

**U.S. Environmental Protection Agency
ENVIRONMENTAL SCIENCE CENTER, FORT MEADE, MARYLAND**

**ESC-EP16
Environmental Management System Procedure for:**

Monitoring and Measurement

Effective Date: February 5, 2002

Revision Date: 7/28/2009

Issued by:

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Review Date: 1/22/09	
By: R.Costas	
Changes: Added table of measurements and monitoring.	
Revision Date: 7/28/2009	EP16
By: R.Costas	
Changes: Consolidated EP 15 and 16 to create one Monitoring EP to reduce paperwork load. Nothing was added or deleted...just re-organized. Now called EP16. Changed Effective Date to equal original creation date. Revised EP naming procedure to remove version numbers. Will track current version by Revision Date. Updated Measurement chart to include all SEAs and related measures.	

1 Purpose

To specify responsibilities and give guidance on the monitoring and measurement of environmental performance at the ESC.

To provide guidance for selecting indicators of performance for significant environmental aspects, for establishing performance baselines, and for selecting measuring methods to track environmental performance at the ESC.

2 Scope

This procedure applies to all equipment and instruments used to monitor or measure the various pollutants which are indicators of environmental performance under ESC's EMS. It is applicable to all facility operations and activities that can have a significant impact on the environment.

3 Procedures

a) Specific Procedures for Monitoring and Measurement:

- Inspect the instrument or equipment to ensure that there is no obvious damage and that it is functioning properly.
- Follow specific instructions that were previously prepared by the manufacturer and/or the principal operator, which describe in detail how the instrument or equipment should be properly calibrated. Those instructions may contain the frequency of calibration, inspection procedures and the method of calibration as per the manufacturer's specification or recommendation.
- See attached table for specific monitoring and measurement procedures.

b) Guidance for selecting Environmental Indicators:

- Indicators can be selected as part of establishing Environmental Management Programs (EMPs) for significant aspects. More specifically, they can be selected in concert with the objectives that are to be achieved within each EMP.
- In order to select environmental indicators, it is necessary to examine the environmental regulation for that significant aspect (for example, air emissions characteristics include particulates and volatile organic

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compounds and can be measured by volume and periodicity; recyclables can be measured by weight, volume, or value.)

- Baselines need to be established for the chosen indicators so we can measure progress from a specific base. Baselines may not be appropriate for some significant aspects where, due to the nature of our business, measurements over time are not indicative of the environmental performance of the organization.
- Technological and procedural methods to measure indicators need to be identified. For example, if temperature is the indicator, the technological method is a thermometer and the procedural methods would be the frequency of measurements or location of measurements.
- All information collected from monitoring and measuring environmental performance is a required input into the periodic management review by top management.

c) Responsibilities

- Responsibility for ensuring that instruments used for monitoring and measuring environmental indicators are calibrated rests with the individuals responsible for the monitoring and measurement of those indicators. These individuals will be specified in the Operational Control Forms (OCFs).

4 Documentation

Calibration records shall be documented and retained in accordance with Federal record retention policy and procedures.

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Attachment: Monitoring and Measurement Procedures and Timetable

Significant Aspect (SEA)	Monitoring/Measurement Procedure	Units	Timetable	Responsible Party
Air Emission	Fuel usage, hours of operation Quarterly NOx emission calculations Pesticide application report (inside) Gas, fuel and water spill/release sensors	Hours ppm Gal monitored	Semi-annual Quarterly As needed constantly	Facility Manager
Wastewater Discharge	Wastewater sampling and analysis Neutralization facility operation records	Reports reports	As per SAP daily	SHEM Manager
Chemical Resources	<i>Reports from contractors:</i> Inventory of chemicals in facility – VIM Pesticide applied Fertilizer applied	Each Gal lbs	Annual As applied As applied	SHEM Manager Facility Manager Facility Manager
Radiation	Radiological dosimetry monitoring Inventory of radioactive components or sources Facility monitoring data, wipe test results Results of checking incoming samples	Reports Each Case File Checklist	Semi-annual Semi-annual Semi-annual Each delivery of OASQA samples	SHEM Manager
Microbial Contamination	Review of all inspections and incident reports	reports	As received	SHEM Manager
Waste Generation: Recycling – non-hazardous items	Items either counted or weighed on balance in J103 by janitorial staff. Balance calibrated annually.	lbs, each	Counting and weighing performed monthly.	Deputy Facility Manager
Waste Generation: Recycling – hazardous items (fluorescent lights and batteries, lab glass and plastics)	Items weighed on balance in J118 by EMSI staff. Balance not calibrated.	kg	Weighing performed as needed	SHEM Manager
Water consumption	<i>Meter readouts on equipment:</i> Boiler feed: Domestic: Cooling tower: DI RO reject:	gal gal gal gal	Readouts performed weekly.	Facility Manager
Energy Consumption, Fuel Consumption	<i>Information from monthly bills:</i> Electricity daily avg: Electricity Cost: Electricity consumed: Gas consumed: Energy demand Gas cost: Fuel used/purchased: <i>Computer Readouts:</i> Fumehoods open: Occupancy rate measured thru light sensors	BTU/ft2/day \$ KWH MMBTU MMBTU/ft2 \$ gal avg % %	Performed Monthly Quarterly Monthly Monthly Monthly Monthly Monthly Daily Daily	Facility Manager
Fuel Consumption - Mobile	<i>Information from EPA-AST Motor Vehicle Database:</i> GSA vehicle miles: GSA vehicles used:	miles total	Monthly	Deputy Facility Manager
Paper Consumption	<i>Readout on copiers:</i> Copies made: <i>Information from purchasing records:</i> Paper purchased:	total cartons	Monthly, Annual Report Annual	Deputy Facility Manager
Stormwater	Pesticides applied (outside) report Fertilizer applied report Annual physical inspection	gal Lbs report	As received As received annual	Facility Manager SHEM Manager
Waste Generation: Waste Disposal – laboratory waste/chemicals	Hazardous and non-hazardous laboratory waste weighed on balances: J103, J102 or J 118 depending on max. weight.	kg	As needed	SHEM Manager