c) - supplemental MSDS reporting
40 CFR 355, Appendices – lists of extremely hazardous substances
40 CFR 370.40(b) - Tier I form
40 CFR 370.41(b) - Tier II form
40 CFR 355.40 - emergency release notification
Executive Order 12856 – requirement for release reporting

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Began work to inventory all batteries, biodiesel, other bulk fuel, and other hazardous materials on April 30, 2007, and plan to complete this work by August 31, 2007.

Information from the inventory will be used to calculate the amount of sulfuric acid contained in the lead-acid batteries and to identify those materials which may be in excess of EPCRA reporting requirements. If/As appropriate, we will provide this information to SERC, and we will submit a Tier II form for lead-acid batteries and/or sulfuric acid and other EPCRA-reportable hazardous materials to the District of Columbia SERC. Scheduled for completion on February 15, 2008. Thereafter, we will submit a Tier II form for lead-acid batteries and/or sulfuric acid and other EPCRA-reportable hazardous materials to the District of Columbia SERC on an annual basis.

BUILDING CODE - BCODE**Finding Number: BCODE-07-001**

Finding: The MIB and SIB have fire-resistant walls with unprotected openings, reducing their fire resistance performance.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: Specific MIB and SIB areas have rated fire walls. The MIB Server Room and adjacent telecom storage room has openings in their walls (also called penetrations) for conduit and wiring to pass through. The utility space between SIB Rooms 120 and 121 has utility wall penetrations approximately 10 feet high. A ceiling opening that penetrates several floors is present in the MIB M Floor near column 3-N-38. In addition, the MIB 6 west transformer room has wall penetrations for electrical wiring and a ceiling opening near 1 east column 3-N-38 is present.

NFPA prohibits penetrations in fire resistant walls that would allow fire or smoke to pass through. Penetrations for cables, cable trays, conduits, pipes, tubes, combustion vents and exhaust vents, wires, and similar items to accommodate electrical, mechanical, plumbing, and communications systems that pass through a wall, floor, or floor/ceiling assembly constructed as a fire barrier shall be protected by a firestop system or device. The firestop system or device shall be tested to meet national recognized performance criteria, such as ASTM E 814, Standard Test Method for Fire Tests of Through Penetration Fire Stops, or UL 1479, Standard for Fire Tests of Through-Penetration Firestops.

A variety of rated products are available to seal openings in fire resistant walls and ceilings. Small openings can be sealed with fire resistant spray foams. Hilti (CP 620 Fire Foam is one of their products) and 3M (3M FireDam Spray 100 is one of their products) are two manufacturers of approved foams. The conduit openings can be sealed with a material designed for that purpose, such as 3M Fire Barrier Moldable Putty. Larger openings will require installation of gypsum board or other approved materials providing an equivalent fire rating.

Recommendation: **A)** Inspect all wall, ceiling, and floor penetrations through the buildings' 2-hour rated stairwells, identify all improperly sealed penetrations, and seal those penetrations and conduit openings with materials that provide an equivalent fire resistance rating; and **B)** Repair other penetrations as they are identified in other non-fire areas (e.g., telephone and mechanical rooms, janitor closets).

Driving Reference(s): 29 CFR 1910.37 - fire protection ratings
NFPA (2006) 101-8.3.5 – penetrations and openings in fire barriers
IBC (2003) 712.3.1 – fire-resistance-rated walls through penetrations

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Work to inspect all wall, ceiling, and floor penetrations through the buildings' 2-hour rated stairwells, identify all improperly sealed penetrations, and seal those penetrations and conduit openings with materials that provide an equivalent fire resistance rating is underway. As penetrations are identified in rated areas, such as, egress stairways and non-rated areas, they are being closed with a passive (intumescent) fire- and smoke-stop material. Work to seal penetrations in all rated areas is scheduled for completion by November 30, 2007. As penetrations in non-rated areas are identified, they will be sealed.

With regard to the specific items mentioned in the discussion paragraph: **1)** The Modernization contractor stuffed the openings in the MIB server room with fire pillows on March 12, 2007; **2)** The ceiling opening that penetrates several floors in the MIB (near column 3-N-38) will be corrected in phase as the Modernization project progresses; **3)** The Modernization contractor stuffed the openings in the transformer room (M-floor, wing 6-west) with fire pillows on March 12, 2007.

BUILDING CODE - BCODE

Finding Number: BCODE-07-002

Finding: A hot water tank in the SIB central plant does not have a discharge pipe on its temperature- and pressure emergency-relief valve.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: A 120-gallon hot water tank in the SIB central plant is not equipped with a discharge pipe on the temperature and pressure relief valve. The purpose of a discharge pipe is to direct pressurized hot water in a downward direction to the floor. An improperly sized or positioned discharge pipe creates a hazard in that hot water could spray out of the valve and burn a person, and should be directed to the floor.

The Uniform Building Code requires that temperature and pressure relief valves have discharge pipes that extend downward to within 18 inches from the floor. The discharge pipe must be of the proper inside diameter so that it does not restrict water flow, no valves may be installed, and the end of the pipe needs to be smooth (no threads).

Recommendation: Install a discharge pipe on the hot water tank's temperature and pressure relief valves so it extends to within 18 inches of the floor and is positioned in a downward direction.

Driving Reference(s): UBC (2003) - 1008.0 – safety relief valve discharge

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: New discharge pipe installed on March 8, 2007.

COMPRESSED GAS AND COMPRESSED AIR EQUIPMENT - CAIR**Finding Number:** CAIR-07-001**Finding:** Air compressors are not routinely drained to prevent the accumulation of oil and water.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 4

Discussion: Portable air compressors are used at the MIB and SIB. No documentation of routine draining of the receiver tanks is available for any compressor. Following are example locations where improperly maintained air compressors were identified:

- SIB central plant (label on tank suggests weekly draining)(1 cup of rusty water drained from compressor during the audit)
- MIB welding shop
- MIB central plant (small compressor on floor near column J24)
- MIB central plant (compressor near column G24 fitted with an automatic drain but not tested periodically)
- MIB alterations shop (two air compressors)
- Storage room near the MIB "C Ramp" (approximately 3 cups of rusty and oily water drained from compressor during the audit)

OSHA regulations require air compressor tanks to be completely drained periodically at such intervals as to prevent the accumulation of excessive amounts of liquid in the receiver. Personnel at other facilities inspected by the CASHE Team either drain compressors at the time of other monthly maintenance duties (e.g., monthly fire extinguishers inspections) or leave the valve open when the compressor is not in use.

Where automatic drains are installed, they must be tested (normally by simply pressing a button) periodically to ensure they are functioning. Automatic drains pose the risk of failing without warning, thereby allowing the accumulation of water in the receiver tank.

Recommendation: **A)** Locate all air compressors at the SIB and MIB and drain them each month (at a minimum), or leave the petcock valve open when not in use; and **B)** Test automatic drains monthly.

Driving Reference(s): 29 CFR 1910.169(b)(2) – drains and traps

Point(s) of Contact: Kurt Nordstrom, Rick Farr, and Gary Dixon

Status of Corrective Action: Completed on March 12, 2007. Monthly program to drain all compressors and log each event has been established. On manual drains, operators have been instructed to open the petcock after each use. Separate logs are maintained by the different functional areas.

ELECTRICAL - ELEC**Finding Number: ELEC-07-001**

Finding: Extension cords are used improperly throughout the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The CASHE Team identified misused extension cords in numerous locations in both the MIB and SIB. Following are selected example locations:

- MIB Room 5160 (executive conference room)(extension cord running to a power strip is taped to the floor for permanent use);
- MIB Room 1547 (extension cord is used to power a permanently stationed electric typewriter and a power strip at a desk);
- SIB Room 334 and Room 355-D (piggy-backed extension cords in);
- SIB Room 264 (extension cord used to provide permanent power to a toaster, pencil sharpener, and fan);
- MIB “SPP Room” on the M Floor, wing 6 (extension cords used to provide permanent power to the communications rack);
- South penthouse roof terrace (extension cord routed through the wall to power a spotlight);
- South penthouse upper penthouse (very long fabricated extension cord made from NM-B non-metallic sheathed cable needs to be replaced with permanent wiring with GFCI outdoor receptacles wherever needed);
- MIB library (extension cords and piggy-based power strips to provide power to computers in the reading room where too few outlets are available);
- MIB wire closet 6335 (approximately 50 feet of flexible cord is attached to an electrical disconnect. The disconnect has a 240 volt receptacle. The disconnect and receptacle are designed and approved only for fixed installation).

Extension cords are permissible for temporary use only. OSHA regulations require that fixed equipment be plugged directly into a permanent electrical receptacle when in use. Extension cords and outlet multipliers draw excess amperage from receptacles, creating an over-current, which, in turn, creates heat in cords and receptacles. Piggy-backed extension cords multiply both the amperage draw and production of heat. This is a fire and electrocution hazard.

Metal quadplex and duplex receptacle cords in use at the MIB are prohibited by the National Electrical Code (NEC). The receptacles are actually boxes intended for permanent use in the construction of a wall, they are metal, and provide no surge protection, and do not have built in breakers. For example, quadplex receptacle cords are used at the MIB alterations shop (Room B142).

Recommendation: Survey MIB and SIB to identify all locations where permanently wired electrical receptacles are required to eliminate the need for extension cords and piggy-backed power strips.

Driving Reference(s): 29 CFR 1910.305(g)(1)(iii)(A) – flexible cords and cables

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: 1) Room 5160 - Plan to work with the stakeholders and Telecom staff to resolve this problem in a manner that meets customer needs and OSHA requirements. Scheduled for completion by July 20, 2007.

2) Room 1547 – Completed on March 27, 2007.

3) Rooms 334 and 355-D, SIB – Completed on March 13, 2007.

4) Room 264, SIB – Completed on February 22, 2007.

5) SPP room, wing 6 - Plan to assist the Telecom staff in resolving this problem and adding any additional (permanent) circuits that may be needed. Scheduled for completion by August 31, 2007.

6) MIB south penthouse roof - This wiring was removed by our staff electricians on March 28, 2007.

7) MIB upper penthouse roof - This wiring was removed by our staff electricians on March 28, 2007.

8) MIB library - Surge protectors with 12-foot cords were purchased and installed on March 9, 2007.

9) MIB wire closet (room 6335) – Scheduled for completion on June 15, 2007.

On March 2, 2007, all administrative contacts were emailed with a reminder on the proper use of extension cords and surge protectors. The administrative contacts were asked to inspect offices within their control to identify and correct any deficiencies. A follow-up memorandum was e-mailed to all occupants during the first week of April 2007. Additionally, the Safety and Occupational Health Manager for the Office of the Secretary is inspecting offices in the Main and South Interior Buildings and, if appropriate, initiates corrective action.

ELECTRICAL - ELEC

Finding Number: ELEC-07-002

Finding: Electrical receptacles in wet locations at the SIB and MIB are not equipped with ground fault circuit interrupters (GFCIs) or the circuits are not functional.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Examples of the receptacles requiring GFCIs are several SIB restrooms including Rooms 207 and 205, and several restrooms in the SIB (Rooms 307 and 306, and Yates Auditorium women's room), B017 custodial wash room, MIB parking garage floor washer and polisher charger receptacles, and MIB roof receptacles.

OSHA requires that electrical receptacles installed in wet or damp locations be suitable for that location. The National Electrical Code (NEC) requires GFCIs in bathrooms, kitchen counter areas, and outdoor areas, including rooftops. In addition, the NEC requires accessible receptacles installed in garages and accessory buildings, where electrical hand tools or portable lighting equipment are to be used, to have GFCI protection. Outdoor GFCI receptacles are required to have weatherproof enclosures.

A GFCI opens the circuit preventing electricity from continuing to power a device if it senses an increase in amperage draw. GFCIs prevent people from being electrocuted.

Recommendation: A) Equip all receptacles in wet locations with GFCI receptacles or GFCI circuits; and B) Equip outdoor receptacles with weatherproof enclosures.

Driving Reference(s): 29 CFR 1910.305(j)(2)(ii) – receptacle in wet or damp location
NEC 210.8(B) – GFCI protection other than dwelling units

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: The following tasks were completed on March 7, 2007: Electrical receptacles in the rest rooms were removed and the openings covered with blank plates. GFCIs were installed in kitchenettes, where applicable. The remaining work (e.g., custodial wash room, garage battery-charger site, and MIB outdoor receptacles are scheduled for completion by June 29, 2007.

ELECTRICAL - ELEC

Finding Number: ELEC-07-003

Finding: Damaged electrical equipment is located at the MIB and SIB.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: According to NBC personnel, the equipment is damaged beyond the point of repair and will be excessed. The damaged cords include the following:

- Power cord for a wet/dry vacuum in the SIB attic (severely damaged);
- Large portable fan in the SIB attic (severely damaged cord);
- Large industrial grinder in the SIB central plant;
- Insulation on the power cord for a wet/dry vacuum in the SIB central plant is damaged and missing the grounding prong; and
- Electrical plug for a space heater in the MIB M Floor (1 East Section) is damaged.

OSHA regulations require that plug-connected equipment be inspected for external defects (e.g., damage to the outer jacket or insulation) and evidence of internal damage (e.g., pinched or crushed outer jacket). If equipment has a defective or damaged cord, it must be removed from service until repairs are made and tests performed that render the equipment safe.

Recommendation: Excess all damaged electrical equipment.

Driving Reference(s): 29 CFR 1910.334(a)(2) - frayed electrical cords
29 CFR 1910.215(a)(4) - tool rests
29 CFR 1910.215(b)(9) - tongue guards
29 CFR 1910.39 – fire prevention plan
29 CFR 1910.39(c)(3) – maintenance of heat-producing equipment
29 CFR 1910.304(f)(4) – grounding path
29 CFR 1910.304(f)(v)(c)(3) – hand-held motor-operated tools
29 CFR 1910.243(a)(5) – grounding portable power tools
NEC 250.114 – equipment connected by cord and plug

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: All noted items were either repaired or discarded on March 8, 2007.

ELECTRICAL - ELEC**Finding Number: ELEC-07-004**

Finding: Exposed energized electrical equipment is present at the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: Following are example locations where exposed wiring were identified:

- SIB attic area near door to cooling tower (junction box is missing its cover)
- SIB telecom attic room (air conditioner electrical disconnect and electrical trough above it has knockout openings)
- SIB elevator room (electrical control panel has energized parts)
- SIB central plant, hot water tank area (the electrical trough's cover above the hot water tank's electrical disconnect does not close and have knockout openings)
- SIB central plant, north wall pit (circuit breakers are missing in panel BLR, openings exist around the panel BC main 240-volt circuit breaker, and panel C-6-24 has a knockout opening on top and no inside cover)
- SIB closet next to Room 50 (Panel C-6-22 does not have a cover inside the outer cover, exposing energized parts)
- MIB 6 east wire closet (circuit breaker panel is missing its cover)
- MIB new SPP room (rack-mounted junction box is missing its cover)
- MIB old SPP room (circuit breaker panel cover is not secured, a junction box cover is loose, and a large electrical panel has 2 knockout openings)
- MIB 3 west (electrical panel W-P-3 has openings where the circuit breakers are missing)
- MIB 1 west (junction box near column MM-37 is missing its cover, a box near hot water tank H-3-2 is missing its cover, and a single receptacle box has a knockout opening)
- MIB 1 east (circuit breaker panel has openings and a junction box is missing its cover)
- MIB B002 mechanical room (circuit breaker missing in panel and electrical disconnect with knockout opening near AHU F-27-1)
- MIB Yates Auditorium (row O, seat 108 conduit along floor broken exposing energized conductors, row O seat 113 no cover on junction box, several aisle light floor junction boxes not secured or missing covers, behind stage a LB fitting is missing its cover, production room electrical cabinet cover missing and a junction box cover missing)
- MIB Museum (a wood receptacle box inside the Juno display case is not approved, a 2-wire plug is missing its insulated cover, and an electrical connection is not located inside a junction box)
- MIB Print Plant (a metal-sheathed cable to a junction box is wrapped around a sprinkler pipe)
- MIB main compressor room (ATC-1 controls have an open trough and panels near column N-3; the storage room's fluorescent ceiling light has exposed wire, a junction box has no cover, and another junction box has a knockout opening)
- MIB B017 custodial unit wash room (circuit breaker missing in panel)
- MIB storage room under A ramp (3 junction boxes missing covers)
- MIB F-12-2 AHU room (junction box no cover)
- MIB storage room under B ramp (2 ceiling hanging by exposed conductors)
- MIB B019 cardboard recycling room (2 circuit breakers missing in panel)
- MIB room adjacent to C ramp (air compressor control panel has knockout opening)

- MIB F-27-10 AHU room (wall junction box knockout opening)
- MIB garage near battery chargers (wall junction box has knockout opening)
- MIB room F-12-5 (receptacle box missing receptacle)
- MIB sump room (knockout opening on side of E-51-50 electrical disconnect, overhead LB fitting cover missing; the light cover in the custodial hallway outside of sump room does not fully cover the electrical wires)
- MIB 6335 wire closet (open electrical cabinet)
- MIB 1640 wire closet (open electrical trough)
- MIB Security break room wire closet (circuit breaker panel cover missing; junction box cover missing)

The NEC requires that aboveground wiring must be installed in rigid metal conduit, in intermediate metal conduit, in electrical metallic tubing, in rigid nonmetallic conduit, in cable trays, as busways, as cablebus, or as open runs of metal-clad cable suitable for the use and purpose. In locations accessible to qualified persons only, open runs of Type MV cables, bare conductors, and bare buss bars are also permitted.

The exposed wiring creates electrical shock, arc flash and fire hazards. OSHA and the National Electrical Code (NEC) require that all pull boxes, junction boxes, and conduit bodies be provided with covers approved for that purpose and suitable for the conditions of use. OSHA also requires that unused openings (“knockouts”) in panels, cabinets, boxes, and other electrical devices be effectively closed. Blank closures are available for any openings within the boxes.

Recommendation: **A)** Repair the electrical equipment; and **B)** Ensure all electrical work is performed by qualified individuals following electrical safe work practices specified in NFPA 70E – Standard for Electrical Safety in the Workplace.

Driving Reference(s): 29 CFR 1910.305(b)(2) - electrical wiring covers
29 CFR 1910.305(b)(1) – cabinets, boxes, and fittings
NFPA 70E (2004) 215 – unprotected openings in electrical equipment

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Each of the items noted above were corrected on or before March 6, 2007, except as noted below: **1)** MIB museum - The receptacle was a temporary power supply that has been removed. Permanent wiring will be installed when efforts to conserve the display have been completed. On February 28, 2007, the museum staff issued a work order to the Alterations staff to correct the problem with the electrical connection made outside the junction box. Scheduled completion date is May 11, 2007. **2)** SIB central plant - Panel BLR is a new panel installed by GSA contract, and the missing breakers were installed on March 29, 2007. **3)** The last fourteen items on the list were brought to our attention on April 25, 2007, and, although we have not had an opportunity to investigate each, we have scheduled this group of items for completion by June 29, 2007.

ELECTRICAL - ELEC

Finding Number: ELEC-07-005

Finding: An electrical safe work practices program has not been instituted.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: An electrical safe work practice program has not been instituted. NBC-authorized employees work in close proximity to exposed energized equipment. For example, some employees are authorized to work in MIB Elevator Machine Room #3 where exposed equipment is energized to 240 volts. Contact with the energized equipment would result in electrocution. Arc flash hazards are also present, which would result in severe burns, fire, and/or explosion. The purpose of the program is to institute electrical safety-related work practices and procedures for employees who work on or near exposed energized electrical conductors or circuit parts.

OSHA has specific electrical safety requirements that protect personnel from shock and arc flash hazards. The requirements address safety procedures and work practices, rated tools, personal protective equipment, and training for qualified and unqualified personnel. The requirements prohibit working on or near exposed energized equipment except when not feasible.

The OSHA regulations were adopted from the NFPA electrical safety in the workplace standard. The NFPA standard provides excellent guidance to develop the electrical safety program.

Recommendation: Institute an electrical safe work practices program.

Driving Reference(s): 29 CFR 1910.332 – electrical safety training
29 CFR 1910.333 – selection and use of work practices
29 CFR 1910.334 – use of equipment
29 CFR 1910.335 – safeguards for personnel protection
NFPA 70E (2004) – electrical safety in the workplace

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Scheduled completion by December 28, 2007. Plan to establish a safe work-practices program. Training is being scheduled now for NBC staff and permanent contractors stationed in the MIB and SIB.

ELECTRICAL - ELEC

Finding Number: ELEC-07-006

Finding: Electrical disconnects at the MIB and SIB are not labeled or are inadequately labeled.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: Circuit breakers in areas that have not been modernized are generally not adequately labeled to identify the specific equipment that they energize. Following are selected locations of where disconnect labeling is inadequate:

- SIB Attic (not all circuit breakers labeled in Panel 4C)
- MIB new SPP room (circuit breakers in an unlabeled panel are not labeled)
- MIB B002 Mechanical Room (circuit breakers not labeled in panel near F-27-1 AHU)

For example, several circuit breakers in one panel are labeled “space” and are energized.

OSHA requires disconnecting means be legibly marked and arranged so the purpose is evident.

Recommendation: Label circuit breakers to identify the specific equipment or work areas that they energize.

Point(s) of Contact: Kurt Nordstrom

Driving Reference(s): 29 CFR 1910.303(f) – identification of disconnection means and circuits
NFPA 70 (2005 NEC) 230.70(B) –disconnecting means marking

Status of Corrective Action: Panels listed in this finding were completed on March 9, 2007. It is recognized that this problem exists in several other panels in the both the MIB and SIB and as they are identified, they will be corrected. For completion purposes, these problems in the MIB are planned to be corrected in phase with the MIB Modernization project.

ELECTRICAL - ELEC**Finding Number: ELEC-07-007**

Finding: The ground prong has been removed from the plugs on equipment stored in the MIB and SIB.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The MIB and SIB contain several un-renovated spaces with outlet lacking a ground. As a result, facilities personnel and contractors have removed the grounding prong from many pieces of electrical equipment used in these locations. Examples include the MIB welding shop (extension cord); SIB auditorium (fan power cord); and MIB south mechanical room (Room B002)(two electric drain cleaner “snakes”).

OSHA regulations require that the path to ground from circuits, equipment, and enclosures be permanent and continuous. Fixed equipment with metal parts must be grounded if there is any potential personnel can touch the metal on the equipment. OSHA does allow distance “guarding” instead of grounding for special circumstances where employees will not be put at risk of shock or electrocution; however, as a practical matter, the CASHE Team recommends that all applicable equipment be properly grounded.

OSHA requires that portable power tools with metal parts be grounded (i.e., a grounding prong in the outlet plug or double insulation). Power tools with double insulation do not have a grounding prong in the outlet plug because the double insulation is the ground. Double-insulated power tools are labeled as such. All other power tools and electrical equipment with metal parts must have a grounding prong in the outlet plug.

The National Electrical Code (NEC) requires exposed non-current-carrying metal parts of cord-and-plug connected equipment to be grounded. The NEC allows for portable tools and appliances to be protected by an approved system of double insulation; however, they must be listed by a qualified electrical testing laboratory (e.g., UL-listed) and must be distinctively marked as double-insulated.

Recommendation: **A)** Remove all severely damaged equipment from service; or **B)** Repair or replace the power cords or equipment.

Driving Reference(s): 29 CFR 1910.304(f)(4) – grounding path
29 CFR 1910.304(f)(5)(iv) – fixed equipment grounding
29 CFR 1910.304(f)(v)(c)(3) – hand-held motor-operated tools
29 CFR 1910.243(a)(5) – grounding portable power tools
NEC 250.114 – equipment connected by cord and plug

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Completed on March 5, 2007. Repaired the power cord, discarded the extension cord, and repaired the two K-50 drain cleaners (snakes).

ELECTRICAL - ELEC**Finding Number: ELEC-07-008**

Finding: Exposed energized electrical equipment is present in rooms accessible to unqualified personnel and electrical safe work practices are not being followed.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: Exposed energized electrical equipment is present in mechanical areas, including the MIB elevator machine rooms and switch gear rooms that have not undergone modernization. The elevator rooms have exposed 240 volt DC parts, and the switch gear rooms have 2300-volt AC conductors. These rooms are kept locked; however DOI personnel and contractors that are not electrical-qualified persons, as defined by OSHA and NFPA, have access to these areas.

Electrical safe work practices (see Finding ELEC-07-005) have not been instituted for qualified and unqualified personnel that enter these rooms. As an acceptable alternative to guarding the energized equipment is to restrict access to only qualified personnel using electrical safe work practices.

OSHA allows live parts to be effectively guarded by having them locked in rooms, vaults and similar enclosures that are only accessible to qualified persons. Qualified persons need to follow electrical safe work practices to work on or near energized parts.

Recommendation: Restrict access to exposed energized electrical equipment to qualified persons using electrical safe work practices.

Driving Reference(s): 29 CFR 1910.303(g)(2) – guarding of live parts in rooms
NFPA 70E (2004) 400.16-18 – guarding of live parts

Point(s) of Contact: Gary Peacock and Ken Tunney

Status of Corrective Action: The following actions are being/will be taken: **1)** Restrict access to the transformer vaults, switchgear equipment, and elevator machine rooms. Doors to these areas are locked and the keys are on our “off-Master” key system. Persons whom are not qualified to be in these areas will not be granted entry except under tightly-controlled conditions (e.g., to service air-conditioning equipment or two-way radio-signal repeaters) which do not place the worker in the vicinity of the high-voltage equipment. This became effective on May 4, 2007.

2) Barriers with appropriate signs will be installed in the elevator machine rooms which mark areas where high voltage equipment exists and restricting further access unless accompanied by a qualified person. Barriers will be ordered on May 4, and will be installed immediately upon receipt.

3) Schedule and accomplish training for all staff personnel and contractors whom may have a future need to work in these spaces. We plan to complete this training by the end of the 1st quarter, FY 2008.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT

Finding Number: EXIT-07-001

Finding: Heat-producing equipment in MIB Room 1221 is not maintained to prevent fire.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Three newly purchased HeatRunner™ space heaters are not equipped with an automatic shut-off device to prevent it from becoming overheated when tipped over. The restricted air flow and heat on the carpet poses a fire risk.

OSHA regulations require that accumulation of combustible materials (e.g., paper, cardboard) be controlled and that heat-producing equipment be maintained to prevent fire. The U.S. Consumer Product Safety Commission (CPSC) estimates that more than 25,000 residential fires associated with the use of room (space) heaters annually. More than 300 persons die in these fires. An estimated 6,000 persons receive hospital emergency room care for burn injuries associated with contacting hot surfaces of room heaters, mostly in non-fire situations. The February 2001 CPSC fact sheet on space heaters (www.cpsc.gov/CPSCPUB/PUBS/463.html) clarifies that space heaters must have a feature that shuts the heater off when tipped over. Many space heaters list a safety shutoff device. This device is a thermal shutoff that shuts down the heater if it over heats, which is not the same as shutting off when tipped over.

Recommendation: Require that all space heaters be UL- or FM-approved and be equipped with automatic shutoff devices.

Driving Reference(s): 29 CFR 1910.39 – fire prevention plan
29 CFR 1910.39(c)(3) – maintenance of heat-producing equipment

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Completed on February 21, 2007. The HeatRunner™ space heaters were returned to vendor and replaced with Dakota Designs heaters which have tip-over protection built in to the units.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT

Finding Number: EXIT-07-002

Finding: The MIB main exit route outdoor stairs do not have adequate intermediate handrails.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The stairs at the main entrance to the MIB is approximately 75 feet wide. The stairs have only one intermediate handrail.

The NFPA requires that for existing exit stairs railings be no more than 88 inches apart. The purpose for this distance is that a person will be no more than 44 inches from a railing. For new stairs, the maximum distance is 60 inches.

Recommendation: Contact the GSA Historic Preservation Office regarding this issue and ensure all modifications are made with DCSHIPO and NCPC approval.

Driving Reference(s): NFPA 101 (2006) 7.2.2.4.1 – handrails

Point(s) of Contact: Gary Peacock

Status of Corrective Action: The GSA Safety Office, as defined by NFPA, is the Authority Having Jurisdiction. In its comments on this finding, the GSA Safety Office stated that this is not a risk that warrants intermediate handrails. The GSA Safety Office also advised that DCSHIPO and NCPC approval on any modifications is required.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-003**

Finding: Emergency lighting is not adequately tested to ensure that it works properly in the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Emergency lighting is present in the MIB and SIB. A random number of these lights were tested during the audit by pushing the "TEST" button on the lights. The following lights did not operate when tested:

- SIB Inner Stairwell, East Side
- SIB both stairwells (at the top floor)
- SIB Stairwell #3 (second floor)
- MIB Mechanical Floor (near pillar 3-E-37)
- MIB South Mechanical (Room B002)
- MIB Elevator Pit #3 (labeled E-19-334)

Emergency lighting is also provided by selected fluorescent lamp fixtures mounted in the buildings' ceilings that have individual battery backup power.

OSHA requires that each exit route be adequately illuminated so personnel can see along the exit route. The exit route begins at the employees' work stations. OSHA references the NFPA Life Safety Code for acceptable compliance criteria. The Life Safety Code requires that emergency illumination be provided for not less than 1.5 hours in the event of failure of normal lighting. Emergency lighting systems shall be arranged to provide initial illumination that is not less than an average of 1 ft-candle and, at any point, not less than 0.1 ft-candle, measured along the path of egress at floor level.

Emergency power lighting systems are required by NFPA to be tested monthly for 30 seconds and annually for 1.5 hours. The 30 second testing period is necessary to ensure that the batteries will provide power for an extended period. As an example, "dead" batteries in a flashlight that hasn't been used for a long time will power the bulb for a couple of seconds, but the bulb quickly fades and goes out.

A walk through of the buildings must be performed to determine if the emergency lighting systems (e.g., wall mounted "frog eyes" and selected ceiling mounted fluorescent lamp fixtures) are functioning. NFPA requires written records of the visual inspections and tests be kept by the building owner for inspection by the local authority having jurisdiction (i.e., DC Fire Department).

Emergency generators providing power to emergency lighting systems shall be installed, tested, and maintained in accordance with NFPA 110, Standard for Emergency and Standby Power Systems.

Recommendation: **A)** Measure emergency lighting levels in all exit routes to determine if emergency lighting is adequate in all occupied work areas; **B)** Improve emergency lighting levels as necessary to meet the required foot-candles of illumination; **C)** Identify and mark the emergency lighting fixtures to facilitate their visual identification during the required periodic testing; **D)** Test the emergency lighting systems (e.g., wall mounted “frog eye” battery powered emergency lighting and the selected fluorescent lamp fixtures) following NFPA criteria discussed in this finding; and **E)** Repair all battery powered emergency lighting systems that do not function.

Driving Reference(s): 29 CFR 1910.37(b)(1) – exit lighting
NFPA 101 (2006) –7.9.3 – period testing of emergency lighting equipment
NFPA 110 (2005) – Standard for Emergency and Standby Power Systems

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: We plan to follow recommendations A and B. Scheduled for completion on February 17, 2008.

Emergency light fixtures in the South Interior Building and the modernized spaces of the Main Interior Building will be identified and marked, as recommended. Scheduled for completion by November 16, 2007.

All emergency light units (wall packs) were checked and, as needed, repaired (e.g., replacement of batteries). The wall packs are on a 3-month preventive maintenance cycle. Recommendations D and E (above) were completed on March 5, 2007.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-004**

Finding: Emergency action plan training has not been performed for all emergency actions specified in the plan.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Emergency action plan training is required for all employees on initial hire and annually thereafter. If employees have specific responsibilities during an emergency, these employees need training on these specific actions. Employees expected to use fire extinguishers need annual fire extinguisher training. Employees designated to operate the stair chairs, Wardens, and other specific tasks are not receiving annual training.

OSHA requires the employer to designate and train a sufficient number of employees to assist in the safe and orderly evacuation of employees before implementing the emergency action plan. In addition, the employer is required to review the plan with each employee under the following conditions: **1)** when the plan is initially developed or an employee is assigned a new position; **2)** when an employee's responsibilities or designated actions under the plan change; and **3)** when the plan is modified.

If fire extinguishers are provided and are intended for employee use, 29 CFR 1910.157 applies in its entirety, including fire extinguisher training. Training records of employees' initial and annual refresher training must be kept.

Recommendation: **A)** Update the plan as necessary to reflect the actual emergency actions; **B)** Designate and train a sufficient number of employees to assist in the safe and orderly evacuation of employees; **C)** Educate all employees on the plan's contents; and **D)** Train selected employees on fire extinguisher use annually and maintain training records.

Driving Reference(s): 29 CFR 1910.38 - emergency action plan
29 CFR 1910.39 - fire prevention plan
29 CFR 1910.157(a) - scope and application of portable fire extinguishers

Point(s) of Contact: Paul M. Cyr

Status of Corrective Action: The Occupant Emergency Plans are routinely updated, and both will be revised in FY07. Command and Support Teams are comprised of designated employees and are routinely trained. In FY06, for example, Wing Wardens, Sector Wardens, Floor Team Coordinators, Security staff, Disabled employees and Buddies, Command and Support Teams, and the Designated Official were designated and trained. Occupants of the Interior Complex are provided copies of the Occupant Emergency Plan through their Bureau and Office Administrative Contacts. In addition, occupants of the Interior Complex are always provided, via email, copies of the evacuation procedures in advance of the drills that are conducted annually. The fire extinguishers are not for employee use; they are available for use by the local fire department.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS – EXIT**Finding Number: EXIT-07-005**

Finding: Exit pathways are not being maintained.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Hallways (aisles) in the MIB and SIB are part of the exit routes. An empty glass display case on the third floor near SIB Room 322 is 3 feet wide. It decreases the width of the aisle from 10 feet to 7 feet, thereby, partially blocking it. Furniture in several locations is partially blocking the aisles. The OSM second floor hallway has a sofa that reduces the 75-inch wide hallway to 45 inches. The outdoor exit stairs from the SIB auditorium had snow and ice on them during the audit. MIB Room 1071 (creative communication) exit door is blocked, and the main aisle is only 25 inches wide in the area where a workstation partition is on one side and a filing cabinet is on the other side of the aisle. The right door from the MIB first floor hallway into stairwell #22 did not open. The emergency exit from the front side of the MIB Yates Auditorium emergency discharges onto a steeply sloped cobble stone driveway that has an electrical conduit on the cobblestone across the entire exit pathway, creating a tripping hazard.

OSHA defines an exit route as a continuous and unobstructed path of exit travel from any point within a workplace to a place of safety. An exit route consists of the following three elements: **1)** the exit (that portion of an exit route which is separated from other areas to provide a protected way of travel to the exit discharge; for example, a 2-hour fire-rated enclosed stairwell); **2)** the exit access (that portion of an exit route leading to the exit; such as a corridor leading to a stairwell); and **3)** the exit discharge (that portion of an exit route that leads directly outdoors; to a refuge area; or to a street, walkway, public way, or open space with access to the outdoors; such as the door on the first floor that leads from the stairwell to the outdoors).

OSHA requires that exit routes remain unobstructed. The minimum width of an exit route is 28 inches. Materials and equipment may not be placed, either permanently or temporarily, within an exit route.

Recommendation: **A)** Remove the furniture and display case that are partially blocking the aisles; **B)** Ensure that snow and ice are removed from exit stairs during hours the building is occupied; **C)** Remove the items blocking the exit door; **D)** Widen the aisle to a minimum of 28 inches; **E)** Repair the stairwell access door; and **F)** Modify the Auditorium emergency exit discharge so that it does not pose a tripping hazard.

Driving Reference(s): 29 CFR 1910.37(a)(3) – unobstructed exit routes
NFPA 101.7.1.10.2.2 (2006) – obstructions in means of egress

Point(s) of Contact: Gary Peacock

Status of Corrective Action: 1) The glass case and sofa blocking exit pathways were removed from the corridor on March 23, 2007, and occupants were reminded of the requirement to maintain minimum widths in all egress routes. 2) On January 26, 2007, the snow-removal contractor was reminded of its requirement to keep all emergency-exit routes in both buildings clear and free of slipping or tripping hazards. 3) The items that were blocking the exit door were removed on May 3, 2007. 4) The width of the aisle will be increased to 28" on or before May 29, 2007. 5) Apparently, the audit team tried to open the inactive door on the double-door set at stair 22 from the corridor side. Since this is an exit floor, the egress flow would be from the stair to the first-floor corridor. When operated from the stairway, both doors open with ease. 6) The electrical conduit is scheduled for removal by December 14, 2007.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT

Finding Number: EXIT-07-006

Finding: SIB fire-rated doors that are designed to be kept closed are wedged or jammed open.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Four fire-rated doors in exit aisles on the SIB third floor are wedged or jammed open. These doors protect the involved work areas from the main stairwell vertical opening. These doors do not have automatic closing devices on them.

OSHA requires that openings into exits must be protected by self-closing fire doors that remain closed or automatically close in an emergency upon the activation of the fire alarm system.

NFPA specifies that doors required to be kept closed must not be secured in the open position except with approved closing devices. Examples of doors designed to normally be kept closed include those to a stair enclosure or horizontal exit. The SIB noted doors are protecting the aisles from the stairwell vertical openings.

Recommendations: A) Remove the rubber wedges and other devices used to hold the doors open; and B) Place signs on the doors that prohibit the doors being blocked open.

Driving Reference(s): 29 CFR 1910.36(a)(3) – exit openings must be limited
NFPA 7.2.1.8.1 (2006) – doors, self closing devices

Point(s) of Contact: Ken Tunney

Status of Corrective Action: Two of these doors are held open by an automated system that is tied into the building fire alarm system and, upon activation, will allow the doors to close. The other doors are not part of the system, but GSA is in the process of issuing a contract to have these doors connected to the building fire system. Scheduled for completion by October 1, 2007. The recommended signs were posted and the rubber wedges that were used to hold the doors open were removed on March 9, 2007.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT

Finding Number: EXIT-07-007

Finding: The SIB auditorium west emergency exit door requires considerable force to open.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The door states that it is an emergency exit door and that an alarm will sound. When tested, it required several shoulder pushes to get the door to open. This exit is necessary due to the high number of people that could be in the auditorium.

OSHA defines an exit route as a continuous and unobstructed path of exit travel from any point within a workplace to a place of safety. An exit route consists of the following three elements: **1**) the exit (that portion of an exit route which is separated from other areas to provide a protected way of travel to the exit discharge; for example, a 2-hour fire-rated enclosed stairwell); **2**) the exit access (that portion of an exit route leading to the exit; such as a corridor leading to a stairwell); and **3**) the exit discharge (that portion of an exit route that leads directly outdoors; to a refuge area; or to a street, walkway, public way, or open space with access to the outdoors; such as the door on the first floor that leads from the stairwell to the outdoors).

NFPA requires that the force to release the latch not exceed 15 foot-pounds, 30 foot-pounds to set the door in motion, and 15 foot-pounds to open the door. In addition, OSHA requires that employees must be able to open an exit route door from the inside at all times without keys, tools, or special knowledge.

Recommendation: Repair the door so that it easily opens.

Driving Reference(s): NFPA 101 (2006) -7.2.1.4.5 – forces to open exit doors

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Completed on March 2, 2007.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-008**

Finding: Exit signs at the MIB and SIB are either not functioning properly, are not adequate, or are missing.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The following are examples of where exit signage is not adequate:

- An exit route in the MIB server room is out of service due to modernization. The exit sign above the door has paper taped over it. It should have NOT AN EXIT sign on it.
- MIB Basement central plant (exit signs are not present)
- MIB alterations shop (exit sign's lights do not illuminate)
- MIB cardboard recycling room B019 (exit signs are not present)
- MIB Yates Auditorium (exit directional sign to emergency left side exit door not visible from main auditorium, right side should have NOT AN EXIT sign)
- MIB Yates Auditorium mezzanine (an exit door with an EXIT sign above it has a paper sign on it stating "DO NOT ENTER")
- MIB library (main exit does not have exit sign)
- MIB museum (main exit does not have exit sign, the emergency exit sign over the alarmed side door does not illuminate)
- MIB Rachel Carson Room (exit sign only partially illuminated)
- MIB hallway outside of room 2534 (exit sign not illuminated)
- MIB stairwell 22, 1st floor (exist sign not illuminated)

Exit signs must be illuminated by a reliable light source giving a surface reflection of not less than 5 foot-candles. Internally illuminated exit signs are not required; however, if they are installed, they must have a give surface light value of at least 0.06 foot-lamberts.

OSHA does not require the installation of internally lighted exit signs; but does require that they be maintained if installed. Self-illuminating or photo-luminescent exit signs, that essentially glow in the dark and do not require a light bulb, are available. Photo-luminescent signs can be used provided a minimum of 5 foot-candles of external unfiltered fluorescent light is present on the sign face at all times during building occupancy. Photo-luminescent signs comply with all applicable regulations and codes and cost approximately \$55 each. The signs can be purchased from Emergency Guidance Systems (www.emergencyguidancesystems.com).

NOT AN EXIT signs are required to identify doors or aisles that are not part of the exit pathway.

Recommendation: **A)** Determine why the exit signs are not working (e.g., wiring, burnt out bulbs) and correct the problem; and **B)** Survey the entire MIB and SIB facilities to identify all locations where exit signs must be installed..

Driving Reference(s): 29 CFR 1910.37(b) – lighting and marking exits

Point(s) of Contact: Gary Peacock

Status of Corrective Action: 1) The exit sign is covered because, due to construction on the other side of the computer room, it is not an exit route. A "NO EXIT" sign was installed on the server room doors February 6, 2007. 2) A comprehensive survey of all locations in both buildings will be conducted by May 30, 2007 to determine whether signage is sufficient and appropriate. 3) Partially-illuminated exits signs in both buildings were relamped during the period March 20-26, 2007, as part of the quarterly maintenance cycle.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-009**

Finding: The emergency action plan for the Main and South Interior Buildings does not meet all required elements.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: Emergency action and fire prevention plans must be prepared and implemented if required by an OSHA standard or if the facility is not in full compliance with 29 CFR 1910.157, portable fire extinguishers. While the facility is not required to prepare plans based on an OSHA standard, it is not in full compliance with the portable fire extinguisher regulations. Emergency action plans must be kept in the workplace and made available for employee review.

OSHA's portable fire extinguisher regulations apply to the placement, use, maintenance, and testing of portable fire extinguishers provided for employee use. This standard requires both emergency action and fire prevention plans be prepared unless fire extinguisher training is provided to all employees.

If a facility is equipped with portable fire extinguishers and does not have a employee action plan and fire prevention plan prepared in accordance with the OSHA requirements, the facility must ensure that portable fire extinguishers are selected, distributed, used, inspected, and tested in accordance with all requirements in 29 CFR 1910.157 [sections (c) through (g)]. This includes providing initial and annual fire control training for all facility personnel.

If the facility has prepared and implemented the aforementioned plans and has provided portable fire extinguishers that are not intended for employee use, then the facility is only required to comply with 29 CFR 1910.157(e), inspection, maintenance, and testing; and 29 CFR 1910.157(f), hydrostatic testing.

OSHA requires a written emergency action plan if a facility accommodates more than ten employees at any given time. OSHA requires that the plan include the following emergency procedures and contacts: **1)** emergencies in addition to fires and bomb threats that are reasonably likely to occur at the facility (e.g., blizzards, chemical spills, earthquakes); **2)** procedures for reporting fires and other emergencies; **3)** procedures for emergency evacuation, including the type of evacuation (i.e., procedures for different types emergencies) and exit route assignments (i.e., a map or floor plan identifying escape routes); **4)** procedures to be followed by personnel who operate critical plant operations, if any, before they evacuate; **5)** procedures to account for all employees after evacuation is complete; **6)** procedures to be followed by employees performing rescue or medical duties, if any; and **7)** the name or job title of employees that may be contacted for further information regarding the emergency action plan, and the responsibilities of personnel under the plan.

OSHA requires the employer to designate and train a sufficient number of employees to assist in the safe and orderly evacuation of employees before implementing the emergency action plan. In addition, the employer is required to review the plan with each employee under the following conditions: **1)** when the plan is initially developed or an employee is assigned a new position; **2)** when an employee's responsibilities or designated actions under the plan change; and **3)** when the plan is modified.

Recommendation: Modify the MIB and SIB Occupant Emergency Plan to include the following:
1) emergencies in addition to fires and bomb threats that are reasonably likely to occur at the facility (e.g., earthquakes, terrorist activity); and **2)** procedures to be followed by personnel who operate critical facility operations, if any, before they evacuate.

Driving Reference(s): 29 CFR 1910.38 – emergency action plan
29 CFR 1910.157(a) - scope and application of portable fire extinguishers

Point(s) of Contact: Paul M. Cyr

Status of Corrective Action: The Occupant Emergency Plans for the Main and South Interior Buildings are being revised in FY07, and will include or expand on natural disasters and criminal terrorist activities. Internal procedures to be followed by personnel who operate critical facilities operations will be expanded with the updating of the Occupant Emergency Plans.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT

Finding Number: EXIT-07-010

Finding: The South Interior Building diesel fuel supply tank is located beneath emergency exit stairs.

Repeat Finding: No

Recurring Issue: No

Safety RAC: 3

Discussion: The diesel fuel supply tank for the generator is located in an alcove beneath exterior emergency exit stairs. A fire or other hazardous material incident involving the tank would prohibit the use of the exit route.

NFPA and OSHA require that exit routes be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency. Exit routes must be arranged so that personnel do not travel towards a higher hazard area. The presence of the diesel tank is a higher hazard area than the auditorium.

Recommendation: Relocate the diesel fuel supply tank.

Driving Reference(s): NFPA 101 (2006) - 7.1.10.1 - impediments to egress
29 CFR 1910.37(a)(2) – exit routes

Point(s) of Contact: Ken Tunney

Status of Corrective Action: The GSA project representative was directed by the GSA Fire Protection Engineer to initiate corrective action in this matter. We have been unable to get information or a commitment from GSA on when the corrective action will be completed (a change order must be prepared, funding obtained, and the GSA contract will need to be modified before this work begins).

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-011**

Finding: MIB emergency exit outdoor discharges do not reach a public way.

Repeat Finding: No

Recurring Issue: No

Safety RAC: 3

Discussion: The B200 corridor emergency exit discharges into a driveway ramp that is blocked by a security gate, preventing access to a public way. The Yates Auditorium front left emergency exit discharges onto a steeply sloped cobblestone driveway ramp that has a security gate at the top of the ramp that prevents access to a public way. A separate findings addresses the auditorium exit door's and outdoor tripping hazard (WWS-007-004). Vehicles on the ramps are a serious hazard to personnel using these exits.

OSHA requires that each exit discharge lead directly outside or to a street, walkway, refuge area, public way, or open space with access to the outside. The street, walkway, refuge area, public way, or open space to which an exit discharge leads must be large enough to accommodate the building occupants likely to use the exit route. The NFPA also requires that each exit discharge allow access to a public way.

Recommendation: Modify the gates so that during an emergency alarm, the security gates open and vehicular traffic on the ramps is stopped.

Driving Reference(s): NFPA 101 (2006) 7.7.1 – discharge from exits
29 CFR 1910.36(c) – exit discharge

Point(s) of Contact: Gary Peacock and Dirk Meyer

Status of Corrective Action: The security gate is tied into our fire-alarm system and opens automatically when the system is activated. We referred the problem (controlling traffic on the ramp during an evacuation) to GSA and, in a preliminary response to us, were told that more time is needed to evaluate this condition. Nonetheless, egress issues in this area will be corrected in phase (during the period 2010-2012) with the MIB Modernization project.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-012**

Finding: The maximum number of personnel allowed on the MIB South Penthouse roof terrace has not been posted or enforced.

Repeat Finding: No

Recurring Issue: No

Safety RAC: 3

Discussion: The MIB South Penthouse roof terrace is a large open roof area that has standard railings around its perimeter. Employees are allowed access to the roof terrace during normal work hours. During the July 4th fireworks, several hundred personnel are apparently allowed on the roof terrace. The main exit route from the roof is a 36-inch door to the South Penthouse, the 7th floor of the building. The egress route from the South Penthouse is stairwell #21. The tertiary exit route from the roof terrace is scaffolding stairs that are approximately 36 inches wide. The scaffolding stairs have standard railings. The secondary route from the roof terrace involves walking a considerable distance to the east side of the building to access another stairwell from the West Penthouse. The standard height railing does not continue along this route, exposing personnel to a fall height of approximately 70 feet, as the parapet height is only 24 inches. A standard railing is 42 inches high with a mid rail and toe board.

OSHA requires two exit routes and the capacity of the routes must be adequate. The NFPA classifies the roof terrace as an Existing Assembly Occupancy.

Recommendations: **A)** Post a sign stating that no more than 200 persons may be on the roof terrace at one time and enforce this capacity rating; and **B)** Block off access to the sections of the roof where there are no standard railings.

Driving Reference(s): NFPA 101 (2006) 13.2.4 – number of exits
29 CFR 1910.36(b) – number of exit routes
29 CFR 1910.36(f) – capacity of exit routes

Point(s) of Contact: Paul M. Cyr

Status of Corrective Action: **1)** Generally, a sign identifying emergency evacuation egress routes and maximum occupancy is posted in the south penthouse on an easel because available wall space is very limited due to the Native American murals. During the audit, the sign and easel had been moved to the storage room in the south penthouse. We will post permanent signs at the stairway and elevator entrances to the south penthouse by May 25, 2007. Also, enforcement is through monitoring events and requiring that all requests for use of the space are made on a form which is approved by the Chief, Division of Facilities Management Services. The request form includes the maximum occupancy for both the south penthouse and roof terrace. **2)** We will block off access to the sections of the roof where there are no standard railings, and plan to install additional safety railings along the entire secondary evacuation route by July 2, 2007.

EXIT ROUTES, EMERGENCY ACTION PLANS, AND FIRE PREVENTION PLANS - EXIT**Finding Number: EXIT-07-013**

Finding: The capacity of the Yates Auditorium is greater than the rating of the exit routes.

Repeat Finding: No

Recurring Issue: No

Safety RAC: 3

Discussion: The MIB Yates Auditorium has seating for 828 persons in the main auditorium, and 58 in the balcony. There is additional floor area for persons to stand on the sides and back of the main auditorium. The main exit route out of the auditorium is through the three sets of double doors at the rear of the auditorium. Each door opening measures 59 inches", totaling 177 inches. These doors discharge into the MIB south lobby where the exit doors discharge down exterior stairs to a public way.

The main auditorium has an emergency exit located on its northeast corner. The exit route is not an acceptable exit route as it does not have adequate exit directional signs from the main auditorium, does not have a proper landing, there is a tripping hazard outdoors (conduit on ground), and access to a public way is blocked with a security gate. If, for the purposes of this discussion, it is assumed that the northeast emergency exit is modified according to the recommendations documented in the other Findings. The minimum width of this exit route is 51 inches.

OSHA requires two exit routes and the capacity of the routes must be adequate. The NFPA classifies the auditorium as an Existing Assembly Occupancy. According to NFPA, a maximum of 600 persons are allowed in an Existing Assembly Occupancy with only two separate means of egress. The limitations of the means of egress next have to be taken into consideration. The egress capacity of each means of egress route for the main exit route is calculated at 0.22 inches of exit width per seat served (from NFPA 101 (2006) table 13.2.3.2 Capacity Factors for Existing Assembly Occupancy). NFPA requires that each of the exit routes be adequately sized to handle 50 % of the occupancy (NFPA 101 (2006)13.2.3.6.2). The main auditorium exit provides an adequate capacity of 804 persons, well more than half of the maximum 600 persons allowed. The northeast emergency exit is calculated differently because there are stairs involved to access the exit door. The exit route capacity is calculated at 0.3 inches of exit width because this exit route has stairs (table 13.2.3.2). The northeast exit is rated for 170 persons, less than half of the 600 allowed capacity. Therefore, the auditorium is only rated for 340 persons based on the limiting rating of the northeast emergency exit.

The balcony, having an occupant load greater than 50 (and less than 100), is required to have two remote means of egress. Either the emergency balcony exit needs to be reestablished, or seats have to be removed to limit the capacity to 50. The capacity of the balcony has to be added to the total capacity of the auditorium as the main exit is also used by persons in the balcony.

Recommendations: **A)** Post a sign stating that no more than 340 persons may be in the auditorium at one time and enforce this capacity rating; or **B)** modify the northeast emergency exit or add another exit to allow for greater capacity; **C)** Address the other Findings concerning signage and the northeast emergency exit; and **D)** Either reestablish the emergency balcony exit or limit the balcony capacity to 50 persons.

Driving Reference(s): NFPA 101 (2006) 13.2.3 – capacity of means of egress
NFPA 101 (2006) 13.2.4 – number of exits
29 CFR 1910.36(b) – number of exit routes
29 CFR 1910.36(f) – capacity of exit routes

Point(s) of Contact: Gary Peacock

Status of Corrective Action: We referred the matter to GSA and, in a preliminary response to us, were told that more time is needed to evaluate this condition. However, room capacity and egress issues in the auditorium will be corrected in phase (during the period 2010-2012) with the MIB Modernization project.

FIRE PROTECTION - FIRE

Finding Number: FIRE-07-001

Finding: The fire protection sprinkler system has not been tested, inspected, and maintained at recommended frequencies.

Repeat Finding: No

Recurring Issue: No

Safety RAC: 3

Discussion:

Discussion: The sprinkler system in the SIB has not received an annual inspection since 2003. Recommended inspections, testing and preventive maintenance of these systems at recommended frequencies are not being performed. SIB and MIB sprinkler system and fire pump testing and inspection records were not available during the audit to determine which specific tests have been conducted.

The following inspection, testing and maintenance frequency for the sprinkler system is recommended by NFPA:

Sprinkler System Inspection, Testing, and Maintenance Schedule		
Item	Activity	Frequency
Gauges (dry, preaction, and deluge systems)	Inspection	Weekly/monthly
Control valves	Inspection	Weekly/monthly
Alarm devices	Inspection	Quarterly
Gauges (wet pipe systems)	Inspection	Monthly
Hydraulic nameplate	Inspection	Quarterly
Buildings	Inspection	Annually (prior to freezing weather)
Hanger/seismic bracing	Inspection	Annually
Pipe and fittings	Inspection	Annually
Sprinklers	Inspection	Annually
Spare sprinklers	Inspection	Annually
Fire department connections	Inspection	Quarterly
Valves (all types)	Inspection	
Alarm devices	Test	Quarterly/semiannually
Main drain	Test	Annually
Antifreeze solution	Test	Annually
Gauges	Test	5 years
Sprinklers — extra-high temperature	Test	5 years
Sprinklers — fast response	Test	At 20 years and every 10 years thereafter
Sprinklers	Test	At 50 years and every 10 years thereafter
Valves (all types)	Maintenance	Annually or as needed
Obstruction investigation	Maintenance	5 years or as needed
Low point drains (dry pipe system)	Maintenance	Annually prior to freezing and as needed

The following inspection, testing and maintenance schedule recommended by NFPA applies to fire pumps:

Fire Pump Inspection, Testing, and Maintenance		
Item	Activity	Frequency
Pump house, heating ventilating louvers	Inspection	Weekly
Fire pump system	Inspection	Weekly
Pump operation		
No-flow condition	Test	Weekly
Flow condition	Test	Annually
Hydraulic	Maintenance	Annually
Mechanical transmission	Maintenance	Annually
Electrical system	Maintenance	Varies
Controller, various components	Maintenance	Varies
Motor	Maintenance	Annually
Diesel engine system, various components	Maintenance	Varies

The testing, inspection and maintenance elements need to be documented and be performed by qualified personnel.

Recommendation: Have qualified personnel perform the recommended inspection, testing, and maintenance of the fire protection sprinkler system.

Driving Reference(s): NFPA 25.5.1 (2002) – inspection, testing and maintenance of water based fire protection systems
29 CFR 1910.159(c)(2) - automatic sprinkler system maintenance

Point(s) of Contact: Ken Tunney

Status of Corrective Action: On March 7, 2007, received documentation from GSA on maintenance that has been performed over the past 2 years on the sprinkler systems in both buildings.

The GSA Fire Alarm Shop is responsible for performing the majority of all scheduled maintenance on our fire-alarm, fire-suppression, and supervisory systems. Exceptions to this include the weekly, monthly, and quarterly testing of the fire pump and related systems, and the annual disassembly, inspection, and hydraulic testing (for certification) of the fire pumps. All “excepted” items performed by NBC staff are performed in the presence of one or more representatives from the GSA Fire Alarm Shop. The type, frequency, and complexity of all PM work on the fire-alarm systems have been established (in writing) by GSA.

FIRE PROTECTION - FIRE**Finding Number: FIRE-07-002**

Finding: Fire extinguishers located at the MIB and SIB are missing annual and/or monthly inspection tags, are past due for inspection, are not consistently mounted and signed, and are not appropriate for the relevant fire hazard.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The CASHE Team identified numerous fire extinguishers that are not selected, mounted, inspected, or maintained properly in numerous locations in both the MIB and SIB. Following are selected examples:

- MIB server room (no inspection tag)
- MIB M Floor (signs missing indicating the location of case-mounted fire extinguishers)
- SIB Room 134 (OSM computer room) (no monthly visual inspections)
- SIB central plant (fire extinguishers are not mounted or signed)
- SIB attic (fire extinguisher with last annual inspection performed in November 2003)
- MIB janitor wash room (B017) (Class B/C fire extinguisher should be replaced with Class A/B/C due to presence of rags and boxes)
- MIB paper baler room (Room B019) (Class B/C fire extinguisher should be replaced with Class A/B/C due to presence of paper and cardboard)
- MIB sump room (fire extinguisher blocked by a refrigerator and a microwave)

In some areas, installed fire extinguishers are inappropriate for the fire hazards posed in the area. For example, a Class A fire extinguisher is installed near SIB Room 354. The extinguisher gauge reads "RECHARGE," which indicates that monthly inspections are not performed. The extinguisher was last tested October 2003. A Class ABC fire extinguisher is stored in the same wall case as the Class A fire extinguisher. Because the Class A extinguisher is not properly maintained and is not suitable for as many fire types as the Class ABC extinguisher, the Class A fire extinguishers (in the SIB) should be removed from services. In addition, fire extinguishers are not mounted or signed in the newly renovated mechanical space (M Floor) in the MIB.

OSHA requires that all fire extinguishers be inspected annually by certified personnel. The annual inspection date must be recorded and maintained for at least 1 year. This information is typically documented on a tag or sticker secured to the fire extinguisher.

OSHA also requires that fire extinguishers be visually inspected monthly by facility personnel (i.e., checking the recharge dial and that the pin is in place). This information is typically documented on the back of the annual tag or on an additional tag.

OSHA regulations also require that fire extinguishers be mounted and their locations signed. Mounting extinguishers off the ground prevents them from being covered by articles stored adjacent to them. Signing of fire extinguisher locations is required to facilitate their rapid access in the event of a fire.

Recommendation: **A)** Contact a fire extinguisher inspection company and arrange for the inspection, recharge, and/or replacement of all fire extinguishers that are past due for inspection; **B)** Initiate internal monthly fire extinguisher inspections and document the monthly inspections on fire extinguisher tags; **C)** Mount and sign all extinguishers; and **D)** Remove all Class A fire extinguishers where Class ABC fire extinguishers are also provide.

Driving Reference(s): 29 CFR 1910.157(e)(2) - monthly fire extinguisher inspection
29 CFR 1910.157(e)(3) - annual fire extinguisher maintenance
29 CFR 1910.157(c)(1) - mounting and signing

Point(s) of Contact: Gary Peacock

Status of Corrective Action: The Building Manager's Office is in the process of developing contract specifications for having all portable fire extinguishers in the MIB and SIB inspected, certified and, if necessary, recharged or changed to the recommended type (Class). Signs identifying the location of fire extinguishers were ordered on March 14, 2007. Monthly inspection of fire extinguishers is setup in our automated PM program, but will be changed to require annotating each fire extinguisher tag with the date and inspector's initials. Class A fire extinguishers will be removed from locations where Class ABC extinguishers exist. Scheduled for completion by June 29, 2007.

FIRE PROTECTION - FIRE**Finding Number: FIRE-07-003**

Finding: Stored items do not allow adequate clearance below sprinkler heads and sprinkler heads are subject to damage in MIB locations.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Items in the SIB attic and MIB A Ramp storage areas are stored too close to sprinkler heads. Sprinkler heads in MIB library aisles are approximately 6 feet 3 inches above the floor. A person's head or an object, such as, a portable ladder may contact the sprinkler heads, break them, and result in the flow of water. This will activate fire alarms and result in water damage. The accessible sprinklers in the library aisles should be equipped with approved cages. The library sprinklers are also included in Finding WWS-07-007 to address the injury hazard.

OSHA states the minimum vertical clearance between sprinklers and material below must be no less than 18 inches along the horizontal plane from the sprinkler heads.

Recommendations: **A)** Move items away from the sprinkler heads to provide at least 18 inches of clearance; and **B)** Install approved cages around the library sprinkler heads that are subject to damage.

Driving Reference(s): 29 CFR 1910.159(c)(10) – sprinkler spacing

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Items were relocated at least 18 inches from each sprinkler head on February 27, 2007.

In our efforts to purchase and install protective cages around the unprotected sprinkler heads in the library stack areas, we learned that all the sprinkler heads in the stack areas—both protected and unprotected—are an old design and no longer are UL-approved. We plan to replace each of those sprinklers and install new cages around each. Scheduled for completion by August 31, 2007.

FIRE PROTECTION - FIRE

Finding Number: FIRE-07-004

Finding: Sliding fire doors do not function properly and fire doors are not periodically inspected and tested.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Fire doors are designed to automatically close during a fire to minimize the fire spreading to other locations and to isolate means of egress pathways. A common type of fire door is a horizontally sliding door that has counter weights to hold the door open. The counter weights are connected to the door with a rope or cable with a fusible link. In a fire the fusible link melts, causing the weights to drop and the door to close. Sliding fire doors for the MIB storage room under the A ramp and for F-12-6 AHU room will not work properly because the cables holding the doors open are not connected to fusible links. There are other fire doors that are properly connected with a fusible link but they are not periodically tested or inspected.

OSHA requires that all emergency safeguards be maintained and fully operational. NFPA requires that all horizontal and vertical sliding and rolling fire doors be tested annually to determine if they work properly. This is commonly referred to as the “fire door drop test.”

Recommendations: **A)** Repair the fire doors so the fusible links are properly connected between the doors and counter weights; and **B)** Annually test all fire doors.

Driving Reference(s): 29 CFR 1910.37(a)(4) – safeguards proper working order
NFPA 80 (2005) 15-3.4.3 – maintenance and testing of fire doors

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: We plan to issue a contract for this work during the first quarter of FY 2008, and will ensure that the periodic preventative maintenance is performed, as scheduled.

GENERAL ENVIRONMENTAL CONTROLS - GEC**Finding Number: GEC-07-001**

Finding: NBC personnel enter confined spaces that have not been evaluated for hazards, and warning signs are not posted on all confined spaces.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: Confined spaces exist in both the MIB and SIB, including ventilation chambers, lift stations, air handling units, pits, and tanks. Following are examples of confined spaces at the MIB:

- Sewage lift station in MIB basement (near column E4) – approximately 15 feet deep and 20 feet in diameter. The sewage tanks are labeled as confined spaces, but the pit itself is not. A sign should be posted at the ladder.
- Sewage lift station in the MIB sump room – approximately 15 feet deep and 20 feet in diameter. The sewage tanks are labeled as confined spaces, but the pit itself is not. A sign should be posted at the ladder.
- Elevator Pit #3 (Room B028) – approximately 18 feet deep shaft with ladder. Railings around opening is not stable (will not support 200 pounds of force in all directions) and no warning signs posted

The sewage lift station pits are currently classified as a permit-required confined space. NBC personnel are not authorized to enter permit-required confined spaces because a confined space entry program has not been developed and implemented [29 CFR 1910.146(c)(4)].

A confined space is defined by OSHA as a space that has the following characteristics: **1)** is large enough that an employee can enter it; **2)** has limited or restricted entry or exit; and **3)** is not intended for continuous occupancy. The definition specifically identifies tanks, vaults, and pits as confined spaces. The fact that a vault is only 1½, 2, or 3 feet deep does not exempt it from this definition. Fatalities have occurred in confined spaces or ditches that are only a few feet deep. Poisonous gases displace oxygen from low lying areas, causing people to succumb to oxygen deficiency. In addition, the use or presence of chemicals (e.g., chlorine, PVC cement) increases the risk of being in a confined space. For example, when a maintenance worker is standing in a vault, his head may be above grade; however, as he bends over to add chlorine to a chlorinator, or to repair a pipe at floor level, the atmosphere could be dangerous.

OSHA requires that if the workplace contains permit spaces, the employer must inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces. OSHA states that a sign reading “DANGER-PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER” satisfies the requirement for a sign. The BLM Prineville District in Oregon was cited by OSHA for failure to identify and sign all of its confined spaces.

It is the preferred approach to first engineer confined spaces out of existence prior to developing an entry program. The second preference is to contract for confined space entry. If a confined space cannot be eliminated and it is necessary for NBC personnel and contractors to enter the space, it must only be done so in accordance with a written confined space entry program or written procedures that have been reviewed by the Safety Manager.

This discussion explains OSHA's confined space standard and the requirements of a confined space entry program. This discussion explains how to eliminate confined spaces at the Main and South Interior Buildings, how to protect NBC employees from the hazards involved when entering a confined space that cannot be eliminated, and opportunities to avoid developing a confined space entry program.

Permit-required confined spaces (PCRS) are confined spaces with any "recognized serious safety or health hazard," including a "**potential** to contain a hazardous atmosphere" [29 CFR 1910.146(b)]. Hazardous atmospheres include atmospheres that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue, injury, or acute illness; and includes atmospheres with low oxygen concentrations or a concentration of substance above its permissible exposure limit (PEL). Oxygen deficient atmospheres contain oxygen concentrations below 19.5% [29 CFR 1910.146(b)].

Alternate procedures for entering permit-required spaces, where continuous forced air ventilation alone is sufficient to maintain the space safe for entry, are provided in 29 CFR 1910.146(c)(5). If monitoring of the confined space demonstrates that forced air ventilation alone is sufficient to maintain a space safe, the employer only needs to comply with the training provisions in 29 CFR 1910.146(g). [Note: As will be discussed, when forced air ventilation is sufficient to maintain safe entry and this is the procedure that is implemented by the NBC, the confined space is **not** considered a nonpermit-required confined space.]

Entering a permit space where forced air ventilation alone **cannot** control all hazards in the space requires that the employer prepare and implement a written permit space program that complies with all requirements of 29 CFR 1910.146, paragraphs (d) through (k). These requirements consist of the following: (d) permit-required confined space program; (e) permit system; (f) entry permit; (g) training; (h) duties of authorized entrants; (i) duties of attendants; (j) duties of entry supervisors; and (k) rescue and emergency services.

Preparing and implementing a written permit space program that meets all requirements of 29 CFR 1910.146(d) involves, but is not limited to, the following: **1)** prevent unauthorized entry; **2)** develop the means, procedures, and practices necessary for safe permit space entry operations; **3)** provide initial space evaluation testing, continuous air monitoring, ventilation, communications, lighting, barriers, and shields; **4)** provide equipment for the safe egress and ingress to and from the permit space; **5)** provide rescue and emergency equipment; **6)** provide an attendant; **7)** designate persons with active roles and define their duties; **8)** develop procedures for summoning emergency services for rescuing entrants, and for providing necessary emergency services to rescued entrants; **9)** develop a system for issuing and canceling entry permits; and **10)** review and revise the program when there is reason to believe that the program may not adequately protect employees.

To implement the alternate procedures, the following condition specified in 29 CFR 1910.146(c)(5)(i) must be met: **1)** the employer can demonstrate that the only hazard posed by the PRCS is an actual or potential hazardous atmosphere; **2)** the employer can demonstrate that continuous forced air ventilation alone is sufficient to maintain that PRCSs are safe for entry; **3)** the employer develops monitoring and inspection data that supports the claim that forced air ventilation is sufficient to eliminate the hazard; **4)** if an initial entry of the PRCS is necessary to obtain the data required to demonstrate that forced air ventilation is sufficient, the entry is performed in compliance with a written confined space entry program; **5)** this data must be made available to each employee who enters the permit space under the alternate procedures; and **6)** entry is performed in accordance with the requirements of 29 CFR 1910.146(c)(5)(ii).

Once the conditions outlined in the previous paragraph are met, the space may be entered under the conditions specified in 29 CFR 1910.146(c)(5)(ii), including, but not limited to the following: **1)** the internal atmosphere must be tested, with a calibrated direct-reading instrument for oxygen, flammable gas and vapors, and potential toxic air contaminants prior to entering; **2)** there is no hazardous atmosphere in the space; **3)** continuous forced air ventilation is initiated before the entrant enters the space, and continues running until after the entrant leaves the space; **4)** the continuous forced air ventilation is from a clean source and does not increase the hazards in the space; and **5)** the atmosphere is periodically tested. Pre-entry written certifications must be prepared to verify that the space is safe for entry.

If a hazardous atmosphere is detected during entry, the entrant(s) must leave immediately and the space must be evaluated to determine how the hazardous atmosphere developed. Measures must be implemented to abate the hazards **before any subsequent entry takes place** [29 CFR 1910.146(c)(5)(ii)(G)].

[**Note:** The standard does not specify how often periodic retesting of the atmosphere must be conducted, but clearly it must be performed before and during the entry, or the employer cannot ensure the ventilation is operating adequately. Monitoring prior to entry must be performed to support issuance of the pre-entry written certification for safe entry. The regulations also call for the entrant to leave a space immediately if a hazardous atmosphere is detected during entry. This requirement in the alternative procedures implies monitoring is on-going during entry.]

Section (c)(7) of the standard is an option afforded employers who have confined spaces that can be reclassified as non-PRCS because **no on-going measures are needed to keep the space free of a hazard** (e.g., forced air ventilation is not needed) [OSHA Standards Interpretation and Compliance Letter, July 2, 1993]. In other words, if a PRCS is entered under the conditions outlined in (c)(5), that is using forced air ventilation to control the hazardous atmosphere, the confined space is still technically considered a **permit-required** confined space because ventilation is considered an on-going measure to keep the space free of a hazard. Only under (c)(7), when all hazards are eliminated and no on-going measures are needed to keep the space free of an actual or potential hazard, can the confined space be reclassified as a **nonpermit**-required confined space.

If the monitoring of the confined space demonstrates that there are no hazardous atmospheres present while the space is occupied, and using forced air ventilation is not required in order to maintain the safe atmosphere, the confined space can be reclassified as non-PRCSs. All monitoring data and conditions must be documented and the records must be maintained by the employer.

The monitoring documentation must clearly state that the non-PRCS designation is only for the conditions and operations that were conducted during the monitoring. The documentation must also note that when **there is a change in the use or configuration of the confined spaces that increases the hazards to entrants (i.e., soldering a pipe), the space must be re-evaluated.** However, if the space is a vault or pit that cannot be effectively sealed to keep animals or organic material from entering the space, the atmosphere could be oxygen deficient due to decaying material. The decaying material could also generate other potentially dangerous gases, such as methane or hydrogen sulfide. Therefore, the CASHE Team's opinion is that periodic monitoring of spaces that are classified as non-PRCS is warranted.

Contracting for work in a permit-required confined space does not release the NBC of all responsibility. The confined-space regulations require an employer who arranges to have a contractor perform work in a permit-required confined space to inform the contractor of the following: **1)** the workplace contains permit spaces and that entry into those spaces is allowed only through a permit space program that complies with the regulations; **2)** the hazards identified in the space that make it a permit space and the employer's experience with the space; and **3)** any precautions or procedures that the host employer has implemented for the protection of employees in or near the permit spaces where the contractor personnel will be working. The regulations require the employer to coordinate entry operations with the contractor when both employer and contractor personnel will be working in or near the permit spaces. A debriefing with the contractor at the conclusion of the entry operations and any hazards found or created in the permit space is also required.

Recommendation: **A)** Immediately label the lift station pits "DANGER – PERMIT-REQUIRED CONFINED SPACE, DO NOT ENTER;" and **B)** Perform atmospheric testing and determine and document the hazards in the elevate pit and develop entry procedures the pit.

Driving Reference(s): 29 CFR 1910.146(b) – definitions
29 CFR 1910.146(c)(1) – workplace evaluation for PRCS
29 CFR 1910.146(c)(2) - warning signs
29 CFR 1910.146(c)(5) - alternate entry procedures
29 CFR 1910.146(c)(6) - change in operations
29 CFR 1910.146(c)(7) – nonpermit-required confined spaces
29 CFR 1910.146(c)(8) –contractor entry into a PRCS
29 CFR 1910.146(d) - program requirements
OSHA Standards Interpretation and Compliance Letter, July 2, 1993

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Signs have been posted at each sewage-ejection pit and will be posted at each elevator pit by May 11, 2007.

Atmospheric testing will be conducted and documented. Facilities will work with the NBC Industrial Hygienist to develop entry procedures that are appropriate for the conditions. Scheduled for completion by September 30, 2007.

The GSA Safety Office recommends that DOI contract for developing confined space entry program and provided NBC with a draft scope of work for that contract. We plan to pursue this option during the first quarter of FY 2008.

HAND AND PORTABLE POWERED TOOLS - TOOL

Finding Number: TOOL-07-001

Finding: Compressed air above 30 psi is used for cleaning in the MIB.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: Compressed air nozzles located in the MIB welding shop, alterations shop, and north elevator room are not marked to indicate compliance with the 30-psi limit for air used for cleaning.

OSHA regulations stipulate that compressed air must not be used for cleaning purposes except where reduced to 30 psi. In a 1985 interpretation letter, OSHA clarified that using compressed air at or greater than 30 psi is permissible if the outlet source (i.e., nozzle) is fitted with a relief device that drops the pressure to less than 30 psi if the flow is dead-ended.

Nozzles that meet the OSHA standard are often stamped with “MEETS OSHA - 30 PSI” or a similar statement. However, some manufacturers only mark the original packaging and the nozzle itself may not be so stamped. Guard Air is one manufacturer that makes long-tip air nozzles that also meet the 30 psi requirement.

Recommendation: Discard non-compliance nozzles and purchase air nozzles designed to deliver air below 30 psi when the nozzle is dead-ended, if needed to clean equipment.

Driving Reference(s): 29 CFR 1910.242(b) - compressed air used for cleaning
OSHA Interpretation Letter, December 6, 1985 – response to request for variance

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Completed on March 12, 2007.

HAZARDOUS MATERIALS - HAZMAT**Finding Number:** HAZMAT-07-001**Finding:** Two small medical oxygen cylinders are stored in a milk crate in SIB Room 336.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: The milk crate does not provide adequate security to prevent the cylinders from falling. OSHA regulations require that all handling, storage, and use of compressed gas cylinders be conducted in accordance with the Compressed Gas Association's (CGA) Pamphlet P-1-2000 (available from CGA, telephone 703-788-2700). The CGA pamphlet states that all cylinders must be secured (e.g., chained) in an upright position to prevent them from falling, and that all cylinder valves be protected from damage.

Proper cylinder storage is typically accomplished by securing it around the shoulder (below the valve neck). The CGA requirement to securely store cylinders and protect cylinder valves from damage is interpreted by the CASHE Team as a prohibition against securing a cylinder around its neck or valve. Securing a cylinder around its neck can damage the valve or allow the cylinder to slip out from under the chain, strap, or ring holding it in place. In addition, securing a cylinder across its middle or lower, or too loosely, will allow the cylinder to tip if it is jolted.

Recommendation: Strap, chain, or construct a rack along the wall of the room to properly secure the oxygen cylinders in an upright position.

Driving Reference(s): 29 CFR 1910.101(b) – compressed gas storage
CGA P-1-2000 – cylinder storage

Point(s) of Contact: J. Maurice Banks

Status of Corrective Action: Completed on March 1, 2007.

HAZARDOUS MATERIALS - HAZMAT**Finding Number:** HAZMAT-07-002**Finding:** Incompatible materials are stored together at assessed facilities.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 4

Discussion: One 1-gallon container of muriatic acid (a corrosive) and a one 5-gallon container of "PEEL AWAY" (a corrosive) are stored with a one 1-quart container of toluene (flammable) and three 1-gallon containers of "LENMAR" coating (extremely flammable) in the flammable storage cabinet in the SIB attic (19th Street Cage). In the MIB paint room (B078), flammable and combustible paints are stored with at least 2 gallons of bleach (an oxidizer) and one gallon of muriatic acid (a corrosive).

In addition, two 1-gallon containers of alkali-foam coil cleaner (corrosive) and one 1-gallon container of bleach (oxidizer) are stored with three extremely flammable aerosol cans in the "PP31" storage cage in the MIB M Floor (2 West Section).

OSHA requires that flammable and combustible liquids be separated from sources of ignition and includes chemical reactions in its definition of sources of ignition. Spontaneous combustion can occur if flammable liquids are intermingled with corrosive materials or oxidizers. All incompatible materials must be separated (especially oxidizers with flammable liquids and corrosive materials with flammable liquids) to avoid container deterioration, fire, or the generation of harmful gas resulting from the accidental mixing of materials due to a spill or leaking container. Information regarding the compatibility of specific hazardous materials can be obtained from the manufacturer, an MSDS, or published compatibility guides (typically designed for DOT purposes).

Flammable storage cabinets isolate flammable liquids and protect both personnel and property in the event of fire. Corrosive cabinets are available and are recommended for large quantities of corrosive materials. Storing corrosive liquids in a corrosive cabinet is not required. Storing corrosive materials on shelves is sufficient.

Recommendation: Store all flammable liquids in flammable storage cabinet, and corrosive materials and oxidizers separately.

Driving Reference(s): 29 CFR 1910.106(e)(6)(i) - sources of ignition

Point(s) of Contact: Ken Tunney

Status of Corrective Action: Completed on March 9, 2007 at MIB and on March 10, 2007 at SIB. These materials were removed from the building using a GSA hazardous materials contractor. The few materials that have been retained are being stored properly (e.g., in required cabinets and/or with proper separation).

HAZARDOUS MATERIALS - HAZMAT**Finding Number: HAZMAT-07-003**

Finding: Flammable and combustible liquids are dispensed from, stored in, or transported in containers that are not OSHA- or DOT-approved for those purposes at the MIB.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Plastic gasoline containers and metal jerricans are stored in MIB Room F-12-1 (one metal jerrican) and in MIB Room B028 (three 1-gallon and one 5-gallon plastic container).

OSHA regulates the workplace storage and dispensing of flammable and combustible liquids in 29 CFR 1910.106. The section of the regulation related to the design, construction, and capacity of containers used to store flammable and combustible liquids states:

“Only **approved** containers and portable tanks shall be used. **Metal containers** and portable tanks meeting the requirements of [the Department of Transportation], shall be deemed to be acceptable” [29 CFR 1910.106(d)(2)(i)].

“Approved” is defined in OSHA as “approved or listed by a nationally recognized testing laboratory” [29 CFR 1910.106(a)(35)]. A safety can is defined as “an approved container, of not more than 5 gallons capacity, having a spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure” [29 CFR 1910.106(a)(29)]. Jerricans are not safety cans because they do not have a self-closing lid and cannot adequately release explosive vapors when exposed to fire.

In 1986, DOT issued packaging specifications that are consistent with the United Nations Performance Oriented Packaging (POP) initiative. Packages that meet the POP standards are marked “UN” plus the specification number according to which the packagings were made. A metal jerrican that meets the UN POP will be marked UN 3A1. For metal jerricans, this marking is typically embossed on the bottom of the container.

Prior to the adoption of the POP standards, DOT-compliant packagings were marked “DOT,” plus the appropriate specification number. When DOT adopted the UN POP standards, use of “DOT”-labeled packagings was authorized until 1996 to allow transporters to use their stock of old packagings. Packagings, such as jerricans, marked “DOT” plus a specification number no longer meet UN POP standards and cannot be used to transport fuel or other hazardous materials. Packagings marked “USMC” do not meet UN POP standards and cannot be used to transport fuel or other hazardous materials.

While it is very clear that OSHA allows metal UN POP containers to be used for storing flammable and combustible liquids, the regulations do not clearly state whether those liquids can be stored in or dispensed from anything other than an approved container or a metal UN POP container. BLM IM Number 2000.087 calls for the replacement of all metal jerricans, regardless of whether they are a UN 3A1 container, by March 2003 because the closed jerrican does not relieve internal pressure when subjected to heat. A closed jerrican becomes a bomb when involved in a fire. In addition, jerrican cans are frequently found with dispensing nozzles left in the bung opening. These open nozzles allow fuel vapor to escape into working space and pose a fire hazard.

Safety cans approved by a nationally recognized testing laboratory are OSHA-approved and must pass a leak test. This test exercises the self-closing lid 5,000 times, after which the lid must not leak more than four drops per minute in the inverted position. When tipped over, even when closed, most jerricans leak around the bung openings.

OSHA adopted the 1969 National Fire Prevention Association (NFPA) Standard 30 when it promulgated the Flammable and Combustible Liquid regulations. At that time, the NFPA did not recognize the use of plastic containers for storing flammable and combustible liquids. Since then, technological changes have led both the NFPA and DOT to allow the use of plastic containers for storing and transporting flammable and combustible liquids. However, now that NFPA does allow plastic, it has often been misinterpreted that OSHA allows indiscriminate storage of flammable and combustible liquids in plastic containers.

OSHA has issued a directive and several letters clarifying that UN POP plastic containers, plastic containers that are not UN POP, and containers that are not regulated, are permissible for storing flammable and combustible liquids under the following specific storage conditions: **1)** the storage area is provided with a fire detection and suppression system interconnected to an employee emergency alarm system; and **2)** the storage building or area (e.g., warehouse, flammable storage shed) in which plastic containers are stored is provided with diking or curbing that will contain the volume of stored liquids and the anticipated flow of fire extinguishing agent, or that the curbed area will drain to a remote impounding area having no employee exposure. [Note: There are actually five specific storage conditions identified in the OSHA directive; the two listed are those applicable to MIB situations.]

Common red plastic gasoline containers that can be purchased at local retailers are UL-listed, and therefore, could be used to store gasoline subject to OSHA's storage conditions. However, there are no areas at the facility that satisfy the OSHA requirements for fire detection and suppression systems and secondary containment. Another disadvantage of the UL-listed plastic containers is that they cannot be used to transport gasoline or diesel fuel because the container is not manufactured in accordance with UN POP standards.

OSHA reinforced its directives and letters related to the storage of flammable and combustible liquids in a March 25, 1999 letter to the Forest Service. The OSHA interpretation letter to the Forest Service states that storage of plastic or polyethylene containers in storage areas that do not meet the five storage conditions would be considered a serious hazard and violation of OSHA standards. The OSHA interpretation letter references BLM's issue paper on this subject, "OSHA and DOT Regulations Related to the Fire Program's use of Jerricans, Safety Cans, and Dolmars" (November 17, 1998), written for NIFC by the BLM CASHE Program Lead. Further, the letter states "OSHA is in agreement on the position stated in the BLM document with respect to recommendations for safe practices and procedures."

The proper container for a flammable or combustible liquid depends on the type and quantity of liquid stored. For example, a maximum of 5 gallons of a Class IB liquid (e.g., gasoline) may be stored in a safety can. A maximum of 1 quart may be stored in an Underwriters Laboratory (UL)- or Factory Mutual-approved container (e.g., a Sigg bottle).

Recommendation: **A)** Transfer fuel from the plastic gasoline containers and jerricans to metal, UN 3A1 jerricans or jerrican-style safety cans; and **B)** Destroy the unapproved containers and throw them in the trash.

Driving Reference(s): 29 CFR 1910.106(a)(35) - safety can definition
29 CFR 1910.106(d)(1)(ii)(b) - fuel tank exception
29 CFR 1910.106(d)(2) - approved containers
29 CFR 1910.106(e)(2)(d) - self-closing nozzles
29 CFR 1910.106(e)(2)(iv)(a) - open containers
49 CFR 173.6(b)(4) - transporting gasoline
Federal Register of January 8, 1997, page 1210 - safety cans
OSHA Directive 1-5.14A, October 24, 1980 - storage of plastic containers
OSHA Letter to Mr. Eugene M. Lyons, December 9, 1992 – storing plastic containers
OSHA Letter to Forest Service, March 25, 1999 – use of containers

Point(s) of Contact: Ken Tunney

Status of Corrective Action: These materials and the containers were removed from the building using a GSA hazardous materials contractor on March 9, 2007.

HAZARDOUS MATERIALS - HAZMAT**Finding Number:** HAZMAT-07-004**Finding:** Flammable and combustible liquids are stored outside flammable storage cabinets.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: Gasoline is stored in MIB Room F-12-1. Approximately 25 1-gallon containers of flammable and combustible paints and sealers, PVC cement, and zinc coating are stored in the MIB south mechanical room (B002). In the paint room (MIB B078), flammable and combustible oil-based paints are stored on open shelves.

At the MIB elevator pit #3 (Room B028), flammable aerosols and alcohol is stored on open shelves because no flammable storage cabinet is available to the elevator contractors.

The presence of the offices in the building, not separated from areas where flammable and combustible liquids are stored by a rated fire wall, results in these storage locations being designated as office occupancy. OSHA regulations require that all flammable and combustible liquids in an office occupancy be stored in a flammable storage cabinet. These regulations also limit storage of flammable and combustible liquids in an office occupancy to those liquids needed to operate and maintain equipment used in the office. Gasoline is not considered a material needed to operate or maintain equipment used in the office.

OSHA requires that a flammable storage cabinet be double-walled, constructed of 18 gauge sheet metal, have 1.5 inches of air space between the walls, provide 2 inches of secondary containment, and be equipped with three-point door latches. In addition, the cabinet design must pass a fire test.

Recommendation: Procure flammable storage cabinets for all areas where flammable liquids are stored, and locate all flammable and combustible liquids in the cabinets.

Driving Reference(s): 29 CFR 1910.106(d)(5)(iii) - flammable liquid storage in office occupancies
29 CFR 1910.106(d)(3)(ii)(a) - cabinet design
40 CFR 261.21 – characteristic of ignitibility

Point(s) of Contact: Ken Tunney, Rick Farr

Status of Corrective Action: Almost all of the flammable and combustible liquids were removed from the building on March 9, 2007, using the GSA hazardous materials contractor. Those that were not removed from the building have been placed in either existing (compliant) or new cabinets approved for the storage of flammable and combustible liquids.

HAZARDOUS MATERIALS - HAZMAT

Finding Number: HAZMAT-07-005

Finding: Vent caps are not properly installed on flammable storage cabinets in the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: Vent caps are missing from the larger flammable storage cabinet outdoors adjacent to the garage. A plastic vent cap is used on one of the flammable storage cabinets in the MIB paint room. Vent caps are missing from the flammable cabinet in the SIB attic (19th Street Cage).

Unless the cabinet is properly connected to a ventilation system, vent caps must be screwed into the bungs on the walls of the cabinet to prevent fire from entering the cabinet through the open vent.

OSHA requires that a flammable storage cabinet be double walled, constructed of 18 gauge sheet metal, have 1.5 inches of air space between the walls, provide 2 inches of secondary containment, and be equipped with three-point door latches. In addition, the cabinet design must pass a fire test.

Recommendation: Securely screw metal bung covers into the vents on all flammable storage cabinets.

Driving Reference(s): 29 CFR 1910.106(d)(3) - cabinet design

Point(s) of Contact: Rick Farr

Status of Corrective Action: Installed metal bungs in the first two cabinets listed above. The cabinet in the SIB attic has been removed from service and will be recycled with other scrap metal. Completed on April 4, 2007.

HAZARDOUS MATERIALS - HAZMAT**Finding Number:** HAZMAT-07-006**Finding:** The aboveground storage tank (AST) for the South Interior Building generator is not protected from vehicle traffic.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3**Discussion:** The AST for the emergency generator is a UL-listed secondary containment tank for flammable liquids. It has all the required spill prevention and containment features. However, the tank is not protected from vehicular traffic. The tank is located beneath an exterior staircase adjacent to a parking lot. While the area in front of the tank is striped for no parking the CASHE Team observed a vehicle parking in front of it. See Finding Number EXIT-07-010.

The NFPA states that guard posts or other approved barrier protection be provided for each protected aboveground tank subject to vehicle impact. Guard posts must be constructed of steel not less than 4 inches in diameter and concrete-filled, spaced not more than 4 feet between posts on center, set not less than 3 feet deep in a concrete footing of not less than a 15-inch diameter, set with the top of the posts not less than 3 feet aboveground, and located not less than 5 feet from the tank. [Note: The existing bollards that protect the material storage area next to the diesel storage tank do not meet these requirements.]

Recommendation: When relocated, install bollards in accordance with the requirements described above to protect the tanks from vehicular traffic, if applicable at the new tank location.**Driving Reference(s):** NFPA 30 4.3.7 – vehicle impact protection**Point(s) of Contact:** Gary Peacock**Status of Corrective Action:** The fuel tank was installed recently as part of a GSA contract to install a new emergency generator for the building. The GSA project office responsible for the contract has agreed to relocate the fuel tank to an approved location. The contract specifications omitted the requirement and funding for barrier protection. If GSA does not provide the required protection, we will install it. GSA has not provided us with a schedule for relocating the fuel tank; therefore it is not possible to estimate the completion date for this finding.

HAZARDOUS MATERIALS - HAZMAT**Finding Number: HAZMAT-07-007**

Finding: The normal vents for the South Interior Building diesel fuel supply tank and day tank do not discharge directly to the outdoors.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The diesel fuel supply tank for the generator is located in an alcove beneath exterior stairs. The vent extends inside the alcove just below its ceiling about nine feet above the floor. The day tank is located inside the South Interior Building, in a room off of the central plant. The generator's day tank has two vents. The day tank has a normal vent and a fuel return vent. They each terminate at the top of the day tank approximately 4 feet off the floor. Diesel fumes are heavier than air and will accumulate in a space if it is not well ventilated. The interior room in which the day tank is located has a strong fuel smell.

Normal vents are required to prevent the development of vacuum or pressure that may exceed the design pressure of a tank. OSHA regulations require that normal vents be sized in accordance with an accepted standard (e.g., API); or be as large as the filling or withdrawal connection, whichever is larger, but no less than 1.25-inch nominal inside diameter.

The normal vent must be equipped with piping that extends 12 feet above grade. Because gasoline and diesel fuel vapors are heavier than air, they accumulate in secondary containment or low areas where they could be ignited by a cigarette butt or other ignition source. The required height of the vent facilitates dispersion of vapors into the atmosphere. OSHA only requires 12-foot vents and flame arrestors on tanks containing flammable (i.e., Class I) liquids, such as gasoline.

NFPA requires normal vents and flame arrestors on tanks containing flammable and combustible (i.e., Class I, Class II, and Class III) liquids, which includes diesel fuel tanks. [**Note:** Flame arrestors are only required by OSHA on tanks with a capacity of 1,000 gallons or greater. Therefore a flame arrestor is not required.] NFPA 30 Chapter 4, Tank Storage, is applicable to the storage of flammable and combustible liquids in fixed aboveground and underground storage tanks, and the requirement for normal venting is not limited to tanks located in vaults. In addition, the Life Safety Code (NFPA 101) requires that means of egress be continuously maintained free of all obstruction or impediments. A fire under the stairs would prohibit the use of this exit. See Finding Number EXIT-07-010.

Recommendation: When the tanks are relocated, ensure they are properly equipped with normal vents to the outdoors to at least 12 feet above grade.

Driving Reference(s): 29 CFR 1910.106(b)(2)(iv)(b) - normal venting
29 CFR 1910.106(b)(2)(iv)(f) - flame arrestor
29 CFR 1910.106(b)(2)(vi)(b) - vent piping 12 feet above grade
NFPA 30 4.2.5.1 - normal venting

Point(s) of Contact: Gary Peacock

Status of Corrective Action: GSA is including this requirement in the (contract) change order to relocate the fuel tank. GSA has not provided us with a schedule for relocating the fuel tank; therefore it is not possible to estimate the completion date for this finding.

HAZARDOUS MATERIALS - HAZMAT

Finding Number: HAZMAT-07-008

Finding: Flammable and combustible liquids are stored in open containers.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Most containers of flammable and combustible liquids are kept closed at the MIB and SIB; however, some open containers were discovered during the audit. Following are example locations where open containers of flammable and combustible liquids were discovered:

- SIB central plant (one 5-gallon container of paint thinner stored near the elevator control room)
- MIB central plant (one 5-gallon container of combustible liquid labeled "MKG ENVIRO CLEAN")

OSHA regulations prohibit the storage of open containers of flammable or combustible liquids in the workplace. The volatile vapors pose a health hazard, as well as a fire hazard.

Recommendation: Close and seal all containers of flammable and combustible liquids, except when in use, to prevent release of flammable vapors.

Driving Reference(s): 29 CFR 1910.106(e)(2)(iv)(a) - open containers

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Completed on March 10, 2007. These items (i.e., the containers and their contents) were removed using the GSA hazardous materials contractor.

MACHINERY AND MACHINE GUARDING - MGuard**Finding Number: MGuard-07-001**

Finding: The tool rests and tongue guards on the grinders at the SIB and MIB are not properly adjusted.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Following are example locations where improperly adjusted grinders or grinders lacking required safety features exist:

- SIB central plant, on the bench - tongue guard adjusted to a 4-inch gap; grinder is also not bolted down and the power cord is damaged
- MIB central plant, near column H2 - missing a tongue guard and tool rest
- MIB carpentry shop - tool rest adjusted to $\frac{3}{4}$ inch from grinding wheel
- SIB central plant - large industrial grinder missing a tongue guard and tool rests not properly adjusted
- MIB welding shop - tongue guard and tool rest both adjusted to a 1-inch gap
- MIB Room B142, alterations shop - tongue guards absent and tool rests adjusted to approximately 1-inch gap
- MIB Room B002, south mechanical room - no tongue guard

Tool rests must be adjusted to within one-eighth inch of the grinding wheel to prevent tools from getting wedged between the grinding wheel and the rest. Tongue guards, located at the top of the wheel, must be adjusted to within one-quarter inch of the wheel to protect the operator from sparks, grinding debris, or pieces of a disintegrated grinding wheel. In addition, the power cord for the grinder is frayed and is exposing the wiring, and the grinder is not bolted to the work bench. [**Note:** Tool rests and tongue guards are not required for wire brushes.] Regardless of whether the grinder is used, its presence in a work area subjects it to OSHA requirements.

In addition, attached shields become dirty and scratched and may interfere with good vision, causing personnel to bypass them. OSHA requires that the employer provide eye protection from flying particles. This requirement includes side protection, meaning that an employee's prescription lenses are not adequate. Safety glasses are provided at the facility; however, the CASHE Team recommends posting signs that require users to wear eye protection as a best management practice.

Recommendation: A) Adjust the tongue guard and tool rests for all grinders to the proper settings; B) Replace or repair damaged power cord; C) Bolt grinder to work benches; or D) Replace the grinder with a new piece of equipment and ensure the safety features are maintain and adjusted appropriately.

Driving Reference(s): 29 CFR 1910.215(a)(4) - tool rests
29 CFR 1910.215(b)(9) - tongue guards
29 CFR 1910.133(a)(1) and (2) – eye protection

Point(s) of Contact: Kurt Nordstrom, Rick Farr

Status of Corrective Action: Completed on March 9, 2007. The bench grinder and large industrial grinder in the SIB central plant; and the grinders in the MIB near column H2, in room B142, and B002 were removed from service and recycled as scrap metal. The tool rests were adjusted to proper settings on the remaining three grinders.

MACHINERY AND MACHINE GUARDING - MGuard**Finding Number:** MGuard-07-002**Finding:** Woodworking equipment at the MIB is not equipped with all required safety devices.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 2

Discussion: The band saw, joiner, portable table saw, and radial arm saw in the MIB Alterations Shop are not equipped with manual restart switches. In addition, the guard on the radial arm saw is not sufficient, the shaper head is not guarded, and the Skill portable table saw does not have a blade guard or anti-kickback device. Regardless of whether the equipment is used, its presence in a work area subjects it to OSHA requirements.

In the event of the loss of power, manual restart switches prevent the equipment from automatically restarting once power is restored, potentially causing an injury. For example, if a power failure was to occur while the table saw was in operation and the wood being cut was left on the table, the wood could be kicked back at personnel when the power came back on. The manual restart switch would also prevent a serious injury should the blade begin spinning unexpectedly. One source for manual restart switches is JDS Products, Inc. (www.saf-start.com, 916-933-2699). The switches are approximately \$70.00 each.

OSHA requires that the upper hood on a radial saw completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. The upper hood must be constructed in a manner and of material that it will protect the operator from flying splinters, broken saw teeth, etc., and will deflect sawdust away from the operator. The sides of the lower exposed portion of the blade must be guarded to the full diameter of the blade by a device that will automatically adjust itself to the thickness of the stock and remain in contact with stock being cut to give maximum protection possible for the operation being performed.

Shaper heads are required by OSHA to be guarded. The cutting heads need to be enclosed with a cage or adjustable guard so designed as to keep the operator's hand away from the cutting edge. The diameter of the shaper guard must be at least the diameter of the largest cutter.

The table saw is required to have a guard that completely encloses the saw blade. Anti-kickback devices are required when boards are being ripped.

Recommendation: Equip all woodworking equipment with the required safety devices

Driving Reference(s): 29 CFR 1910.213(b)(3) - manual restart
29 CFR 1910.213(h)(1) – radial saw blade hood
29 CFR 1910.213(m)(1) – wood shapers
29 CFR 1910.213 (c)&(d) – rip and crosscut saws

Point(s) of Contact: Rick Farr

Status of Corrective Action: This equipment has been removed from service and tagged, and will remain so until the proper (manufacturer-approved) guards and manual-restart switch are installed. The table saw has been removed from service and discarded as scrap metal to be recycled. The shaper was removed from service on May 3, 2007, and is awaiting the receipt of a replacement guard which has been ordered. Scheduled for completion by May 31, 2007.

MACHINERY AND MACHINE GUARDING - MGuard

Finding Number: MGuard-07-003

Finding: Fan blades are not adequately guarded.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Pedestal fans, exhaust fans, and ventilation fans in the following locations have fan blade guards that do not meet OSHA specifications:

- SIB attic areas (U-1-11, U-1-12, U-1-9, U-1-8, U-1-5, and several AC fan auto dampers have fans blades that are not adequately guarded)
- SIB central plant (exterior wall fan has large openings in its guard)
- MIB 1 west (two wall fans do not have blade guards)
- MIB #1 elevator pit (pedestal fan guard damaged)
- MIB room 2509 (desk fan guard damaged)

OSHA requires that all fan blades less than 7 feet from the work surface need be fully guarded to prevent access. Fan blades need guards with openings no greater than ½ inch.

Recommendation: Install guards on the fans that meet the ½-inch maximum opening specification on fans.

Driving Reference(s): 29 CFR 1910.212(a)(5) – fan blade guarding

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Scheduled for completion by February 8, 2008. Facilities plans to award a contract for the fabrication and installation of compliant guards for several fans, air-handlers, and other locations where pulleys and belts pose a safety threat.

The guard on the fans in MIB elevator pit no. 1 and room 2509 will be repaired or the fans will be discarded. Scheduled for completion by June 15, 2007.

MACHINERY AND MACHINE GUARDING - MGuard**Finding Number: MGuard-07-004**

Finding: Belts, pulleys, and shafts, and fans in mechanical spaces at the Main and South Interior Buildings are not adequately guarded.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Many air handling units, heaters, pumps, and shop equipment are equipped with belts, pulleys, shafts, and fans that are not fully enclosed with appropriately sized guards or shields. Following are example locations where guarding is inadequate:

- MIB welding shop (drill press cover missing exposing belts and air compressor belts completely unguarded)
- SIB attic (air handling pulleys and belts that operate the fans are unguarded or partially guarded)
- MIB M Floor, 6 West Section - belts and pulleys on air handlers F-6-WA, F-5-EB, F-5-EB, F-5-EV, and F-5-WA are not completely enclosed with guards
- MIB M Floor, 1 West section - (two metals fans approximately 5 feet from floor are not guarded)
- MIB alterations shop (no cover on top of drill press belt and pulley guard, and sponge laying directly on internal belts)
- SIB elevator room (the lower cover on the elevator control cabinet is not in place, exposing belts and pulleys)
- MIB M Floor 1 west (air handling belts A-11-10 and F-27-16)
- MIB B-002 mechanical room (air handling belts A-11-1 and F-27-1, shafts on pumps M-3-6 and M-3-7 do not have shaft guards)
- MIB F27-12 AHU room (air handler F27-12 belts and pulleys)
- MIB B266 mechanical room (air handler F-27-28 belts and pulleys)

OSHA specifically identifies rotating parts as a hazard and requires proper guarding to protect employees from hazards. OSHA regulations require belts, pulleys, gears, sprockets, and chains less than 7 feet from the floor be guarded at least 15 inches above the belt or that the belt and pulleys be fully enclosed.

OSHA requires that fans guards must not contain openings greater than ½ inch. The majority of the air handling unit belt and pulley guards are constructed of wire mesh that has openings approximately 1 inch by 1 inch, and due to the close proximity of these openings to the moving belts and pulleys, the openings are too large.

Recommendation: **A)** Obtain and replace all missing guards; or **B)** Fabricate expanded metal guards that fully enclose all the belts, pulleys, and fans.

Driving Reference(s): 29 CFR 1910.219(d)(1) - guarding pulleys
29 CFR 1910.219(e)(1) – horizontal belts
29 CFR 1910.219(e)(4) – vertical belts
29 CFR 1910.219(f) – gears, sprockets, and chains
29 CFR 1910.219(m) – standard guards
29 CFR 1910.219(o) – approved materials

Point(s) of Contact: Kurt Nordstrom, Rick Farr

Status of Corrective Action:

- 1) Fabricated and installed a proper cover for the top of the drill press (i.e., where pulleys were exposed) in the MIB welding shop.
- 2) Regarding the air handlers in the SIB attic, GSA has awarded a contract for the replacement of all the air handlers in the SIB. The new air handlers will have code-compliant guards surrounding all belts, pulleys, and other moving parts. Work is expected to begin on May 5, 2007, and will be completed by August 25, 2007.
- 3) Regarding MIB M Floor (6 West Section) belts and pulleys on air handlers F-6-WA, F-5-EB, F-5-EB, F-5-EV, and F-5-WA which are not completely enclosed with guards, GSA has been asked to initiate corrective action because the units are new (installed as part of the Modernization project). Awaiting GSA response and, until then, we are unable to estimate a date for completion.
- 4) A cover for the top of the drill press in the MIB Alterations Shop was fabricated and installed on April 6, 2007.
- 5) The elevators in the SIB were being modernized under a GSA contract at the time of the audit. Work on the project was completed on April 20, 2007, and the cover door on the control cabinet has been in place since that time.

The scheduled completion date for the remaining items noted in the discussion is February 8, 2008 (excluding the corrective action needed on the item on the MIB M floor, wing 6, above, by GSA and/or its modernization contractor).

MACHINERY AND MACHINE GUARDING - MGUARD

Finding Number: MGUARD-07-005

Finding: The radial arm saw in the MIB welding shop does not automatically retract.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Regardless of whether the saw is used, its presence in a work area subjects it to OSHA requirements.

The radial arm saw may not be retracting because the coating on the retractor cable has peeled off the cable. OSHA regulations require that installation of a radial saw be in such a manner that the front end be slightly higher than the rear to cause the cutting head to retract gently to its starting position when released by the operator. OSHA interpretation letters (at www.osha.gov) state, "The employer may use devices, attachments, or other means to accomplish this requirement." Therefore, pullback mechanisms may be used in lieu of having the front end of the radial saw higher than the rear.

The automatic pullback mechanism retracts the radial saw when it is released by the operator and prevents the cutting head from moving towards the operator due to vibration. Wolfe Machinery Company (515-270-2766; <http://www.wolfemachinery.com>) has been identified as a source for these devices. The device is called a "spirator" and Wolfe Machinery Company claims that it is OSHA-approved for satisfying the requirement that the cutting head of the radial arm saw retract gently to its starting position when released by the operator.

Recommendation: A) If cleaning and maintenance does not allow the saw to retract, either adjust the radial arm saw so that the front end is slightly higher than the rear, allowing the cutting head to slide back; or B) Install a retrofit pullback mechanism.

Driving Reference(s): 29 CFR 1910.213(h)(4) - pullback mechanism
OSHA Interpretation Letter, March 31, 1991 - pullback mechanism
OSHA Interpretation Letter, October 19, 1994 - pullback mechanism

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Installed a new pullback device on the saw on March 9, 2007.

MACHINERY AND MACHINE GUARDING - MGuard**Finding Number:** MGuard-07-006**Finding:** The print plant laminator may be operated in a manner that bypasses a safety device.**Repeat Finding:** No**Safety RAC:** 3

Discussion: The Image Impact Laminator machine in the MIB print plant laminates sheets of paper and other materials together. The machine has a safety light curtain that senses when the operator's hands come in close proximity to the in-running rubber rollers nip. If the safety light is broken, the laminator stops. When the machine is operated in the manual mode, the safety light feature does not work. Authorized laminator operators may not be aware that the safety light does not work in the manual mode. The in-running rollers create a serious crushing hazard. The machine should not be operated in the manual mode. Ideally, the manufacturer should be contacted to see if the manual setting can be removed. If it has to be used, alternative safeguards need to be employed, such as installing fixed guards to prevent access to the in-running nip.

OSHA requires that in-running nips and other point of operation hazards have adequate safeguards to prevent exposure.

Recommendation: **A)** Do not operate the laminator in the manual mode; **B)** Train employees that are authorized to use the laminator on how to properly use the machine and its safeguards; and **C)** Contact the manufacturer to have the manual mode setting removed; or **D)** if the manual mode setting has to be used, install a fixed guard or other machine safeguard to prevent access to the in-running rollers.

Driving Reference(s): 29 CFR 1910.212(a)(2) – machine guarding**Point(s) of Contact:** Gary Dixon

Status of Corrective Action: All employees have been instructed to not use the machine in manual mode. Additionally, Operator Warning signs were applied to both the machine and its manual pedal. Completed on May 2, 2007.

We plan to contact the manufacturer on or before May 18, 2007, in an effort to have the manual-mode setting removed or—preferably—to have it modified in such a way as to allow us to safely use the feature when occasionally needed.

MATERIALS HANDLING AND STORAGE - MHS**Finding Number:** MHS-07-001**Finding:** Materials are stored in the SIB and MIB in a manner that creates various hazards.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 4

Discussion: Storage areas in the SIB attic have excessive materials in storage, creating fire, walking, sanitation and other hazards. Bird feces are excessive in areas, such as Bay 39. In the 19th Street attic cage area approximately 25 50-pound sand bags are stored in a pile that may exceed the posted floor load rating. In SIB Room 322, boxes are stored on top of filing cabinets, creating unstable storage and hazards to place and retrieve the boxes. A 5-gallon containers of bituminous coating and a 55-gallon drum of Coil Bright detergent are leaking in the storage room under the MIB A ramp.

OSHA regulations prohibit the storage of materials on the floor or roof of any structure that exceeds the load limit for the floor or roof. The regulations state that the floor area used for storage must have a load limit posted on it. The load limits are to be approved by a local building official.

OSHA also requires that the storage of materials does not create a hazard. Items stored in tiers must be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.

Recommendation: A) Organize the materials in a stable and secure manner; B) Clean and disinfect the areas soiled with bird feces; and C) Ensure stored materials do not exceed load limits in elevated storage areas.

Driving Reference(s): 29 CFR 1910.176(b) – secure storage
29 CFR 1910.176(c) – housekeeping
29 CFR 1910.22(d)(1) – establishing and posting of load limits
29 CFR 1910.22(d)(2) – prohibition of storage above load limits

Point(s) of Contact: Maurice Banks, Kurt Nordstrom

Status of Corrective Action: The bags of sand were moved to the SIB parking lot on February 28, 2007, and the bird feces was cleaned on March 28, 2007. The boxes stored in room 322 at the SIB were moved and stored properly on March 26, 2007. The container of bituminous coating and drum of Coil Bright in the MIB A Ramp were removed from the building by the GSA hazardous materials contractor on March 9, 2007.

On May 4, 2007, two of our Building Management Specialists and one of our Maintenance Work Inspectors were tasked with inspecting the SIB attic at least once each month. Their inspections include checking for apparent violations of the posted weight-load limit and improper storage of materials (e.g., storage in vicinity of sprinkler heads). Violators will have their use of the space revoked.

MATERIALS HANDLING AND STORAGE - MHS**Finding Number: MHS-07-002**

Finding: No evidence was found to document that the underhung hoist trolley cranes and their components located in the MIB mezzanine and central plant were tested to their rated load capacity prior to initial use.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: There is a 1-ton hoist hooked to a 3-ton trolley on an I-beam in the mezzanine. The I-beam is welded to metal plates that are bolted into a reinforced concrete beam. This hoist trolley appears to have been installed by the modernization contractor to lift long sections of steel pipe so they may be welded together. The load limits on the hoist trolleys in the central plant could not be read by the CASHE Team.

OSHA requires overhead and gantry cranes to meet the American National Standard Safety Code, ANSI B30.2.0 – 1967; however, underhung trolley/lifting devices, such as a hoist on a trolley, are excluded in the scope of the standard. While underhung trolley/lifting devices are excluded in the scope of OSHA overhead and gantry crane regulations, OSHA considers exposure of employees to the risk of injury due to possible failure of support components of underhung trolley/lifting devices to be a recognized hazard.

OSHA issued an interpretation letter on November 2, 1993 that says, “employees utilizing underhung trolley/lifting devices must conduct ‘rated load tests’ prior to initial use on all new, extensively repaired, and altered underhung trolley/lifting devices in the workplace. These tests are required to verify the loading capacity of the underhung trolley/lifting devices, as installed. The tests must be performed after the device is installed on the supporting structures (including I-beams) and connectors. Test loads must not be more than 125% of the manufacturer’s rated load unless otherwise recommended by the manufacturer. The resulting load rating for the hoist must not be more than 80% of the maximum load sustained during the test. These requirements would not be applicable in working situations where employees would never be exposed to potentially falling hoist components, loads or supporting elements.” Manufacturer recommended installation would also likely require the I-beam to have a safe working load equal to that of the hoist.

The general duty clause for Federal employees requires that the employer furnish a place of employment that is free from recognized hazards. The interpretation letter also states that OSHA’s policy is to consider rated load tests on hoists mandatory, that it considers the potential collapse of an underhung trolley/lifting device a serious hazard, and that it will cite violations under the general duty clause.

OSHA regulations require all new and altered cranes be operational and load tested prior to initial use. In addition, infrequently used cranes (e.g., a crane not used in 6 months) must be tested to determine whether a defect has developed since its last use.

The required operational tests on the crane include, but are not limited to, hoisting and lowering, trolley and bridge travel, limit switches, and locking and safety devices. The crane should have been tested up to 125% of its rated load capacity prior to its initial use.

Recommendation: **A)** Require the modernization contractor to discontinue operation of the crane until the provide documentation that it has been tested to its rated load capacity prior to use: **B)** Perform and document an operational and weight test of the hoist trolley cranes; **C)** Contract for operational and weight tests on the central plant hoist trolley cranes every 6 months if it is infrequently used; or **D)** Remove the central plant hoist trolley cranes due to their infrequent use to eliminate the need for complying with this and numerous other regulations.

Driving Reference(s): 29 CFR 1910.179(k)(2) - overhead and gantry crane load tests
29 CFR 1910.179(k)(1) - overhead and gantry crane operational tests

Point(s) of Contact: Dirk Meyer, Kurt Nordstrom

Status of Corrective Action: The crane on the mezzanine floor was removed on March 5, 2007. One crane in the central plant has been secured and tagged "OUT OF SERVICE," pending proper recertification of the unit, which is scheduled for completion by September 30, 2007. The other overhead cranes in the central plant have been removed.

MATERIALS HANDLING AND STORAGE - MHS**Finding Number: MHS-07-003**

Finding: The load limit is not indicated on the I-beams holding the hoist trolley in the MIB mezzanine or on the two hoist trolleys in the central plant basement.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: There is a 1-ton hoist hooked to a 3-ton trolley on an I-beam in the mezzanine. The I-beam is welded to metal plates that are bolted into a reinforced concrete beam. This hoist trolley appears to have been installed by the modernization contractor to lift long sections of steel pipe so they may be welded together. The load limits on the hoist trolleys in the central plant could not be read by the CASHE Team.

OSHA requires overhead and gantry cranes to meet the American National Standard Safety Code, ANSI B30.2.0 – 1967; however, underhung trolley/lifting devices, such as a hoist on a trolley, are excluded in the scope of the standard. While underhung trolley/lifting devices are excluded in the scope of OSHA overhead and gantry crane regulations, OSHA considers exposure of employees to the risk of injury due to possible failure of support components of underhung trolley/lifting devices to be a recognized hazard.

OSHA issued an interpretation letter on November 2, 1993 that says, “employees utilizing underhung trolley/lifting devices must conduct ‘rated load tests’ prior to initial use on all new, extensively repaired, and altered underhung trolley/lifting devices in the workplace. These tests are required to verify the loading capacity of the underhung trolley/lifting devices, as installed. The tests must be performed after the device is installed on the supporting structures (including I-beams) and connectors. Test loads must not be more than 125% of the manufacturer’s rated load unless otherwise recommended by the manufacturer. The resulting load rating for the hoist must not be more than 80% of the maximum load sustained during the test. These requirements would not be applicable in working situations where employees would never be exposed to potentially falling hoist components, loads or supporting elements.” Manufacturer recommended installation would also likely require the I-beam to have a safe working load equal to that of the hoist.

The general duty clause for Federal employees requires that the employer furnish a place of employment that is free from recognized hazards. The interpretation letter also states that OSHA’s policy is to consider rated load tests on hoists mandatory, that it considers the potential collapse of an underhung trolley/lifting device a serious hazard, and that it will cite violations under the general duty clause.

Recommendation: **A)** Perform and document an operational and weight tests of the hoists and I-beams; and **B)** Post the applicable load limit on both sides of each crane’s I-beam.

Driving Reference(s): 29 CFR 1910.179(b)(2) - overhead and gantry cranes must meet ANSI OSHA Letter, November 2, 1993 – underhung trolley/lifting devices
29 CFR 1960.8(a) –general duty clause for Federal employees

Point(s) of Contact: Dirk Meyer, Kurt Nordstrom

Status of Corrective Action: The crane on the mezzanine floor was removed on March 5, 2007. One crane in the central plant has been secured and tagged “OUT OF SERVICE,” pending proper recertification of the unit, which is scheduled for completion by September 30, 2007. The other overhead cranes in the central plant have been removed.

MATERIALS HANDLING AND STORAGE - MHS**Finding Number: MHS-07-004**

Finding: The required frequent and periodic inspection of hoist components is not performed on the underhung hoist trolley cranes in the MIB mezzanine and central plant.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: The modernization contractor appears to have installed a crane in the mezzanine to lift steel pipe. The central plant has two cranes to lift equipment. The mezzanine hoist is hooked to the trolley. The safety hatch on the hook that connects the hoist to the underhung trolley does not snap shut. None of the load hook have a safety hatch.

The items that must be inspected and inspection frequency are specified in the OSHA regulations. Examples of frequent daily inspections include all control mechanisms, and deterioration or leakage in air or hydraulic systems. Items that must be inspected at least monthly include, but are not limited to, safety devices and hooks for cracks or twists.

The monthly inspection must be documented in a certification record. The record must include the date of the inspection, signature of the person who performed the inspection, and crane serial number or other crane identifier. The certification record is designed to ensure that all critical components are inspected frequently and that those inspections are documented. The certification record must be kept readily available. The regulations do not require that the person performing periodic or frequent inspections be trained or certified, but the requirement that the inspector's signature be on the certification record is intended to provide accountability in regards to the quality of the inspection. [**Note:** Many states do license crane/hoist inspectors, in a manner similar to elevator inspectors.]

The OSHA regulations require that all crane types have a complete *periodic* inspection **at least once a year**. The inspection includes, but is not limited to, a careful examination of structural members, loose or worn bolts or rivets, and excessive parts wear.

A crane or hoist that has not been in regular service for one to 6 months must be given a complete frequent inspection, prior to being put into service. A crane or hoist that has not been in regular service for a period of 6 months or longer must be given a complete periodic to being put into service.

If a deficiency is found, the regulations require that a determination as to whether it constitutes a safety hazard must be made. This type of determination is best made by trained personnel. The North American Crane Institute (NACI) offers training at locations throughout the country on crane and hoist inspections. The NACI offers its own certification examination at the end of each training course. The exam provides a means for the NBC to determine whether its employees are competent to perform crane and hoist inspections. Contact the NACI at 800-654-5640 to obtain information on its training classes.

If a contractor is hired to perform the annual periodic inspection and load test, the contractor should have "errors and omissions" insurance for the inspection and load testing services. Firms with this type of insurance would be liable for property damage or personal injuries attributable to a defect in a crane or hoist they inspected. A firm carrying this type of insurance is treating crane and hoist inspections as a professional service, not a side-line business.

Recommendation: **A)** Require the modernization contractor to perform and document inspection of their crane; **B)** Designate at least one NBC employee to be responsible for the monthly certification inspection of each crane in the central plant, send that individual to formal training, and have that individual become certified as an inspector; **C)** Have the certified inspector provide training to all crane users on how to conduct the daily crane inspections; **D)** Issue a NBC policy restricting use of the crane to the personnel trained on frequent inspection procedures; **E)** Establish a log to document frequent inspections; or **F)** Remove the crane in the central plant due to its infrequent use to eliminate the need for complying with this and numerous other regulations.

Driving Reference(s): 29 CFR 1910.179(j)(2) - overhead and gantry crane frequent inspection
29 CFR 1910.179(j)(3) - overhead and gantry crane periodic inspection
29 CFR 1910.179(j)(4) - overhead and gantry crane not in regular use

Point(s) of Contact: Gary Peacock, Kurt Nordstrom

Status of Corrective Action: We have informed the modernization contractor of the requirements for performing and documenting inspections of cranes under its control. However, the contractor has dismantled and removed its cranes from the building.

Scheduled for completion by January 11, 2008. An employee will be assigned the responsibility for monthly certifications, and will be provided all necessary training to achieve certification as an inspector. Written policy will be established and implemented and will include requirements for daily and monthly log entries and use of the crane only by trained personnel.

MEDICAL AND FIRST AID - MED**Finding Number: MED-07-001**

Finding: Eyewash units at the Main and South Interior Buildings are not properly maintained.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The eyewash located in the SIB attic cooling tower access room has no records of maintenance, flushing, is missing its spout caps, and improperly mounted to the wall (mounted approximately 4 feet off the ground). An eyewash unit and deluge shower in the MIB parking garage (near the area where floor cleaner batteries are charged) is not maintained and is blocked by pallets of potassium chloride and sand).

In addition, two eyewash units and a deluge shower located in the SIB central plant have no maintenance records or logs indicating a schedule for periodic flushing.

At the MIB, an eyewash/deluge shower is installed in the janitorial wash room (Room B017). This unit is not functional and is not maintained properly. Because neither the eyewash nor the deluge shower is required in this location, they should be removed.

OSHA requires that where the eyes or body of any person may be exposed to corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body must be provided within the work area for immediate emergency use.

The American National Standards Institute (ANSI) standard Z358.1 states that a victim should be able to reach an eyewash station within 10 seconds, and estimates that the average person can cover approximately 55 feet in that time. That time and distance should not include stairs or a maze of obstacles.

Periodic flushing of eyewashes is necessary to prevent a build-up of parasites or bacteria that could potentially contaminate the eyewash user. A log posted near the eyewash to document flushing the eyewash will remind personnel of the need to perform this task.

Recommendation: **A)** Flush the eyewash to clean the lines of any parasites or bacteria at least monthly; **B)** Maintain a log to document this process; **C)** Keep the head caps in place when not in use; **D)** Purchase and install head caps on the eyewash heads; and **E)** Maintain a clear area in front of and around the eyewash (this maybe accomplished by placing yellow and black striping on the floor in front of the and on the counter around the eyewash to indicate the area is not to be used for storage).

Driving Reference(s): 29 CFR 1910.151(c) - emergency shower and eyewash
ANSI Z358.1 – distance to eyewash

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Weekly inspections and maintenance for all emergency eyewash stations are documented in the automated PM program. Because caps are missing caps from at least one eyewash station, additional training for those whom perform weekly inspections was provided in April 2007. As part of each inspection, each inspector is to ensure that head caps are in place.

The eyewash station in the SIB attic (near the cooling tower) was replaced on March 8, 2007 (the replacement unit has the required caps). The items blocking access to the eyewash station in the MIB garage (near the battery-charging station) were removed on February 27, 2007, and the custodial contractor was reminded of the importance of keeping the eyewash station fully accessible. Because it no longer is needed, the eyewash station in room B017 was removed on March 8, 2007.

OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL – OHEC**Finding Number: OHEC-07-001**

Finding: Annual safety inspections of all work areas in the Main and South Interior Buildings do not appear to be performed or documented.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: The large number of obvious serious safety violations found in the Main and South Interior Buildings leads the CASHE Team to conclude that annual safety inspections are not performed and/or are not documented. OSHA regulations require each agency utilize, as inspectors, “personnel with equipment and competence to recognize hazards.” Inspections must be conducted by inspectors qualified to recognize and evaluate hazards of the working environment and to suggest general abatement procedures. Safety and health specialists, as defined in 40 CFR.1960.2(s), with experience and/or up-to-date training in occupational safety and health hazard recognition and evaluation are considered as meeting the qualifications of safety and health inspectors. For those working environments where there are less complex hazards, such safety and health specializations as cited above may not be required, but inspectors in such environments must have sufficient documented training and/or experience in the safety and health hazards of the workplace involved to recognize and evaluate those particular hazards and to suggest general abatement procedures. All inspection personnel must be provided the equipment necessary to conduct a thorough inspection of the workplace involved.

In addition OSHA regulations require that all areas and operations of each workplace, including office operations, be inspected at least annually. More frequent inspections must be conducted in workplaces where there is an increased risk of accident, injury, or illness due to the nature of the work performed. Sufficient unannounced inspections and unannounced follow-up inspections should be conducted by the agency to ensure the identification and abatement of hazardous conditions.

The inspector must, in writing, describe the findings which form the basis for the issuance of any Notice of Unsafe or Unhealthful Working Conditions. Each agency must establish a procedure for the prompt issuance of a Notice of Unsafe or Unhealthful Working Conditions. Such notices must be issued not later than 15 days after completion of the inspection for safety violations or not later than 30 days for health violations. If there are compelling reasons why such notice cannot be issued within the 15 days or 30 days indicated, the person in charge of the workplace must be informed of the reasons for the delay.

Notices must be in writing and describe, with particularity, the nature and degree of seriousness of the unsafe or unhealthful working condition, including a reference to the standard or other requirement involved. The notice must include a reasonable time for the abatement of the unsafe or unhealthful working condition; and a copy of the notice must be sent to the official in charge of the workplace, the employee representative who participated in the closing conference, and/or the safety and health committee of the workplace, if any. This CASHE Report provides the basis for issuance of Notices of Unsafe or Unhealthful Working Conditions.

Recommendation: **A)** Perform in-house annual safety inspections of all work areas and operations and document the findings; **B)** Issue or reissue if appropriate policy on the performance of those inspections and the issuance of Notice of Unsafe or Unhealthful Working Conditions; **C)** Perform independent occupational safety, health, and environmental inspection of the Main and South Interior Buildings on a recurring schedule.

Driving Reference(s): 29 CFR 1960.25(a) – qualification of safety inspectors
29 CFR 1960.25(c) – annual safety inspection of areas and operations include office space
29 CFR 1960.26(c) – written inspection reports and issuance of Notice of Unsafe or Unhealthful Working conditions

Point(s) of Contact: Jimmy Delp

Status of Corrective Action: In-house annual safety inspections of NBC- or OS-occupied space began on March 12, 2007, and should be completed by September 30, 2007. Written procedures will be issued on the performance of those inspections and the reporting of findings. Recurring independent occupational safety, health, and environmental inspections of the Main and South Interior Buildings will be scheduled.

PERSONAL PROTECTIVE EQUIPMENT - PPE**Finding Number: PPE-07-001**

Finding: Personnel at the Main and South Interior Buildings use dust masks and comfort masks without proper training or hazard evaluations.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: Following are examples of locations where comfort masks and dust masks are stored and used:

- SIB fire pump room (two comfort masks hanging unprotected on a water line)
- MIB M Floor, 1 East Section (two comfort masks stored in a dusty area on a rolling work bench)
- MIB central plant workbench (NIOSH-approved dust masks in storage)
- MIB alterations shop break room (NIOSH-approved dust masks in storage)

According to facility personnel, the required instructions and warnings (Appendix D, described below) are not provided to facility personnel. OSHA requires all air purifying respirators (APRs) and APR cartridges be NIOSH-approved. Additionally, OSHA encourages voluntary users to select NIOSH-approved dust masks (also referred to as “filtering facepieces” by OSHA.

Voluntary use is when an employee chooses to wear a respirator, even though the use of the respirator is not required by the employer or any OSHA standard (e.g., the working environment exceeds a Permissible Exposure Limit (PEL)). For example, an employee may choose to wear a respirator for mowing, sweeping, or cutting wood.

Dust masks used at the MIB have more substantial filtering capabilities than comfort masks and they are NIOSH-approved. OSHA’s respiratory protection regulations issued on January 8, 1998 clarify that dust masks are considered negative-pressure particulate respirators, and state that employees’ voluntary use of dust masks is subject to reduced OSHA regulation.

Most boxes of comfort masks are labeled “NOT A RESPIRATOR” or “NOT OSHA- OR NIOSH- APPROVED,” because they have never been submitted to NIOSH. Therefore, comfort masks do not meet the testing standards for a respirator due to minimal filtering capability. Many comfort masks state on the packaging that they are not intended for industrial use or that they are for household use. The use of comfort masks should be restricted to household applications; MIB and SIB mechanical and facilities operations are considered industrial.

Determining Exposure Limits - OSHA requires employers to determine if the working environment exceeds a PEL before supplying dust masks for voluntary use by employees. If an employee is wearing a dust mask because they operate heavy equipment for several hours and are exposed to significant quantities of dirt and dust, personal air monitoring of that employees breathing zone is appropriate. Personal air monitoring is not necessary if an employee wears a dust mask when sweeping the floor, mowing, or operating grinding equipment for minimal periods of time.

To determine if a working environment exceeds a PEL, a personal air monitor is typically placed on an employee while performing tasks that potentially warrants use of a respirator. Personal air monitors periodically pump air from near the employee's breathing zone through a filter. The filter is then analyzed for the contaminants of concern (e.g., dust, organic vapors) and compared to the applicable PEL. Air monitoring may need to be contracted to an industrial hygienist. The facilities industrial hygienist should be consulted if there is any question as to whether personal air monitoring is necessary to determine if dust masks use can be considered voluntary.

Should it be determined that air monitoring is not necessary and employees choose to voluntarily wear dust masks, the employer must ensure compliance with the requirements listed under *Voluntary Use of Dust Masks*. Should it be determined that employees who wear dust masks are being exposed to working environments above a PEL, the exposure cannot be eliminated by engineering controls, and APRs are required, a comprehensive RPP must be developed and implemented. The requirements of an RPP are detailed in a separate Personal Protective Equipment finding.

Voluntary Use of Dust Masks - If the only respirators that are voluntarily worn are dust masks and all contaminants of concern are below the PEL, employers are only subject to the following requirements: **1)** ensuring that dust masks are clean and stored properly so that using them does not present a health hazard to the user; **2)** ensuring that dust masks do not interfere with employees' ability to work safely; and **3)** providing a copy of Appendix D of 29 CFR 1910.134 to all employees who voluntarily wear dust masks.

OSHA's "Respiratory Protection Program Advisor" clarifies that employers must develop procedures for storing, reusing, and disposing of respirators and filter elements that have been designated as disposable. OSHA's "Questions and Answers on the Respiratory Protection Standard" dated August 3, 1998 clarifies that employees voluntarily wearing dust masks are not required to have a medical evaluation.

Recommendation: **A)** Discard all comfort masks and do not provide them to employees; **B)** Verify that the work environments for which employees ask for dust masks do not exceed OSHA PELs; and **C)** If the work environment exceeds a PEL, implement or install control measures (e.g., ventilation) to bring the contaminant levels below the applicable PEL; **D)** If the contaminant levels cannot be engineered out, designate a respiratory protection program administrator; **E)** Send the administrator to training; and **F)** Develop and implement a written program that addresses all criteria as required by OSHA; **G)** Schedule training, respirator fit testing, and medical monitoring annually; and **H)** Maintain records of fit tests, training, medical monitoring, and respirator inspections; **I)** If it is determined that employees are to be provided dust masks, provide a copy of Appendix D to all employees who voluntarily wear them; **J)** Issue an all-employee memorandum regarding policy on respirator and dust mask use, including a contact for employees regarding exposure concerns or information on wearing respiratory protection; and **K)** Ensure that dust and mist respirators are stored in covered plastic containers in an area that will protect them from dust and chemicals; or **L)** Eliminate the processes that exceeds the PEL.

Driving Reference(s): 29 CFR 1910.134(a)(1) - engineering control measures
29 CFR 1910.134(c)(2) - voluntary use of respirators
29 CFR 1910.134(c)(2)(ii) - voluntary use exception
29 CFR 1910.134(c)(3) - program administration
29 CFR 1910.134(e) - medical evaluation
29 CFR 1910.134(e)(7) - additional medical evaluations
29 CFR 1910.134(f)(2) - annual fit test
29 CFR 1910.134(k) - training

Point(s) of Contact: Ian Rosenblum

Status of Corrective Action: Scheduled for completion by April 28, 2008. All comfort masks discarded and shop foremen have been reminded to not provide comfort masks to employees. Independent tests are frequently conducted to ensure that work environments do not exceed OSHA PELs. The Industrial Hygienist is the respiratory program administrator, and he is trained to act in this capacity. A written respirator program will be developed, and training, fit-testing, respirator inspections, and medical monitoring will be scheduled. If employees are provided a dust mask or request to use one, only NIOSH N95s will be issued, and the employee will be given a copy of Appendix D of the OSHA respirator standard.

PERSONAL PROTECTIVE EQUIPMENT - PPE**Finding Number: PPE-07-002**

Finding: A self-contained breathing apparatus (SCBA) is available to employees although the equipment is not properly maintained and a complete respiratory protection program (RPP) is not maintained for NBC employees who wear this equipment.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: An excess SCBA is stored in the SIB central plant. The facility does not have a respiratory protection plan, any current need, or trained personnel qualified to use the equipment. In addition, there are no records for monthly inspections. NBC personnel indicate the SCBA is never used and will be excessed.

OSHA defines an atmosphere-supplying respirators as a respirator that supplies the user with breathing air from a source independent of the ambient atmosphere, and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units. Regulations for these respirators include requirements for the respiratory program, medical evaluations, training, fit testing, respirator storage, testing and inspection, air quality, and SCBA cylinders which are discussed below.

Respiratory Protection Program Requirements - OSHA regulations require that a comprehensive written RPP be established and implemented and a respiratory protection program administrator must be designated if employees are wearing respirators. The written program must include procedures governing the use and selection of respirators, as well as the care and storage of respirators. The program must also provide for surveillance of work area conditions, and it must be evaluated periodically to maintain program effectiveness. The individual designated as the respiratory protection program administrator oversees the training necessary to carry out the requirements detailed in the written RPP. The regulations require that the administrator "be a suitably trained program administrator."

One of the potential hazards of wearing a SCBA, is that it physiologically stresses the person wearing it. This physiological stress occurs in the heart and lungs, and therefore, creates a potential health hazard. Persons should not be assigned to tasks requiring the use of a respirator unless they are in suitable physical condition as evaluated by a physician.

Medical Evaluation Requirements - OSHA requires the employer to provide a medical evaluation to determine the employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace. The employer must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire. The medical evaluation must obtain the information in Sections 1 and 2, Part A of Appendix C of 29 CFR 1910.134.

The following information must be provided to the PLHCP before the PLHCP makes a recommendation concerning an employee's ability to use a respirator: **1)** the type and weight of the respirator to be used by the employee; **2)** the duration and frequency of respirator use (including use for rescue and escape); **3)** the expected physical work effort; **4)** additional protective clothing and equipment to be worn; **5)** temperature and humidity extremes that may be encountered; and **6)** a copy of the written respiratory protection program and a copy of 29 CFR 1910.134.

In determining the employee's ability to use a respirator, the employer must obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation must provide only the following information: **1)** any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used, including whether or not the employee is medically able to use the respirator; **2)** the need, if any, for follow-up medical evaluations; and **3)** a statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendations.

The regulations do not specify a frequency for follow-up medical evaluations. They state that additional evaluations must be performed if the following occur: **1)** the employees report symptoms that are related to the ability to use a respirator; **2)** a professional health care provider (e.g., doctor, occupational health nurse) informs the employer that employees must be re-evaluated; **3)** information from the program (e.g., fit test) indicates a need for re-evaluation; and **4)** a change in workplace conditions occurs that may increase the physiological burden placed on an employee.

Training Requirements - Training provided by the employer must ensure that each employee can demonstrate knowledge of at least the following: **1)** why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective affect of the respirator; **2)** the limitations and capabilities of the respirator; **3)** how to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions; **4)** how to inspect, put on and remove, use, and check the seals of the respirator; **5)** the procedures for maintenance and storage of the respirator; and **6)** how to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

Fit Test Requirements - Employees must be fit tested to determine the proper size, and type of respirator they should wear. In addition, refresher training and fit testing must be performed annually, or when the working conditions change in any way that may affect the use of respirators. Records of fit tests must be maintained and include the following: the name or identification of the employee tested; the type of fit test performed; the specific make, model, style, and size of respirator tested; the date of the fit test; and the pass/fail results for qualitative fit tests (QLFTs) or the fit factor and strip chart recording or other recording of the test results for quantitative fit tests (QNFTs). These fit test records must be retained for respirator users until the next fit test is administered.

Storage Requirements - Respirators used with SCBAs are to be stored in a dirt- and dust-free environment, away from chemicals. OSHA specifically states that respirators be stored to protect them from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They must be packed or stored to prevent deformation of the face piece and exhalation valve. In addition, emergency respirators must be kept accessible to the work area, stored in compartments or in covers that are clearly marked as containing emergency respirators, and stored in accordance with any applicable manufacturer instructions.

OSHA does not recommend storing respirators in a plastic-sealable bag after use because the respirator may be damp after used and sealing prevents drying and encourages microbial growth. If plastic bags are used, the respirators must be allowed to dry before storage (OSHA's "Respiratory Protection Program Advisor," Q&A section).

Testing and Inspection Requirements - Air cylinders for SCBAs must be tested and maintained as described in DOT's Shipping Container Specification Regulations (49 CFR 178). OSHA requires that the employer ensure that all respirators used in routine situations be inspected before each use and during cleaning. All respirators maintained for use in emergency situations must be inspected at least monthly in accordance with the manufacturer's recommendations, and must be checked for proper function before and after each use. Emergency escape-only respirators must be inspected before being carried into the workplace for use.

All inspections should be documented so the employer can demonstrate the inspections are being performed and are to include a check of respirator function, tightness of connections, and the condition of the various parts including, but not limited to, the face piece, head straps, valves, connecting tube, and cartridges, canisters or filters; and a check of elastic parts for pliability and signs of deterioration.

In addition to the inspection requirements for routine-use, emergency-use, and escape-only respirators, SCBAs must also be inspected monthly, air and oxygen cylinders must be maintained in a fully charged state and recharged when the pressure falls to 90% of the manufacturer's recommended pressure level. A determination must be made that the regulator and warning devices function properly.

OSHA requirements for emergency use further require that the employer certify the respirator by documenting the date the inspection was performed, the name or signature of the person who made the inspection, the findings, required remedial action, and a serial number or other means of identifying the inspected respirator; and provide this information on a tag or label that is attached to the storage compartment for the respirator, is kept with the respirator, or is included in inspection reports stored as paper or electronic files. This information must be maintained until replaced following a subsequent certification.

Air Quality Requirements - OSHA requires the employer to provide breathing gases of high purity to employees using atmosphere-supplying respirators (supplied-air and SCBA). The specifications for the supplied air are detailed in 29 CFR 1910.134(i) and include the following:

- compressed and liquid oxygen must meet the United States Pharmacopoeia requirements for medical or breathing oxygen;
- compressed breathing air must meet at least the requirements for Grade D breathing air described in ANSI/Compressed Gas Association Commodity Specification for Air, G-7.1-1989 (oxygen content (v/v) of 19.5-23.5%; hydrocarbon (condensed) content of 5 milligrams per cubic meter of air or less; carbon monoxide (CO) content of 10 ppm or less; carbon dioxide content of 1,000 ppm or less; and lack of noticeable odor);
- compressed oxygen is not used in atmosphere-supplying respirators that have previously used compressed air;
- oxygen concentrations greater than 23.5% are used only in equipment designed for oxygen service or distribution.

The employer is also required to ensure that cylinders used to supply breathing air to respirators and compressors used to supply breathing air meet requirements for certification, moisture content, and construction. Those requirements are detailed in 29 CFR 1910.134(i)(4) and 29 CFR 1910.134(i)(5).

Recommendation: Excess the SCBA equipment.

Driving Reference(s): 29 CFR 1910.134(b) – definition of SCBA as a respirator
29 CFR 1910.134(c)(3) - program administration
29 CFR 1910.134(e) - medical evaluation
29 CFR 1910.134(e)(7) - additional medical evaluations
29 CFR 1910.134(f) - fit testing
29 CFR 1910.134(k) – training
29 CFR 1910.134(h)(2) – respirator storage
29 CFR 1910.134(h)(3) - cylinder inspection
29 CFR 1910.134(h)(3)(iii) – SCBA inspection
29 CFR 1910.134(h)(3)(iv) – maintenance
29 CFR 1910.134(i)(1) – air quality

Point(s) of Contact: Gary Peacock

Status of Corrective Action: This SCBA, and others subsequently identified, are awaiting pickup by GSA. They are not used by staff or contractor personnel. Completed on February 2, 2007.

PERSONAL PROTECTIVE EQUIPMENT - PPE**Finding Number: PPE-07-003**

Finding: Air purifying respirators (APRs) are provided to employees without hazard evaluations, medical clearance, fit tests, or training on APR use, storage, and maintenance.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Two powered APRs and a supply of filter cartridges are stored in the MIB alterations shop break room.

The NBC does not have a respiratory protection program (RPP). If working conditions expose employees to hazards that cannot be eliminated using engineering controls, or employees are using products or performing tasks that require the use of a respirator, a comprehensive written respiratory protection program must be established and implemented.

The written program must include procedures governing the use and selection of respirators, as well as the care and storage of respirators. The program must also provide for surveillance of work area conditions, and be evaluated periodically to maintain program effectiveness. Training, fit tests, and medical evaluations are required for all personnel who wear APRs.

An individual must be designated as the RPP administrator to oversee the training necessary to carry out the requirements detailed in the written RPP. The regulations require that the administrator "be a suitably trained program administrator."

Engineering Controls – If working conditions expose employees to an environment above an OSHA permissible exposure limit (PEL) that cannot be eliminated by use of engineering controls, or employees are using products or performing tasks that require the use of a respirator, a comprehensive written respiratory protection program must be established and implemented. However, if engineering controls can eliminate employee exposure to an environment above a PEL, OSHA requires that those controls be implemented.

OSHA requires that engineering controls be implemented if they will eliminate employee exposure to an environment above an OSHA Permissible Exposure Limit (PEL). For example, employees operating heavy equipment are routinely exposed to dust levels above the PEL. If exposure above the PEL could be eliminated by spraying water on the ground or by fully enclosed air conditioned cabs outfitted with high-efficiency particulate air filters, one or the other would have to be implemented. The regulations specifically state: "In the control of those occupational diseases caused by breathing air contaminated with dusts, fogs, mists, gases, ...or vapors, the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). Where effective controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to this section."

Medical Evaluations - Wearing a respirator makes breathing more difficult and stresses the heart and lungs, creating a health hazard. Persons should not be assigned to tasks requiring the use of a respirator unless they are in suitable physical condition.

OSHA requires the employer to provide a medical evaluation to determine an employee's ability to use a respirator before the employee is fit tested or required to use the respirator in the workplace. The employer must identify a physician or other licensed health care professional (PLHCP) to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information as the medical questionnaire. The medical evaluation must obtain the information in Sections 1 and 2, Part A of Appendix C of 29 CFR 1910.134. Medical exams must be provided to employees who give positive answers to specific questions in Section 2 of the evaluation.

The following information must be provided to the PLHCP before the PLHCP can make recommendations concerning an employee's ability to use a respirator: **1)** the type and weight of the respirator to be used; **2)** the duration and frequency of respirator use (including use for rescue and escape); **3)** the expected physical work effort; **4)** additional protective clothing and equipment to be worn; **5)** temperature and humidity extremes that may be encountered; and **6)** a copy of the written respiratory protection program and a copy of 29 CFR 1910.134.

In determining an employee's ability to use a respirator, the employer must obtain a written recommendation regarding the employee's ability to use the respirator from the PLHCP. The recommendation must provide the following information: **1)** any limitations on respirator use related to the medical condition of the employee, or relating to the workplace conditions in which the respirator will be used; **2)** the need, if any, for follow-up medical evaluations; and **3)** a statement that the PLHCP has provided the employee with a copy of the PLHCP's written recommendations.

The regulations do not specify a frequency for follow-up medical evaluations, but require that additional evaluations must be performed if any of the following occur: **1)** the employees report symptoms that are related to the ability to use a respirator; **2)** a professional health care provider (e.g., doctor, occupational health nurse) informs the employer that employees must be re-evaluated; **3)** information from the program (e.g., fit test) indicates a need for re-evaluation; or **4)** a change in workplace conditions occurs that may increase the physiological burden placed on an employee.

Training - Training provided by the employer must ensure that each employee can demonstrate knowledge of the following information: **1)** why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator; **2)** the limitations and capabilities of the respirator; **3)** how to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions; **4)** how to inspect, put on and remove, use, and check the seals of the respirator; **5)** the procedures for maintenance and storage of the respirator; and **6)** how to recognize medical signs and symptoms that may limit or prevent the effective use of the respirator.

Fit Tests - Employees must be fit tested to determine the proper size, and type of respirator they should wear. Refresher training and fit testing must be performed annually, or when the working conditions change in any way that may affect the use of the respirator. Records of fit tests must be maintained and include the following: the name or identification of the employee tested; the type of fit test performed; the specific make, model, style, and size of respirator tested; the date of the fit test; and the pass/fail results for qualitative fit tests (QLFTs) or the fit factor and strip chart recording or other recording of the test results for quantitative fit tests (QNFTs). Fit test records must be retained for respirator users until the next fit test is administered.

Respirator Storage - Respirators must be stored in a dirt- and dust-free environment, away from chemicals. OSHA specifically states that respirators be protected from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. They must be packed or stored to prevent deformation of the face piece and exhalation valve. In addition, emergency respirators must be kept accessible to the work area, stored in compartments or in covers that are clearly marked as containing emergency respirators, and stored in accordance with manufacturer instructions.

OSHA does not recommend storing respirators in sealable plastic bags after use because the respirator may be damp after use and a sealed plastic bag prevents drying and encourages microbial growth. If plastic bags are used, respirators must be allowed to dry before storage (OSHA's "Respiratory Protection Program Advisor," Q&A section).

Voluntary Use – Voluntary use is when an employee chooses to wear a respirator even though the use of the respirator is not required by the employer or any OSHA standard (e.g., the working environment exceeds a PEL). OSHA requires employers to determine if the working environment exceeds a PEL before supplying respirators for voluntary use by employees. To determine if a working environment exceeds a PEL, a personal air monitor is typically placed on an employee while performing tasks that potentially warrants use a respirator. Personal air monitors periodically pump air from near the employee's breathing zone through a filter. The filter is then analyzed for the contaminants of concern (e.g., dust, organic vapors) and compared to the applicable PEL. Air monitoring may need to be contracted to an industrial hygienist. Facilities industrial hygienist should be consulted if there is any question as to whether personal air monitoring is necessary to determine if dust masks use can be considered voluntary.

Employers may allow employees to use respirators voluntarily, if the employer first determines that the respirator itself will not present a hazard to the employee due to misuse, other hazards or conditions in the workplace, or employee medical conditions. The employer must also ensure that the following aspects of the written RPP are implemented for voluntary respirator users: **1) provisions and schedules for medical evaluations; 2) procedures and schedules for cleaning, disinfecting, storing, inspecting, repairing, removing from service or discarding, and otherwise maintaining respirators. Note that the voluntary-use RPP elements discussed in this paragraph must be written and are only required for the voluntary use of tight-fitting negative-pressure APRs (also referred to as elastomeric) and powered APRs. They do not apply to voluntary use of dust masks (also referred to as filtering facepieces).**

Lastly, the employer must provide the voluntary respiratory user with the advisory information contained in Appendix D of 29 CFR 1910.134. This appendix provides basic information on the proper use of respirators for voluntary users of respirators, thereby eliminating employee training. These precautions can be presented to the employee either verbally or in a written form.

The voluntary-use section of the regulation does not specifically state that a medical evaluation is required, but state that "an employer may provide respirators at the request of employees or permit employees to use their own respirators, if the employer determines that such respirator use will not in itself create a hazard." OSHA's Small Entity Compliance Guide for the Revised Respiratory Protection Standard (September 30, 1998) states that the employer is required to ensure that employees are medically able to wear a respirator. Wearing a respirator creates a health hazard by physiologically stressing the heart and lungs. For this reason, a medical evaluation is necessary if employees are wearing respirators, even if worn voluntarily.

On August 3, 1998, OSHA issued "Questions and Answers on the Respiratory Protection Standard." The following questions and answers are taken directly from page 17 of the document:

Question: "Are medical evaluations required for positive pressure, as well as negative pressure, respirators?" [Federal Register, January 8, 1998, page 1210]

Answer: "Yes. Clinical studies show that [even] positive pressure use can harm the employee."

Recommendation: **A)** Prohibit the use of APRs; and **B)** Provide all facilities personnel with a point of contact for any concerns relating to respiratory protection.

Driving Reference(s): 29 CFR 1910.134(c)(3) - program administration
29 CFR 1910.134(e) - medical evaluation
29 CFR 1910.134(e)(5)(i) – conditions preventing a good face seal
29 CFR 1910.134(e)(7) - additional medical evaluations
29 CFR 1910.134(f)(2) - annual fit test
29 CFR 1910.134(k) – training
Small Entity Compliance Guide for the Revised Respiratory Protection Standard (OSHA, September 30, 1998)

Point(s) of Contact: Rick Farr

Status of Corrective Action: APRs discarded on February 28, 2007. They are no longer required for any work performed onsite.. All staff personnel have been advised that they may direct any concerns or issues relating to our respiratory-protection program to Ian Rosenblum, Industrial Hygienist.

RADIATION - RAD

Finding Number: RAD-07-001

Finding: The security screening and mail checking X-Ray machines are not certified.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: The security entrance and mail room have X-ray machines used to screen items and packages brought into the building. The District of Columbia Department of Public Health is authorized by the Nuclear Regulation Commission for the regulation of selected ionizing radiation sources, such as X-ray machines. The Department of Public Health regulations requires that X-ray machines to be evaluated.

Recommendation: The X-ray machines must be inspected following District of Columbia requirements.

Driving Reference(s): District of Columbia DPH X-Ray inspection requirements

Point(s) of Contact: Steve Hargrave

Status of Corrective Action: On or about March 28, 2007, the Federal Protective Service (FPS) provided a copy of the 2006 inspection report for our records. FPS has scheduled the 2007 inspections for June 2007.

TOXIC AND HAZARDOUS SUBSTANCES - THS**Finding Number: THS-07-001**

Finding: Material safety data sheets (MSDSs) are not available for any of the water treatment chemicals, refrigerants, lubricants, or coatings used or stored in the SIB central plant.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: The HAZCOM Standard requires an MSDS for each hazardous chemical used and stored to be readily available to employees in their workplace. Retailers are required to provide a copy of an MSDS upon request or provide instructions to the purchaser on how to obtain one. Missing MSDSs can be obtained from manufacturers or suppliers on the Internet. The University of Vermont has one of many websites (www.hazard.com) where MSDSs can be obtained.

“Right-to-Know Centers” are an excellent means to increase employee awareness of MSDSs and of their availability. A Right-to-Know Center typically consists of a poster explaining how to read an MSDS and a rack for the visible storage of an MSDS binder and any other safety booklets.

OSHA also requires the employer maintain chemical exposure information for the duration of employment plus 30 years. MSDSs concerning the identity of a substance or agent need not be retained for any specified period as long as some record of the identity (chemical name, if known) of the substance or agent, where it was used, and when it was used is retained for at least 30 years. However, the CASHE Team recommends maintaining the MSDSs to ensure products that contain more than one chemical are not overlooked.

Recommendation: **A)** Inventory all hazardous materials (be sure to include often-forgotten hazardous materials such as welding rods and concrete mix); **B)** Obtain MSDSs for all hazardous materials used and stored at facility; **C)** Organize MSDSs applicable for the mechanical room and place them in “Right-to-Know Centers” to ensure that they are available to employees in their workplace; [**Note:** Place MSDSs for products that are no longer used in a separate binder that must be maintained for 30 years.] **D)** Instruct credit card holders to request MSDSs from retailers when purchasing a hazardous material; and **E)** Assign supervisors the responsibility for maintaining hazardous material inventories and MSDSs at mechanical and storage area.

Driving Reference(s): 29 CFR 1910.1200(g)(8) - material safety data sheet requirement
29 CFR 1910.1020(d)(1)(ii)(B) – maintaining chemical exposure information

Point(s) of Contact: Jimmy Delp, Kurt Nordstrom, Ken Tunney, Gary Peacock, Rick Farr

Status of Corrective Action: Scheduled for completion by July 31, 2007. Vendors, suppliers, and GSA contractors working in the SIB have been contacted for copies of all required MSDSs. An inventory of all hazardous materials now onsite began in April 2007. MSDSs will be kept where the materials are used and stored, and a copy placed in our command center, in case they are needed during emergencies. Our credit card holders will be reminded to request MSDSs and product-data sheets from vendors. Supervisors have been reminded of their responsibilities for maintaining both hazardous material inventories and appropriate MSDSs at mechanical and storage areas.

TOXIC AND HAZARDOUS SUBSTANCES - THS**Finding Number:** THS-07-002**Finding:** Paint, possibly lead-based, in MIB mechanical areas is cracked and peeling.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3**Discussion:** Due to the age of construction, the paint chips falling off the wall may contain lead. If the peeling paint contains lead, it poses a hazard to personnel.

In addition, the concentration of the lead in the paint chips may be high enough that the paint itself fails TCLP criteria, and therefore, the paint chips would be a hazardous waste.

Recommendation: **A)** Collect a sample of paint chips and analyze it for total and TCLP-lead; **B)** If the chips have a TCLP-lead concentration over 5.0 mg/L, they are a hazardous waste and must be collected and disposed of as such; and **C)** If the chips have a total lead concentration over 5,000 mg/kg, the paint is considered lead-based by EPA and HUD, and scraping and repainting of the areas must be done by a contractor who is licensed by the State for lead-based paint abatement and complies with the OSHA construction regulations for lead.**Driving Reference(s):** 29 CFR 1910.1025 - lead safety
29 CFR 1910.1025(h) - lead housekeeping
29 CFR 1910.134 - respiratory protection
29 CFR 1926.62 - construction standards
40 CFR 261.24 - TCLP-limit for lead**Point(s) of Contact:** Gary Peacock**Status of Corrective Action:** Scheduled for completion by May 31, 2007. Samples will be taken to an independent lab. Follow-up action (i.e., removal of peeling paint) and disposal will depend on analysis of samples.

TOXIC AND HAZARDOUS SUBSTANCES - THS**Finding Number:** THS-07-003**Finding:** Friable asbestos-containing materials (ACM) are located at the Main and South Interior Buildings.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: Asbestos exists throughout the MIB and SIB, including pipe and tank insulation, mastic, and floor tiles. This asbestos has reportedly been surveyed, and is abated as portions of the buildings are renovated or where repairs are required. Most friable asbestos has been adequately coated or covered to prevent release; however, pipe chases with limited access contain friable asbestos. At the rear of the MIB carpentry shop, an unsealed doorway provides direct access to a pipe chase. Behind the doorway, friable asbestos is falling to the floor.

At the trash compactor near the MIB "B Ramp" loading dock, asbestos insulation on pipes over the compactor is becoming damaged while working with trash containers and has become friable. In the MIB mechanical room (Room B266), asbestos on motor M-3-49 and tank T-1-9 has become disturbed and friable.

OSHA requires that employers ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter (f/cc) of air as an 8-hour time-weighted average (TWA) or 1.0 f/cc of air averaged over 30 minutes, unless they are protected and trained as described in 29 CFR 1910.1001(g), (h), and (j)(7). All asbestos work in the MIB and SIB is performed by contractors.

Recommendation: A) Seal all areas where friable asbestos exists to reduce employee exposure; and B) abate asbestos on the pipes near the trash compactor.

Driving Reference(s): 29 CFR 1910.1001 - asbestos removal**Point(s) of Contact:** Ken Tunney

Status of Corrective Action: Completed on March 13, 2007. Abatement contractor repaired the damaged insulation at the trash compactor and in the mechanical room (B266). The material inside the door at the rear of the carpentry was removed, the door sealed, and an appropriate asbestos hazard sign posted on the door.

TOXIC AND HAZARDOUS SUBSTANCES - THS**Finding Number: THS-07-004**

Finding: An unlabeled plastic 55-gallon drum is located in the MIB central plant near column D22.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: The HAZCOM Standard requires that all containers be labeled as to content, appropriate hazard warnings (e.g., flammable, corrosive), and target organ effects (e.g., skin irritant, inhalation hazard). Unlabeled containers are typically caused by the original label becoming detached or the transfer of material to an unlabeled container. Under the HAZCOM Standard, an unlabeled container is only appropriate if an employee transfers the chemical from a labeled container to an unlabeled container for his or her immediate use.

The product names on labels must be identical to the name on the product's MSDS. This labeling enables employees to rapidly locate the MSDS. For example, labeling a container "SOLVENT" is not adequate because many different types of solvents are used in the workplace. The simplest method for providing proper labeling is attaching a photocopy of the MSDS to the container using clear packaging tape to protect the MSDS.

A label that only states a generic product name (e.g., "SOLVENT," "PICNIC TABLE PAINT") does not communicate the product's hazard warnings or target organ effects. Examples of hazard warnings are FLAMMABLE, COMBUSTIBLE, POISON, and CORROSIVE. Examples of target organ effects are FATAL IF SWALLOWED, SKIN IRRITANT, and INHALATION HAZARD. Hazard warnings and target organ effects can typically be found in capital letters at the bottom of the original container's label. For example, proper labeling for a container in which antifreeze is stored should be labeled "ANTIFREEZE - POISON - HARMFUL OR FATAL IF SWALLOWED."

Proper labeling requirements also apply to water containers. Water containers and tanks should be labeled "POTABLE WATER" or "NONPOTABLE WATER," according to usage. Water containers must be labeled to ensure that emergency response personnel know that the container's contents are not hazardous, and that a HAZMAT response team is not deployed, if the water container develops a leak or is involved in an accident while in transport.

Portable containers of gasoline, diesel fuel, and chain saw fuel need not have hazard warnings and target organ effects indicated on them because safety and health hazards are common knowledge. However, the contents of every container of fuel must be noted on the container itself or on a tag secured to the container.

Tanks of gasoline and diesel fuel (e.g., truck-mounted tanks, aboveground storage tanks) should be labeled "GASOLINE - FLAMMABLE" and "DIESEL - COMBUSTIBLE," accordingly.

In addition to HAZCOM Standard requirements, RCRA inspectors may consider unlabeled or improperly labeled containers uncharacterized hazardous waste. It would be difficult to convince an inspector that the content of a container is not waste if no one knows exactly what is in the container. In addition, when facility personnel cannot readily identify the contents of an unlabeled container, the material is typically not used and eventually becomes hazardous waste. Unknown materials must undergo costly testing to determine characteristics prior to disposal.

Recommendation: Properly label all containers as to content, appropriate hazard warnings, and target organ effects.

Driving Reference(s): 29 CFR 1910.1200(f)(5)(i-ii) - hazardous material labeling

Point(s) of Contact: Ken Tunney

Status of Corrective Action: These items were removed from the building using a GSA hazardous materials contractor on March 9, 2007.

TOXIC AND HAZARDOUS SUBSTANCES - THS**Finding Number: THS-07-005**

Finding: A written hazard communication (HAZCOM) program has not been developed for the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: The written program, or HAZCOM plan, must include the following information:

1) a description of how general and hazard-specific training will be provided (e.g., video tape, tailgate, classroom); **2)** designation of specific personnel responsible for ensuring containers are labeled; **3)** clarification that portable containers into which hazardous materials have been transferred are exempt from labeling requirements **only when intended for immediate use by the employee who performs the transfer**; **4)** a list of the chemicals known to be present at the facility, using chemical names as they appear on their MSDS; **5)** a description of methods used to inform MIB employees of the hazards of nonroutine tasks [**Note:** The HAZCOM regulation specifically states that the plan include “the **methods** the employers will use to inform employees of nonroutine tasks.” Simply stating in the plan that the employees are to be trained is not sufficient. OSHA has clarified in its guidance to field personnel that the written HAZCOM plans are to identify how the training will be provided to employees (e.g., classroom, tailgate, video)]; **6)** a discussion concerning the ways in which employees will be informed of the hazardous chemicals brought into the facility by a contractor performing work in or around the facility, and the person responsible for providing this information; **7)** the person responsible for alerting contractors of hazardous chemicals stored or used by NBC personnel in work spaces where contractors’ employees are working; **8)** methods used to provide employees with MSDS information while in the field; **9)** action to be taken if a specific MSDS is missing and who is responsible for that action; **10)** a requirement that names used on container labels be consistent with product names used on the MSDSs, and that appropriate hazard warnings (e.g., flammable) and target organ effects (e.g., inhalation hazard) also be on the labels; **11)** a clarification that labeled names must be identical to the product name on MSDSs, allowing employees to cross-reference the label with the MSDS so that it can be easily located; **12)** a statement that the HAZCOM plan is applicable to all employees, including seasonal and volunteer employees who use or handle hazardous materials; and **13)** designation of personnel responsible for providing general and hazard-specific training.

The following issues, although not required in a HAZCOM plan, should be included to clarify its content:

- 1)** Instructions for bankcard holders to obtain and forward MSDSs to their supervisors for filing; and
- 2)** Exclusions of common consumer products from the HAZCOM Process.

The HAZCOM plan should address all facilities and operations. Reviewing the plan annually will ensure it addresses changing facility operations. As new materials are brought in, personnel changes occur, and operations change, the HAZCOM plan must be revised to reflect the changes.

A sample HAZCOM plan that addresses all required information can be obtained via e-mail from Ken Morin at ken_morin@blm.gov. The sample plan was written using OSHA’s “Guidance for Conducting HAZCOM Inspections.” As a result, the sample plan addresses issues that are not clearly defined in the regulations.

Recommendation: A) Develop a HAZCOM plan that includes all required information and train employees on its content; B) Review the plan annually to ensure it remains current and addresses all MIB and SIB operations; and C) Implement the plan at parts of the facilities.

Driving Reference(s): 29 CFR 1910.1200(e) - written HAZCOM program

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Scheduled for completion by December 28, 2007.

TOXIC AND HAZARDOUS SUBSTANCES - THS**Finding Number:** THS-07-006**Finding:** The MIB print plant has not been monitored for potential air contaminants nor its controls evaluated.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: Hazardous chemicals are used in the print plant for printing and binding operations. Chemical odors were evident during the audit, even though printing and binding operations were not actively being performed. Selected hazardous chemicals are also flammable liquids. The binding machine has a local exhaust ventilation system; however its exhaust duct downstream from the air cleaning unit leaks contaminated air back into the print plant. Print plant employees have complained of air quality issues.

OSHA requires employers to evaluate the working environment and institute engineering controls that control air contaminants below occupational exposure limits.

Recommendations: Evaluate the air quality and engineering controls to determine if hazardous chemicals are being adequately controlled.

Driving Reference(s): 29 CFR 1910.1000(e) –engineering controls

Point(s) of Contact: Gary Dixon

Status of Corrective Action: Scheduled for completion by August 3, 2007. The hazardous chemicals were removed from the building on March 9, 2007. Currently evaluating the use of environmentally friendly and non-flammable products for use during printing operations. Binding machine will be relocated in an effort to reconfigure (shorten) its exhaust system and eliminate fumes that are leaking into work areas.

WALKING-WORKING SURFACES - WWS**Finding Number: WWS-07-001**

Finding: Elevated working surfaces and stairs are not equipped with proper railings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: Elevated work surfaces where a fall of 4 feet or more to a lower level exists do not have standard railings. Stairs with 4 or more risers that are open on one or both sides do not have standard railings. The following locations are examples of where the railings were inadequate or not present:

- SIB inner stairwell landings (handrail height is 36 inches high)
- SIB auditorium outdoor exit stairs and top landing (handrail height is 34 inches high)
- SIB mechanical room (railing along upper level is 32 inches high)
- MIB B Ramp loading dock (trash compactor's elevated ramp's railing is 34 inches high, and are not present on both sides of the area directing in front of the compactor loading area)
- MIB D Ramp stairs between loading docks (stairs have 5 risers and no standard railings on either side)
- MIB paper bailer room B019 (rear railing to prevent a fall to a stairwell is broken)
- MIB sump room (wall around the sump pit is 24 inches high)
- MIB south penthouse roof terrace (roof-top exit route to the secondary exit travels by parapet walls that are 24 inches high)
- MIB south penthouse roof (stairs to upper roof railing has no intermediate railing and some of the metal stairs have cracks and excessive flexing)
- MIB mechanical floor (platform stairs near tank T-1-5 has no stair railings; stairs with four risers on each side of the pipe chase platform near column N-1 do not have railings)
- MIB outdoor stairs to upper penthouse (stair railing has no intermediate railing)
- MIB cardboard disposal chute (no railing or other safety device to prevent falling into chute)
- MIB elevator pits (the railings around the pit openings have no intermediate railings, toe boards the handrails are 36 inches high, and are not of substantial construction)
- MIB F27-12 AHU room (small Genie lift does not have mid rail on all sides)
- MIB sump room pit (the concrete lip around the 11-foot deep pit is 24 inches high and requires a 42-inch rail)
- MIB Library (6th level book area has 35-inch railing around top of stairs)

Open-sided platforms 4 or more feet above the ground and stairs with 4 or more risers that are open on one or both sides must be provided with standard railings. Handrails must be designed and installed so that the railing height is 42 inches and will support a load of at least 200 pounds applied in any direction at any point on the rail. OSHA also requires that the intermediate railing should be approximately halfway between the top rail and the platform's floor. Open-sided stairs handrail heights are required to be 34 inches with an intermediate railing and toe board.

The NFPA requires guards on open sides of means of egress that exceed 30 inches above the floor or grade below (NFPA 101-7.1.8). The guards need to be at least 42 inches high. For existing guards on existing stairs, the height may be not less than 30 inches (NFPA 101-7.2.2.4.5.2.3). This 30-inch exception only applies to the stairs, not to the landings.

Toe boards are intended to prevent items from being kicked over or from otherwise falling and creating a hazard. Toe boards are required by OSHA wherever persons can pass beneath, or where there is moving machinery or equipment below. The toe board must be 4 inches nominal in vertical height from its top edge to the level of the floor, platform, runway, or ramp; and must be securely fastened in place and with not more than ¼-inch clearance above floor level.

Recommendation: Install standard railings in the identified areas.

Driving Reference(s): 29 CFR 1910.23(e) – railing specifications
29 CFR 1910.24(h) – stair railings
NFPA 101 (2006)- 2.2.4.5 – guard details

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Subject to the availability of resources and receipt of approvals from the GSA Historic Preservation and Safety Offices, Fine Arts Commission, and other authorities, our long-term plan is to correct each of the areas listed in this finding. Scheduled for completion in the third quarter, FY 2009. As appropriate, required handrails and railings will be fabricated or a contract issued for the fabrication and installation of the required handrails or railings. On March 27, 2007, we sought guidance from the GSA Historic Preservation and Safety offices to resolve the matter pertaining to the height of the historic handrail. The GSA Safety Office replied that NFPA 101 allows the existing-building stair handrail heights to be between 30 and 38 inches. However, the CASHE Team does not agree and provided an additional NFPA discussion to this finding.

WALKING-WORKING SURFACES - WWS**Finding Number:** WWS-07-002**Finding:** A fall protection program has not been instituted.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 2

Discussion: Authorized employees are exposed to fall hazards from the MIB and SIB roofs and other elevated work surfaces. For example, auditors observed personnel working on piping in the MIB main compressor room. A contractor was sitting on the top of pipes that he accessed from a step ladder. The fall distance to the floor was greater than 7 feet. He was not wearing a full-body harness. Also, personnel occasionally need to access speakers in an area above the stage in the Yates Auditorium. The area is not designed to support the weight of a person. Falls can result in fatalities or catastrophic injuries and can be through wall openings or floor openings.

OSHA's general industry standard requires that standard railings and floor coverings be used to when a fall of 4 feet or more exists. OSHA's construction standard requires fall protection when a fall of 6 feet or more exists. The fall protection requirements address various fall situations and provide fall protection options. For example, in fixed locations where employees regularly work, standard railings and floor opening covers are applicable. For temporary fall conditions that may be created during construction activities, personal fall protection is the preferred option. Personal fall protection consists of a full body harness, lanyard, and rated anchorage point. Employees need to be trained on the program.

Recommendation: Develop a fall protection program.**Driving Reference(s):** 29 CFR 1926.500-510 – fall protection**Point(s) of Contact:** Gary Peacock, Dirk Meyer

Status of Corrective Action: Scheduled for completion by September 1, 2008. Written program will be established and implemented by December 28, 2007. However, the implementation of the modifications needed for rooftop areas of both buildings will require an engineered solution and, possibly, modification to the roofs of both buildings.

The GSA contractor doing the modernization construction has a fall-protection program in place. A modernization worker was not following the contractor's written plan when he was observed by the auditors, and we brought this to the attention of the appropriate GSA official.

WALKING-WORKING SURFACES - WWS**Finding Number:** WWS-07-003**Finding:** Ladders are not frequently inspected in the Main and South Interior Buildings.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: Many wood step ladders and fiberglass step ladders are present in each of the buildings. The ladders are in generally good repair, however, loose steps were observed during the audit on a few of the wood ladders. For example, a wood step ladder in MIB 6 east, M floor, has a broken rail connector. There is no ladder inspection program.

OSHA requires ladders to be maintained in good condition at all times. Joints between the steps and side rails must be tight, all hardware and fittings securely attached, and the movable parts must operate freely without binding or undue play. OSHA requires wood ladders be inspected monthly. A good management practice is to inspect all ladders. Ladders with defects must be withdrawn from service for repair or destruction. Damaged ladders should be labeled "DANGEROUS, DO NOT USE." Care should be taken that employees do not use damaged ladders.

Recommendation: **A)** Inspect all ladders on a monthly basis; **B)** Remove the damaged ladders from service and tag them as dangerous for use; **C)** Repair the ladders; or **D)** Throw them away.

Driving Reference(s): 29 CFR 1910.25(d)(1)(x) – wooden ladder inspection and removal
29 CFR 1910.25(d)(1)(i) and (x) - removal of defective ladders from service
29 CFR 1910.26(a)(5)(vii) – out-of-service metal ladders

Point(s) of Contact: Gary Peacock

Status of Corrective Action: Plan to establish a written ladder-safety and –inspection program. The NBC Branch of Support Services and Branch of Building Operations instituted a ladder inspection and log procedures on March 12, 2007. The written program is scheduled for completion by July 27, 2007.

WALKING-WORKING SURFACES - WWS**Finding Number:** WWS-07-004**Finding:** Tripping and other walking hazards exist in several locations.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3**Discussion:** Tripping hazards exist in the following locations:

- SIB electrical supply room (18 old electrical conduits that have been sealed protrude approximately 8 inches into the walking area)
- SIB mechanical room hot water tank area (a floor drain cover is missing, leaving a floor depression approximately 8 inches in diameter in the floor)
- SIB guard office (the floor strip at the office door is damaged)
- MIB Yates Auditorium emergency exit discharge (electrical conduit on cobblestones approximately 3 feet from exit door landing)
- MIB B015 room (first concrete stair crumbling)
- MIB stairwell 50 discharge in garage (aisle floor vent is 4 inches above walking surface)
- MIB B621 transformer room (several fasteners no longer in use attached to floor)
- MIB F-12-6 AHU room (floor drain grate openings are 3 inches wide; floor holes cannot be more than 1 inch wide)
- MIB Library technical services room (floor electrical receptacles are raised approximately 1 inch)

Head and body hazards exist in the following locations:

- MIB outside of Verizon main frame room (cable support racks protrude into the aisle at approximately 5 feet 8 inches high and are difficult to see)
- SIB attic (pipes associated with the heaters located in the aisle at a height of approximately 6 feet)
- MIB main compressor room (8" pipe several inches above floor in main aisle; insulation holders on tank near columns M3 & M4 protrude approximately 1 inch and are very sharp)

OSHA requires that walking and working surfaces be kept free of tripping hazards and clear of obstructions that could create a hazard. Aisles that are means of egress pathways cannot have head obstructions less than 6 foot 8 inches. Tripping and obstruction hazards that cannot be feasibly eliminated should be color highlighted and signs posted warning of the hazard. In addition, obstruction hazards can be padded.

Recommendations: **A)** Remove, modify or cover the tripping and obstruction hazards; or **B)** Where it is not feasible to eliminate the hazard, color highlight, post caution signs and pad obstruction hazards.**Driving Reference(s):** 29 CFR 1910.22(b) - walking surfaces
29 CFR 1910.23(a)(8) – floor holes
29 CFR 1910.36(g)(1) – exit route head obstructions

Point(s) of Contact: Gary Peacock

Status of Corrective Action:

- 1) A work order has been issued to correct the problem in the SIB electric room floor. Construction will be completed on Saturday, May 5, 2007.
- 2) Replaced the missing cover in the SIB central plant (hot-water tank area) on February 28, 2007.
- 3) The tripping hazard at the SIB guard's office was removed on March 15, 2007.
- 4) The electrical conduit at the MIB Yates Auditorium emergency exit discharge (electrical conduit on cobblestones approximately 3 feet from exit door landing) will be removed by June 30, 2007.
- 5) The remaining tripping hazards will be corrected as soon as possible, but no later than November 30, 2007.
- 6) With regard to the head and body hazards, the Facilities staff is working with representatives from the Modernization and Telecom groups for resolution. Many additional signs are needed and have been ordered; low areas will need to be guarded (padded) or relocated (ideal, but not likely). Scheduled for completion by November 30, 2007.

WALKING-WORKING SURFACES - WWS

Finding Number: WWS-07-005

Finding: The fixed ladder into the modernized elevator pit is not constructed properly.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: The fixed ladder into the MIB elevator pit #1 only provides 22 inches of clearance from the ladder to the circular floor opening. The near vertical ladder has been constructed with stair-like treads that are 11 inches apart and 6.5 inches deep. A person ascending the ladder may easily hit their head on the underside of the concrete floor opening.

OSHA fixed ladder regulations require a minimum of 30 inches of clearance on the climbing side.

Recommendation: Modify the ladder and floor opening so that they meet OSHA requirements.

Driving Reference(s): 29 CFR 1910.27(c)(1)– ladder climbing side clearance

Point(s) of Contact: Dirk Meyer

Status of Corrective Action: On March 27, 2007, the GSA Safety Office was requested to evaluate the configuration of the entry points and the elevator pits. In its April 13, 2007 response, the GSA Safety Office concurred with this finding and its recommendations. GSA has directed that a change order be prepared for the contractor; no schedule for completion of the work is available at this time.

WALKING-WORKING SURFACES - WWS**Finding Number:** WWS-07-006**Finding:** Stairs in SIB and MIB mechanical rooms are not constructed properly.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: The SIB mechanical room stairs to the small platform adjacent to the hot water tank area is actually a metal ladder that has been placed at a 45-degree angle. A metal pipe handrail, without an intermediate railing and toe board, is located on each side of the ladder. The stairs to a platform in the MIB B266 mechanical room are at an angle of approximately 70 degrees and are constructed of angle iron and iron sheet material.

OSHA regulations require that fixed stairs must be installed at angles to the horizontal of between 30 and 50 degrees. OSHA also stipulates that rise height and tread width are to be uniform throughout any flight of stairs. Table D-1 in 29 CFR 1910.24(e) provides rise and tread dimensions that will produce a stairway within the permissible angle range. A standard railing on each open side is required.

OSHA requires fixed stairs for access from one structure level to another where operations necessitate regular travel between levels, and for access to operating platforms at any equipment which requires attention routinely during operations. Fixed stairs shall also be provided where access to elevations is daily or at each shift for such purposes as gauging, inspection, regular maintenance, etc., where such work may expose employees to acids, caustics, gases, or other harmful substances, or for which purposes the carrying of tools or equipment by hand is normally required. If none of these criteria apply, it is an acceptable alternative to remove the stairs and install fixed ladders.

Recommendation: A) Reconstruct the stairways so that they meet OSHA requirements; or B) If stairs are not required, remove the stairs and install fixed ladders.

Driving Reference(s): 29 CFR 1910.24(e) – angle of stairway rise
29 CFR 1910.24(f) – stair treads and risers

Point(s) of Contact: Ken Tunney

Status of Corrective Action: We plan to have both ladders removed and new ladders designed, fabricated, and installed by a contractor qualified in this area. Scheduled for completion by August 31, 2007.

WALKING-WORKING SURFACES - WWS**Finding Number:** WWS-07-007**Finding:** Unguarded sprinkler heads in the library pose a hazard to individuals.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 2

Discussion: The fire sprinkler system in the library is run through the center of each aisle of library books. The majority of the sprinkler heads are approximately six feet three inches (75 inches) above the floor. A person not paying attention or who quickly turns around may easily bang their head into sharp edges of a sprinkler head. A severe cut and accidental discharge of the sprinkler head could occur. Some sprinkler heads have metal cages around them to protect individuals from their sharp edges and prevent an accidental discharge. However, the majority of the sprinkler heads in the library are unguarded. An accidental discharge of a sprinkler head would obviously result in numerous books getting wet.

OSHA regulations require that aisles be kept clear with no obstruction across or in aisles that could create a hazard. In addition, an exit route must meet the following minimum height and width requirements. Ceiling of an exit route must be at least seven feet six inches high; and any projection from the ceiling must not reach a point less than six feet eight inches from the floor. It is not possible to relocate the sprinkler piping because the library ceiling is low.

It is recommended that a fire protection expert be contracted to determine the best method to eliminate or greatly reduce the head obstruction hazard while maintaining acceptable fire protection.

Recommendation: Have a fire protection expert determine the best method to eliminate or greatly reduce the head obstruction hazard while maintaining acceptable fire protection.

Driving Reference(s): 29 CFR 1910.22(b) – no obstruction in aisles that could create a hazard
29 CFR 1910.36(g)(1) – exit route minimum height
NFPA 101 (2003) -7.1.5.1 – headroom projections

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: We met with the GSA Fire Protection Engineer to discuss this problem and ways in which the potential hazard can be minimized. We will post overhead-clearance signs at each entrance to the stack area and at each elevator lobby within the stack area. We will meet with library management to propose implementation of other measures which, we feel, will reduce the possibility of someone suffering an injury caused by the low overhead clearances in the stack areas. These include permitting only library staff personnel to enter and work in the stack areas, and/or making the area a hard-hat area. (Also, please see the Status of Corrective Action paragraph for Finding FIRE-07-003.)

WALKING-WORKING SURFACES - WWS**Finding Number:** WWS-07-008**Finding:** Stagnant, potentially sewage contaminated water, accumulates in sumps in the Main and South Interior Buildings.**Repeat Finding:** N/A**Recurring Issue:** N/A**Safety RAC:** 3

Discussion: One of the elevator pits inspected by the CASHE Team had a strong musty odor from the stagnant water in its sump. The elevator maintenance staff and NBC personal both stated that the pit periodically flood with rain water. In addition, drinking water from a water line break or sewage from a backed up toilet flows into the pit.

A spill of elevator hydraulic fluid into the South Interior Building central plant pit occurred during the CASHE audit. This incident illustrates the need to be able determine if the fluid in the pit can be discharged into the sanitary sewer. One of the elevator pits in the Main Interior Building has a sump pump installed in it. If this pit was to receive a hydraulic fluid spill, the petroleum product would have automatically been discharged into the sanitary sewer in violation of pretreatment standards. Hand-off-automatic control switches are necessary to allow the sump pumps to be left in the off position and then put in a hand or automatic position depending on the circumstance. [**Note:** Power is improperly provided to the pump by an extension cord. This is documented in a separate finding.]

A secondary containment curb could be installed around the elevator sumps to prevent elevator hydraulic fluid from flow into the sump. The curb height would have to be sufficient to allow the hydraulic fluid to collect on the elevator pit floor. The curb would allow water to flow over it in the event of a flood or water line break. A lockable drain valve in the curb would allow water contained by it to flow into the sump. This drain valve would have to be kept closed and locked and only opened to drain water/sewage into the sump for discharge into the sanitary sewer system.

OSHA requires all places of employment, passageways, storerooms, and service rooms shall be kept clean and orderly and in a sanitary condition. The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Sewage is potentially contaminated with a variety of blood borne pathogens. Providing a means to pump the elevator sumps out eliminates a variety of potential health issues and regulatory requirements.

Recommendation: **A)** Pump the stagnant water that has accumulated in the elevator sumps out; **B)** If sanitary sewer piping is easily accessible, permanently install sump pumps in the elevator pit sumps without them; and; **C)** Provide hand-off-automatic operational control switches on the pumps so that they are left in the off position, but may be manually or automated operated as appropriate; or **D)** Construct a curb with a lockable valve in it around the sumps of a height sufficient to contain the largest possible hydraulic fluid leak on the floor, but allows water to flow over it and into the sump; or **E)** Develop a procedure utilizing a portable pump that allows stagnant water to be removed from the sumps.

Driving Reference(s): 29 CFR 1910.22(b) – walking working surfaces shall be keep in a clean and sanitary condition
29 CFR 1910.1030 – blood borne pathogens

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: Completed on February 27, 2007. The water was pumped out of the pit. Sanitary sewer lines are not easily accessible which makes the installation of permanent sump pumps impractical. Elevator mechanics now make routine inspections to ensure there is no accumulation of water in this area.

There are no plans to construct a curb around the sumps in the SIB. First, hydraulic oil is lighter than water and, therefore, would overflow the containment recommended. Second, the curb would pose a significant tripping hazard. Finally, the hydraulic oil in the SIB elevators has been replaced with biobased oil which will reduce the potential hazards in the event of another breach in the hydraulic system.

We have the necessary procedures and equipment that would be needed to remove stagnant water from the sumps in the elevator pits.

WELDING, CUTTING, AND BRAZING – WCB**Finding Number: WCB-07-001**

Finding: Welding gas cylinders are not stored properly at the MIB and SIB.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: One each oxygen and acetylene cylinders are stored together in the SIB fire pump room. According to NBC personnel the outfit is rarely used. In addition, the welding torches were not equipped with flash-back protection, and the valve for the acetylene cylinder was stored open. Two each oxygen and acetylene cylinders are stored together in the MIB M Floor (3 West). The cylinders are stored adjacent to each other, the rope securing the oxygen cylinders is too low, and the rope securing the acetylene is around the neck of the cylinders. Lastly, one each oxygen and acetylene are stored on welding cart on the MIB M Floor (3 West). The cylinders are not hooked up and are not scheduled for use. Because they are not being used daily, the cylinders are considered in storage.

OSHA prohibits oxygen cylinders from being stored near fuel-gas cylinders (e.g., acetylene), unless the welding gas cylinders have the welding leads attached and they are “ready for use.” A welding cart with the gas cylinders capped and covered with dust and cob webs would not be considered “ready for use.” Cylinders can be left on the cart when the equipment is being used periodically because the act of separating the cylinders poses a risk as well.

OSHA requires that oxygen cylinders be stored at least 20 feet from fuel-gas or combustible materials, especially oil or grease, or be separated by a noncombustible barrier at least 5 feet high with a fire resistance rating of at least 30 minutes. All compressed gas cylinders must be stored in an area where the ventilation is adequate to dissipate escaping gas in the event of a leaking cylinder; they may be stored outdoors. Cages with solid metal roofs and locking wire cage side panels are readily available from most industrial equipment suppliers, but are not required.

OSHA regulations require that all handling, storage, and use of compressed gas cylinders be conducted in accordance with the Compressed Gas Association’s (CGA) Pamphlet P-1-2000 (available from CGA, telephone 703-788-2700). The CGA pamphlet states that all cylinders must be secured (e.g., chained) in an upright position to prevent them from falling, and that all cylinder valves be protected from damage.

Proper cylinder storage is typically accomplished by securing cylinders around the shoulder (below the valve neck). The CGA requirement to securely store cylinders and protect cylinder valves from damage is interpreted by the CASHE Team as a prohibition against securing a cylinder around its neck or valve. Securing a cylinder around its neck can damage the valve or allow the cylinder to slip out from under the chain, strap, or ring holding it in place. In addition, securing a cylinder across its middle or lower, or too loosely, will allow the cylinder to tip if it is jolted.

The CGA pamphlet also states that, at gas manufacturing facilities, nesting cylinders is considered a safe manner of storage. However, nesting may not be adequate in seismically active areas, and additional measures, such as chaining and strapping, may be required to prevent the cylinders from falling. Appendix D of the pamphlet illustrates proper cylinder nesting. Nesting depends on a 3-point contact system (i.e., all cylinders must be in contact at three points - either with a secure wall or with another cylinder). Personnel will need to ensure that when a cylinder is removed from a nested set, the remaining cylinders must be readjusted to regain the 3-point contact before the strap or chain is secured in place.

In addition, OSHA requires that manifold systems be equipped with flash-back protection to prevent oxygen from flowing into the fuel-gas (e.g., acetylene) system or fuel from flowing into the oxygen system. A manifold is a multi-cylinder system with lateral outlets for more than one fuel supply or oxygen supply.

Flash-back protection is not required on single unit systems, such as those in use at the facility; however, the CASHE Team recommends using flash-back protection devices as a best management practice to prevent the gases from mixing.

Recommendation: **A)** If cylinders are not intended for regular use, dispose of them by giving them to the local gas supplier; **B)** If cylinders are intended for regular use, place them on a welding cart, keep the leads on, and store the cart so that it is ready for use; **C)** If the cylinders are being stored, separate them by at least 20 feet and chain them below the shoulder to a wall with the valve caps on; **D)** Purchase UL-listed flash-back protection devices and install them on the welding torch; or **E)** Purchase a new torch equipped with flash-back protection and dispose of the old torch.

Driving Reference(s): 29 CFR 1910.253(b)(4) – welding gas storage
29 CFR 1910.101(b) – compressed gas storage
CGA P-1-2000 – cylinder storage
29 CFR 1910.253(e)(5)(v) - hose and hose connections
29 CFR 1910.253(e)(3)(ii)(C)(3) - flash-back protection for manifold systems

Point(s) of Contact: Kurt Nordstrom, Dirk Meyer

Status of Corrective Action: Flashback protectors purchased and installed on all oxygen/acetylene torch sets on March 6, 2007. The oxygen and acetylene cylinders were moved to another storage location and have been separated by more than 20 feet and stored in a secure manner. Employees were reminded to secure all valves on torches when not in use. The modernization contractor reported that it separated its cylinders by at least 20 feet and stored them properly.

WELDING, CUTTING, AND BRAZING - WCB**Finding Number: WCB-07-002**

Finding: The welding exhaust ventilation systems in the MIB mezzanine and welding shop are not adequate to prevent those gases from entering the Main Interior Building ventilation system or to effectively protect the welder.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 3

Discussion: A window has been removed by the modernization contractor and a circular fan installed in front of the open window to provide fresh air in the mezzanine. Ventilation duct work for the seventh floor is located next to this fan and open window.

A squirrel cage fan has been installed near the ceiling of the welding shop to exhaust fumes from it. The fan exhausts into the central plant. The fan intake is so high that welding fumes they are drawn through the welder's breathing zone, exposing the welder to the fumes the ventilation system was designed to eliminate. Welding fumes from both locations could be drawing into the MIB ventilation system.

OSHA regulations require that mechanical ventilation be provided if employees are welding or cutting materials such as zinc, zinc-bearing compounds, or stainless steel. A common zinc-bearing material is galvanized metal because the galvanizing coating is primarily zinc. Lead may also be present as a contaminant in the galvanizing compound. When galvanized metal is welded or cut, potentially toxic fumes are created from the heating of the zinc or lead compounds in the metal. OSHA requires mechanical ventilation to be provided as close as possible to the galvanized or stainless steel being welded or cut to reduce the potentially toxic fumes from being in the welder's breathing zone (i.e., their mouth and nose). However, mechanical ventilation is not required if galvanized metals are only cut or welded outdoors.

Regardless of the metals being welded, mechanical ventilation is required if the space in which welding is conducted is less than 10,000 cubic feet per welder or the ceiling is less than 16 feet high. The ceiling in the shop was approximately 12 feet high therefore mechanical ventilation that complies with OSHA's ventilation standards is required. Neither location meets this criteria.

OSHA's ventilation standards require that local mechanical exhaust ventilation systems meet one of the following: **1)** a freely moveable hood placed by the welder, as near as practical to the work being welded, with an air flow rate sufficient to maintain a velocity in the direction of the hood of 100 linear feet per minute in the welding zone when the hood is at its most remote distance from the point of welding; or **2)** a fixed enclosure with a top and not less than two sides that surrounds the welding or cutting operations and has an airflow rate sufficient to maintain a velocity away from the welder of not less than 100 linear feet per minute. A table in the regulations provides additional details on the minimum airflow and duct diameters (for option 1 described above) depending on the distance the torch or arc is from the material being welded.

Recommendation: **A)** Require the modernization contractor to purchase a portable self contained compliant welding gas exhaust unit with a moveable hood that may be placed by the welder as close to the work being welded as possible; and **B)** Purchase a portable self-contained compliant welding gas exhaust unit with a moveable hood that may be placed by the welder as close to the work being welded as possible for the welding shop.

Driving Reference(s): 29 CFR 1910.252(c)(2) - ventilation for general welding and cutting
29 CFR 1910.252(c)(3) – local exhaust hoods and booths
29 CFR 1910.252(c)(6)(ii) – ventilation for welding or cutting zinc indoors

Point(s) of Contact: Dirk Meyer, Kurt Nordstrom

Status of Corrective Action: The modernization contractor installed a portable, self-contained, compliant welding-gas exhaust unit on March 12, 2007. Facilities purchased and installed a similar unit for use in the basement welding shop on April 10, 2007.

WELDING, CUTTING, AND BRAZING – WCB**Finding Number: WCB-07-003**

Finding: Oxygen, acetylene, and other compressed gas cylinders are not stored properly in the Main and South Interior Buildings.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: Compressed gases are stored in the MIB mezzanine (two locations) and central plant (two locations), in the SIB attic, and in the SIB fire pump room. Approximately 20 cylinders of free standings were found near a new compressor in the central plant.

A welding cart with oxygen and acetylene cylinders with caps in place was found in the MIB mezzanine. Two oxygen and two acetylene cylinders with caps in place tied to a column on the mezzanine were also found by the CASHE Team. All of these cylinders are believed to have been left by the modernization contractor.

OSHA prohibits oxygen cylinders from being stored near fuel-gas cylinders (e.g., acetylene), unless the welding gas cylinders have the welding leads attached and they are “ready for use.” A welding cart with the gas cylinders capped and covered with dust and cob webs would not be considered “ready for use.” Cylinders can be left on the cart if the equipment is being used periodically because the act of separating the cylinders poses a risk as well.

Oxygen and acetylene cylinders were found chained to together in the compressed gas storage cage in the MIB central plant with other compressed gases inert gases and propane. The chain was in the proper location for most of the tall oxygen cylinders below the cylinders’ shoulder above the midpoint on the cylinder, but the chain when around the neck of the shorter acetylene cylinders. None of the cylinders were firmly secured. They all move or slide if someone accidentally tripped into them or something fell onto them.

A small hand carrying welding set was found in the SIB attic. The pressure cage showed the acetylene lead was still pressurized. The cylinder did not have a knob on its valve stem to shut off the pressure and the special wrench needed to turn the stem was not with the welding set. Welding gases are secured at the cylinder and then bled off the torch to ensure that the leads are not left pressurized and flammable gas allowed to potential leak into the workplace.

OSHA requires that oxygen cylinders be stored at least 20 feet from fuel-gas or combustible materials, especially oil or grease, or be separated by a noncombustible barrier at least 5 feet high with a fire resistance rating of at least 30 minutes. The modernization contractor has a red expanded metal cage with a noncombustible barrier in located a Main Interior Building courtyard.

All compressed gas cylinders must be stored in an area where the ventilation is adequate to dissipate escaping gas in the event of a leaking cylinder; they may be stored outdoors. Cages with solid metal roofs and locking wire cage side panels are readily available from most industrial equipment suppliers, but are not required.

OSHA regulations require that all handling, storage, and use of compressed gas cylinders be conducted in accordance with the Compressed Gas Association's (CGA) Pamphlet P-1-2000 (available from CGA, telephone 703-788-2700). The CGA pamphlet states that all cylinders must be secured (e.g., chained) in an upright position to prevent them from falling, and that all cylinder valves be protected from damage.

Proper cylinder storage is typically accomplished by securing cylinders around the shoulder (below the valve neck). The CGA requirement to securely store cylinders and protect cylinder valves from damage is interpreted by the CASHE Team as a prohibition against securing a cylinder around its neck or valve. Securing a cylinder around its neck can damage the valve or allow the cylinder to slip out from under the chain, strap, or ring holding it in place. In addition, securing a cylinder across its middle or lower, or too loosely, will allow the cylinder to tip if it is jolted. The cylinders stored on the Mezzanine

The CGA pamphlet also states that, at gas manufacturing facilities, nesting cylinders is considered a safe manner of storage. However, nesting may not be adequate in seismically active areas, and additional measures, such as chaining and strapping, may be required to prevent the cylinders from falling. Appendix D of the pamphlet illustrates proper cylinder nesting. Nesting depends on a 3-point contact system (i.e., all cylinders must be in contact at three points - either with a secure wall or with another cylinder). Personnel will need to ensure that when a cylinder is removed from a nested set, the remaining cylinders must be readjusted to regain the 3-point contact before the strap or chain is secured in place.

Recommendation: **A)** Require the modernization contractor to store all gas cylinders that are not in use outside in an expanded metal cage; **B)** Store oxygen cylinder cylinders at least 20 feet from acetylene cylinders or provide a noncombustible barrier between the gases as described in this finding; **C)** Educate all employees on the requirement to properly secure all cylinders; and **D)** Instruct personnel not to store oxygen and acetylene with gas still in the torch leads.

Driving Reference(s): 29 CFR 1910.253(b)(4) – welding gas storage
29 CFR 1910.101(b) – compressed gas storage
CGA P-1-2000 – cylinder storage
29 CFR 1910.253(e)(5)(v) - hose and hose connections

Point(s) of Contact: Dirk Meyer, Kurt Nordstrom

Status of Corrective Action: The GSA Modernization contractor separated the cylinders, as appropriate, and has stored the cylinders properly on March 5, 2007.

We conducted training for Facilities staff and contractors which included the proper transportation, use, and storage of cutting torches, and the importance of storing oxygen and acetylene cylinders properly.

Contract employees working in the SIB were reminded that, when finished using the welding set, it must be properly secured and stored. The set was being used that day, but the employee did not secure the bottles while taking a break. Completed on February 27, 2007.

WELDING, CUTTING, AND BRAZING - WCB

Finding Number: WCB-07-004

Finding: The welding torch stored in the attic of the South Interior Building is not equipped with flash-back protection to prevent flame from passing into the fuel-gas system.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 4

Discussion: OSHA requires that manifold systems be equipped with flash-back protection to prevent oxygen from flowing into the fuel-gas (e.g., acetylene) system or fuel from flowing into the oxygen system. A manifold is a multi-cylinder system with lateral outlets for more than one fuel supply or oxygen supply.

Flash-back protection is not required on single unit systems, such as those in use by the NBC; however, the CASHE Team recommends using flash-back protection devices as a best management practice to prevent the gases from mixing. New welding torches purchased today have flash-back protection devices built in. Inexpensive, UL-listed devices that can be installed on welding torches without built in flash-back protection can be purchase from welding supply companies.

Recommendation: **A)** Purchase UL-listed flash-back protection devices and install them on the welding torch; or **B)** Purchase a new torch equipped with flash-back protection and dispose of the old torch.

Driving Reference(s): 29 CFR 1910.253(e)(3)(ii)(C)(3) - flash-back protection for manifold systems

Point(s) of Contact: Kurt Nordstrom

Status of Corrective Action: We purchased and installed UL-listed flash-back protection devices on all of our oxygen/acetylene cutting/welding torch sets on March 6, 2007.

WELDING, CUTTING, AND BRAZING - WCB

Finding Number: WCB-07-005

Finding: Arc welders in use at the MIB are damaged.

Repeat Finding: N/A

Recurring Issue: N/A

Safety RAC: 2

Discussion: An arc welder (welder #57) in the MIB central plant has a burned and cut power cord, which is lying in a puddle of water on the floor. The damaged cord poses an electrocution hazard.

In the MIB welding shop, an arc welder's electrode holder cable has visible damage to its insulation approximately 2 feet from the electrode holder. OSHA requires that the insulation on arc welder cords be undamaged within 10 feet of the electrode holder, and splices are not allowed. Damage in this area can not be corrected using electrical tape.

Recommendation: Repair or replace all damaged arc welder components.

Driving Reference(s): 29 CFR 1910.254(d)(8) – arc welding and cutting operation and maintenance

Point(s) of Contact: Dirk Meyer, Kurt Nordstrom

Status of Corrective Action: The modernization contractor repaired the power cord on welder number 57 on February 6, 2007.

Our electrician repaired the welding leads on the machine in the MIB welding shop on March 7, 2007. The subject of working with damaged leads was discussed during weekly shop safety meeting on March 9, 2007.