

ENVIRONMENTAL MANAGEMENT PROGRAM

1. PROGRAM NAME: NIEHS Wastewater Program

2. Significant Environmental Aspect(s):

Wastewater discharges
 Natural resources
 Ecological disturbance

3. Document Control Code: EMP-2007-Wastewater

4. Date: 11/29/2007

5. Program Lead:
 Bill Steinmetz – HSB
 Bob Roe – ORF/FOB
 Wayne Boyer – ORF/FOB

6. Goals and Objectives

Five-year Goal(s):	Annual Objective(s):	Performance Indicator(s)	Resource requirements
Encourage digital imaging alternatives to the current wet chemistry method of photo development, which generates silver waste	Maintain compliance with Durham County, NC wastewater permit effluent limitations	No Notices of Non-compliance	Current resources
	Maintain compliance with the Durham County Sewer Use Ordinance	No Notices of Violation	Current resources
	Remove sink traps and collect liquid samples for Hg analysis during laboratory renovations	Sink trap collection rate is 95% or greater	Current resources
	Collect annual scrubber effluent samples to determine mercury removal efficiency	Mercury removal efficiency is 95% or greater	Current resources
	Maintain silver recovery units for treatment of spent fixer solution	Silver concentrations in wastewater are low or non-detectable	Current resources

7. Reason(s) for Significance:

Potential health impact
 Legal and regulatory requirements

8. Potential Environmental Impacts:

Interference with biological treatment activity at the Durham County wastewater treatment plant (POTW)
 Detrimental impact on aquatic life in the POTW receiving stream (for pass-through pollutants)

9. Legal and Other Requirements (Specify):

Durham County: Industrial User Pretreatment Permit
 Durham County Sewer Use Ordinance

10. Program Description:

The NIEHS holds a wastewater discharge permit issued by Durham County, North Carolina. The permit limits the total volume of wastewater discharged by the NIEHS into the sanitary sewer system to 241,000 gallons per day. The permit also mandates periodic sampling of NIEHS wastewater discharge for a variety of pollutants including volatile organic compounds, oil & grease, mercury, silver, cyanide, molybdenum, total phosphorus, total nitrogen, ammonia, chloride, pH and temperature.

The NIEHS is committed to pollution prevention activities that focus on preventing mercury from entering NIEHS wastewater discharge. These activities include a mercury thermometer exchange program, review of new laboratory chemicals for mercury content, and a mercury removal system installed to pretreat scrubber effluent prior to discharge into the sanitary sewer system.

Silver recovery units are located in all eight of the Building 101 photo development darkrooms to recover silver from spent fixer solution prior to discharge into the sanitary sewer system. The equipment configuration for recovering silver involves an electroplating tank in series with a solution transfer tank and two metals exchange cartridges. The Health and Safety Branch maintains the silver recovery units while contract personnel are responsible for equipment repair and silver harvesting. Silver concentrations within NIEHS wastewater are typically less than the detection limit.

11. Operational Controls

Activity	Controls	Responsible Party / Job Function	Monitoring	Records	Comments
Laboratory research activities that may impact wastewater discharge	Laboratory research protocols NIEHS Health & Safety Manual NIEHS Waste Manual	Principal Investigators HSB / Safety Officer HSB / Hazardous Waste Manager	Periodic lab inspections conducted by HSB	Lab inspection reports/email Online chemical waste pickup requests	
Operation and maintenance of the media preparation unit and glassware washing systems	Durham County Wastewater Permit	DIR Media and Glassware Unit Project Officer	Wastewater samples collected twice per year	MSDS Analytical results	
Operation and maintenance of animal cage washing systems	Durham County Wastewater Permit	DIR/CMB Project Officer for Animal Resources	Wastewater samples collected twice per year	MSDS Analytical results	
Operation and	Silver Sure ® Ion	HSB Environmental	Silver levels	Electronic logbook	

maintenance of the Building 101 silver recovery units	Exchange Cartridge Operation/Installation Notes Durham County Wastewater Permit	Compliance Officer	monitored to determine cartridge change interval	Analytical results	
Operation and maintenance of the Cafeteria grease removal systems	Durham County Wastewater Permit	Cafeteria Manager ASAB Cafeteria Project Officer HSB Environmental Compliance Officer	Wastewater samples for oil & grease collected twice per year	Purchasing records Analytical results	
Disposal of janitorial cleaning agents into the sanitary sewer	Durham County Wastewater Permit MSDS review	Janitorial Staff ORF/FOB Janitorial Services Project Officer HSB / Safety Officer HSB / Environmental Compliance Officer HSB / Hazardous Waste Manager	Product review occurs periodically New products must be approved prior to use	MSDS database for products used by NIEHS posted on searchable website	
Addition of water treatment chemicals to the cooling tower, chilled water, HTHW and incineration systems	Manufacturer recommended procedures	ORF/FOB NVT Project Officer NVT Operations Supervisor NVT Utility & Incinerator Operators	Operational parameters are routinely recorded Chemicals added per manufacturer's recommendations	NVT Utility Operator logbooks	
Operation and maintenance of other building utility systems that can discharge wastewater to the sanitary sewer system	Manufacturer recommended procedures	ORF/FOB NVT Project Officer ORF/FOB Maintenance & Operations Chief ORF/FOB Building Engineers	Operational parameters are routinely recorded	Utility Operator and Building Engineers logbooks	

		NVT Operations Supervisor			
		NVT Utility Operators			
Operation and maintenance of the Building 106 scrubber effluent / mercury removal system	Operations and maintenance manual Durham County Wastewater Permit	NVT Incinerator Operators HSB Environmental Compliance Officer	Operational parameters recorded hourly. Annual samples collected to determine mercury removal efficiency	Operator logbooks Analytical results	

12. Action Plan: Structure, Authorities, Responsibilities

Targets/Milestones to meet Annual Objectives	Timeframe	Responsibility
Conduct audits of silver recovery units	Quarterly	Environmental Compliance Officer / HSB
Determine removal efficiency associated with the scrubber effluent / mercury removal system	Annual	Environmental Compliance Officer / HSB
Provide chemical waste disposal training for all new laboratory employees through the Intro to Health & Safety course	Semiannual	Hazardous Waste Manager / HSB

13. Relevant Document(s)

Document Name	Location	Document Custodian
NIEHS Waste Manual	Web-based	Hazardous Waste Manager / HSB
NIEHS Health & Safety Manual	Web-based	Safety Officer / HSB
Durham County Wastewater Permit	Hardcopy, electronic	Environmental Compliance Officer / HSB
RCRA Contingency Plan	Hardcopy, electronic	Hazardous Waste Manager / HSB
SPCC Plan	Hardcopy, electronic	Environmental Compliance Officer / HSB
SolmeteX™ Operations & Maintenance Manual	Hardcopy	NVT Incinerator Operators
Silver Sure® Ion Exchange Cartridge Operation & Installation Notes	Hardcopy	Environmental Compliance Officer / HSB

14. Competence of persons responsible

Title	Basis for Competence
HSB / Environmental Compliance Specialist	Professional level education and experience
HSB / Hazardous Materials Manager	Professional level education and experience

HSB / Safety Officer	Professional level education and experience
NIH / ORF/FOB Maintenance & Operations Chief	Qualified experience and on-the-job-training
NIH / ORF/FOB NVT Project Officer	Qualified experience and on-the-job-training
NVT Operations Supervisor	Qualified experience and on-the-job training
NVT Incinerator and Utility Operators	On-the-job training / Introductory and refresher training (RCRA Contingency/SPCC)
15. EMS Review	
Name / Signature:	William K. Steinmetz
Date:	November 29, 2007