Environmental Management System Manual

June 24, 2015

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1 INTRODUCTION AND OVERVIEW

1.1 ENVIRONMENTAL MANAGEMENT SYSTEM

Welcome to University of Massachusetts Boston's (UMass Boston) Environmental Management System. This Manual is designed to serve as a guide to the Environmental Management System (EMS) and all of its related components. It provides an overview of the EMS, and a discussion of its components. The Manual addresses environmental requirements and the tools available to meet those requirements. UMass Boston faculty and staff should read the Manual to assist them in complying with environmental requirements and best practices.

The EMS Manual is organized as follows:

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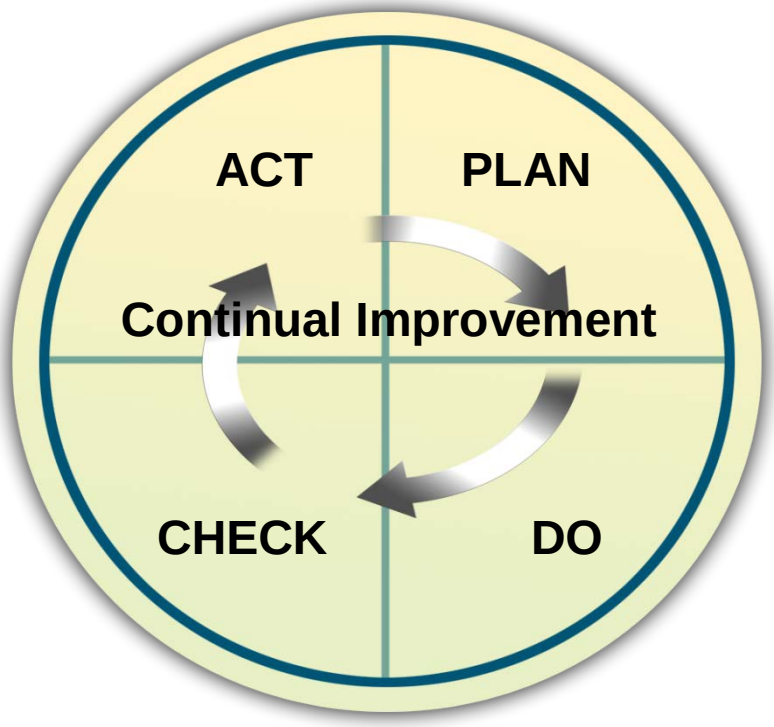
Reading the Manual will provide an overview on the purpose, approach, and tools UMass Boston is using to help meet and surpass its environmental requirements. Section 4 introduces program areas that will be addressed after the five priority areas.

EMS Framework and Document Structure

Overall EMS Framework

The focus of the EMS is to help ensure that UMass Boston meets all of its regulatory requirements and improves its performance in non-regulated environmental arenas such as recycling and energy usage.

The basis of the EMS is a commitment to continual improvement. This EMS is based on the "Plan, Do, Check, and Act" model. A visual representation of this model is set out below.



The EMS is a systematic approach to environmental performance. It consists of various components that together ensure effective environmental performance through accountability, assigned responsibilities, employee involvement, written policies, training, corrective action, senior management review and senior staff involvement. All components will work together to continually improve UMass Boston's environmental performance.

Goals and Objectives

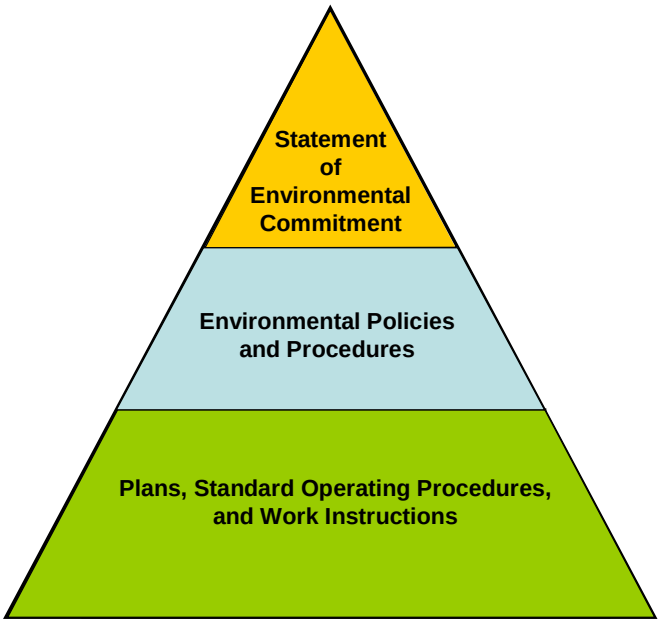
UMass Boston has built its EMS on many practices already in place to meet federal and state regulatory requirements.

One of the initial actions of the EMS is to identify the most significant environmental issues on campus and to address these issues through objectives and targets. By including pollution prevention in this process, UMass Boston can improve its operating efficiencies and achieve cost savings through implementing waste reduction and energy efficiency opportunities.

EMS Documentation Structure

The documentation for the Environmental Management Program is grouped into several categories: 1) Statement of Commitment; 2) Environmental Policies and Procedures; and 3) Plans, Standard Operating Procedures, and Work Instructions. These documents provide the framework for how the UMass Boston EMS functions, producing a framework for managing and continually improving environmental performance.

Environmental Management System Framework



1.2 ROLES AND RESPONSIBILITIES

Overview

UMass Boston (UMB) is committed to defining the needed roles and responsibilities in order to protect the environment and maintain a healthy and safe campus. Identifying and defining roles and responsibilities of UMB personnel involved with the Environmental Management System (EMS) is a key part of ensuring that UMB activities are conducted in accordance with all applicable laws, regulations and campus standards and best practices.

This policy delineates the leadership, roles and responsibilities of those UMB personnel who are charged with implementing and using the EMS.

Roles

1. The Chancellor directs members of UMB senior management to provide the necessary resources and support to ensure the implementation and management of the EMS, so that UMB personnel conduct activities in compliance with all applicable laws, regulations, UMB polices, and best practices.

2. Members of UMB senior administration provide the necessary resources and support to ensure the implementation of the EMS, including decisions on capital improvements. Senior Management reviews, approves modifications, and provides resources needed to support the EMS.

3. Steering Committee and Oversight Committees – provide oversight and guidance on compliance with EHS requirements.

4. Department Heads, faculty, managers and supervisors are responsible for implementing the relevant portions of the EMS in their areas, assigning responsibilities to the appropriate personnel who assist in the implementation of the EMS, ensuring that personnel under their supervision are adequately trained and managing contract service providers.

5. Faculty, staff and contractors are responsible for conducting their activities in a safe manner and in compliance with all applicable laws, regulations, UMB polices, and best practices. These members of the UMB Community also participate in all required training.

Responsibilities:

In order to implement and maintain the EMS, to manage the variety of issues associated with environmental health and safety laws and regulations, to develop and oversee policies and procedures, and to assess and evaluate compliance and sustainability activities, UMB has a framework of offices and committees.

This framework includes the following:

1. The **Chancellor** is responsible for approving and adopting the Commitment to Environmental Principles, directing senior administration to provide necessary resources and support to ensure the implementation and management of the EMS, and final oversight and management of the EMS.

2. **Senior Administration** is responsible for:

   a. Providing the necessary resources and support that are essential to the implementation and management of the EMS. These resources and support can include human resources, support in implementing and maintaining the EMS, use of consultants with specialized skills when necessary, and financial resources.

3. **EHS Steering Committee** is responsible for:

   a. Overseeing the EMS.

   b. Reviewing the Goals and Targets recommended by the EMS Working Group.

   c. Reviewing the roles and responsibilities of the EMS to ensure that the EMS is functioning appropriately.

   A list of the Chancellor's EHS Steering Committee members is included in Appendix B

4. **EMS Working Group** is responsible for:

   a. Identifying, developing and evaluating the environmental aspects, objectives and targets of the EMS.

   b. Evaluating the status of the EMS to ensure compliance and to identifying instances of noncompliance.

   c. Conducting an annual management review of the EMS.

   d. Providing an annual report of its activity, including ongoing monitoring for EMS compliance, to the EHS Steering Committee

   A list of the EMS Working Group Members is included in Appendix B

5. **Environmental Health and Safety Office (EHS)** is responsible for:

   a. Overseeing environmental health and safety programs and taking an active lead in ensuring their effectiveness.

   b. Providing environmental health and safety training to UMB personnel.

1.3 EVALUATIING IMPACTS AND SETTING PRIORITIES

Overview

This section describes how UMass Boston evaluates those campus activities that have an impact and potential risk to the environment.

Evaluation of Impacts and Risks

The EMS Working Group is responsible for developing criteria used to evaluate the impacts and risks, for designating a method of scoring the criteria, and for setting a threshold that determines what impacts and risks are significant. The EHS Steering Committee is responsible for reviewing and approving the template, criteria, scoring method and threshold.

Set out below are the procedure(s) for determining the impacts and risks, and for undertaking the evaluations:

1. Developing Criteria and Scoring

    a. In evaluating the aspects and impacts, the EMS Working Committee and the EHS Steering Committee will use the nine criteria set out below to evaluate impacts and risks:

- **On-Campus Health Impacts/ Exposure (score doubled)** - This is the risk that the activity could pose to faculty, students, staff and visitors on the UMass Boston campus if the activity was completely unregulated or unattended by any campus personnel. The score for this criteria is doubled because of its importance.
- **Community Health Impacts (score doubled)** - This is the risk that the activity could pose to members of the community near the UMass Boston campus if the activity was completely unregulated or unattended by any campus personnel. The score for this criteria is doubled because of its importance.
- **Environmental Impacts/ Exposure (score doubled)** - This is the risk that the activity could pose to the environment if the activity was completely unregulated or unattended by any campus personnel. The score for this criteria is doubled because of its importance.
- **Regulatory Compliance Concerns** - This is the difficulty in managing to ensure that the activity is conducted in compliance with all regulatory requirements
- **Regulatory Compliance Costs** - This is the cost to UMass Boston of managing the activity so that it conducted in compliance with all regulatory requirements
- **Potential for fines/penalties** - This is the risk of fines or penalties that UMass Boston could face if the activity is not conducted in compliance with all regulatory requirements
- **Impact on Reputation** - This is the risk or impact on UMass Boston's reputation if the activity is unattended or not conducted in compliance with regulatory requirements

- **Use of natural resources** - This is the degree to which the activity uses natural resources such as water, energy, petroleum or minerals
- **General nuisance** - This is the degree to which the activity creates an imposition such as noise or dust on the campus community or the surrounding community

b. The EMS Working Group and the EHS Steering Committee will use a ranking score of 0 – 3 for scoring each of the criteria to be used in evaluating the risks and impacts. "0" will mean "no impact"; "1" will mean "low impact"; "2" will mean "moderate impact"; and "3" will mean "high impact"

2. Evaluating the Impacts and Risks

a. The EMS Working Committee and the EHS Steering Committee will use the criteria and scoring described above to evaluate the impacts and risks identified by the EHS Office and the academic departments and administrative units.

b. The EMS Working Committee and the EHS Steering Committee will score each aspect/impact and risk, and develop a total score.

A copy of the current scoring sheet follows behind this procedure.

c. For the first year, any impact/risk with a score of 19 or above is considered to be significant enough that the EHS Office will establish a program, systems and procedures to address and minimize the risks posed by that activity. For the second year, any impact/risk with a score of 9 or above is considered to be significant enough that the EHS Office will establish a program, systems and procedures to address and minimize the risks posed by that activity.

3. Ongoing Review of Existing Impacts/Risks and Review of New Impacts/Risks

a. At least once a year, the EMS Working Committee and the EHS Steering Committee will review the evaluations that have been done for any ongoing activities, and make any changes to the evaluations as needed.

b. In the event that any new activity is started at UMass Boston or if there is a major change to any existing activity, the EMS Working Committee and the EHS Steering Committee will evaluate any impacts and risks associated with that new activity using the criteria and scoring set out in this procedure, and will assign a score to that activity.

4. Review of Evaluation Process

a. At least once a year, the EMS Working Committee and the EHS Steering Committee will review the process, criteria and the scoring that has been set out, and make any changes to the process as needed.

Current Impacts and Risks Evaluation and Scoring

UMASS BOSTON

PRIORITIES FOR ENVIRONMENTAL MANAGEMENT

ASPECT	CRITERIA									
	On-Campus Health Impacts	Community Health Impacts	Environmental Impacts	Regulatory Compliance Concerns	Regulatory Compliance Costs	Potential for fines/ penalties	Impact on Reputation	Use of Natural Resources	General Nuisance	Score
Soil Management	4	4	6	2	3	1	2	1	3	26
Laboratory Waste water	2	4	4	3	3	3	2	1	0	22
Cooling water	2	0	6	3	3	3	2	2	0	21
Laboratory chemicals	6	0	2	3	3	2	2	0	1	19
Laboratory hazardous waste	6	0	2	3	3	2	2	0	1	19
Green House Gases	2	2	4	1	2	0	2	1	0	14
Marine Operations	0	0	4	1	1	1	3	1	1	12
Oil/ waste oil	2	0	4	1	1	1	1	1	1	12
Solid waste/ recycling	0	0	4	1	1	1	2	2	1	12
Stormwater	0	0	2	2	2	1	2	1	0	10
Universal Waste	2	0	2	1	1	1	1	1	0	9

3.10.15

Impact Scoring 0 = no impact; 1 = low impact; 2 = moderate impact; 3 = high impact

Scores of first three columns are doubled because of their significance

1.4 EMS GOALS AND OBJECTIVES

Overview

UMass Boston (UMB) is committed to setting goals and objectives as part of protecting the environment and maintaining a healthy and safe campus. Setting goals and objectives for UMB personnel involved with the Environmental Management System (EMS) is a key part of ensuring that UMB strives to continually improve and to comply with all applicable laws, regulations and campus standards and best practices.

This policy delineates the procedure for setting goals and objectives related to the EMS.

Setting Goals and Objectives

UMass Boston will set goals and objectives for the EMS by using the following procedure:

- ✓ Each year, the EMS Working Group will propose goals and objectives for each of the programs covered in the EMS. The goals and objectives will be presented to the EHS Steering Committee.
- ✓ The EHS Steering Committee will review and approve goals and objectives for the EMS.
- ✓ The goals and objectives for each program covered by the EMS will be set out in the section of the EMS manual covering that program.

2 PROGRAM AREAS

Overview

Based upon an evaluation and scoring of environmental impacts and potential risks posed by activities occurring at the UMass Boston campus, the EMS Working Group and EHS Steering Committee determined that five activities posed the highest potential risks.to the campus and scored the highest using the evaluation process and criteria set out above in Section 1.2. Those five activities are included in the EMS for the first year. Set out below are descriptions of those five activities and the programs at UMass Boston that address the potential risks posed by those activities:

- Soil Management
- Laboratory Waste Water
- Non-Contact Cooling Water
- Laboratory Chemicals
- Laboratory Hazardous Waste

For each program, there is a description of the campus activity, the environmental risks potentially posed by that activity, an overview of the legal requirements which regulate the activity, how UMass Boston is managing the potential environmental risks posed by the activity, the roles and responsibilities of UMass Boston faculty and staff in conducting the activity, the goals and objectives for improving how UMass Boston is conducting the activity, and a list of the specific regulations applicable to the activity.

Based upon an evaluation and scoring of environmental impacts and potential risks posed by activities occurring at the UMass Boston campus, the EMS Working Group and EHS Steering Committee determined that an additional six activities posed significant potential risks.to the campus and to include those six activities in the EMS for the second year. Descriptions of those six activities, listed below, and the programs at UMass Boston that address the potential risks posed by those activities are included in an appendix at the end of the manual.

The activities that will be included during the second year are the following:

- Green House Gases
- Marine Operations
- Oil/Waste Oil
- Solid Waste/Recycling
- Storm Water
- Universal Waste

2.1 SOIL MANAGEMENT

Campus Activity:

The UMass Boston campus sits on approximately 100 acres of former municipal landfill. That coupled with the complex land use history of the property and extensive re-grading during the initial Campus construction has created a large, fairly homogeneous, waste profile of fill extending to depths as much as 30 feet below the existing grades. Oil and hazardous materials (OHM) have been encountered in the fill that including: petroleum hydrocarbons, polychlorinated biphenyls (PCBs), metals, polycyclic aromatic hydrocarbons (PAHs) and methane. In some cases, OHM concentrations exceed Reportable Concentrations as defined in the Commonwealth Waste Site Cleanup Program and regulations specified in the Massachusetts Contingency Plan.

Construction at UMass Boston—and just about anywhere else—involves excavating dirt. The Utility Corridor and Roadway Relocation project alone will generate about 195,000 tons of excavated fill.

Excavated material, especially here on the former Columbia Point landfill, includes a variety of other materials in addition to dirt. Most of the dirt will stay on site for reuse, but approximately 20 percent may not be reusable and will be trucked to appropriate disposal sites.

Environmental Risks:

Accidentally coming into contact with soil, ingesting soil and/or inhaling contaminated dust are the primary risks to construction workers, UMass Boston workers and passersby.. Risk of a “release” is low because the contaminants are bound in the soil. In addition, there is a risk to the environment if rainwater were to carry contaminated soil into the Boston Harbor, or if contaminated soil were to be disposed of improperly.

Legal Requirements:

Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup maintains lists of sites that have had historical contamination or have had spills of hazardous materials. There are regulations that dictate how these sites must be addressed and cleaned up. The UMass Boston campus is part of a larger listing for Columbia Point that covers the former “Mile Road Landfill.” This landfill was active until the mid-1960s.

Managing the risks:

- UMass Boston has a Special Project Designation (SPD) that provides an overall framework for managing soil projects.
- Licensed Site Professionals (LSPs) oversee the soil work on each project. The Environmental, Health & Safety (EHS) Department at the university monitors this process.
- A site-specific Excavated Materials Management Plan covers handling of soil. The plan specifies measures that must be taken when digging greater than two feet below the surface, including monitoring.
- On large, capital projects environmental firms working for the Division of Capital Asset Management and Maintenance (DCAMM) and/or the University of Massachusetts Building Authority (UMBA), and for the construction managers along with UMass Boston EHS examine and characterize soil regularly.
- Dust control measures including wetting soil are used when necessary.
- At the end of each project, a two-foot cap of clean topsoil will be installed at the surface with the organic make-up to grow plants.

Roles and Responsibilities

- Facility personnel have responsibility for activities related to projects involving the excavation of small amounts of soil, such as the installation of a sign post.
- Outside contractors have responsibility for activities related to projects involving the excavation of large amounts of soil, such as the installation of new utilities. Those projects are managed by either DCAMM or UMBA, depending on the project.
- EHS Office personnel oversee compliance with all regulatory requirements of all projects that involve the excavation of soil.

Goals and Objectives

Goals

1. Develop a comprehensive approach to coordinating and communication among all soil management projects
2. Continue to carefully monitor risks of the soil management program

Objectives

a) Holding soil and excavation coordination meetings with a representative from each project and EHS Office staff

b) Developing additional soil management educational/informational materials

c) Develop a comprehensive compilation of all documents relating to SPD soil management projects

d) Creating an executive summary of the SPD

e) Evaluate the feasibility of adding Bayside property to the SPD

Specific regulations:

Massachusetts Contingency Plan (MCP): 310 C.M.R. 40.0000

Massachusetts Solid Waste Regulations: 310 C.M.R. 19.00

2.2 LABORATORY WASTE WATER

Campus Activity:

Wastewater is water that has been altered by human activity and has been discharged to a sink or drain that is connected to the sanitary sewer system and that goes to a municipal treatment plant. Under the federal Clean Water Act and related Massachusetts Department of Environmental Protection (DEP) and local Massachusetts Water Resources Authority (MWRA) regulations, there are limits on the types and amounts of chemicals and other substances that are allowed to be disposed down a sink or drain.

UMass Boston has a sewer use permit issued by the MWRA that designates the types and quantities/ concentrations of chemicals and other substances that may be drain disposed. The permit sets limits for mercury, silver, zinc, copper, lead, oil and grease, pH and a variety of organic chemicals commonly referred to as Total Toxic Organics (TTO). Under the MWRA permit, UMass Boston must conduct certain quarterly sampling and certain semi-annual sampling.

At UMass Boston, a variety of activities discharge waste water that could potentially contain substances governed by regulations. Laboratory personnel in Chemistry, Biology, School for the Environment, Physics, occasionally drain dispose of small amounts of solvents and other chemicals. Many laboratories use solvents to wash glass ware. Certain laboratories also engage in cage washing. Art studio personnel drain dispose of paints and other substances.

Environmental Risks:

With all of the activities noted above, there is the risk that the solvents or chemicals being drain disposed will exceed the permitted limits. Improper drain disposal of chemicals will send pollutants to the MWRA sewage treatment plant and could harm MWRA staff operating the plant. The chemicals could also pose a risk to the water and marine life in the Boston Harbor, and also adversely affect the fertilizer produced from the sewage operations.

In the past, UMass Boston has had exceedances of mercury, zinc and copper.

Legal Requirements:

EPA regulates the discharge and treatment of wastewater under the Clean Water Act (CWA). The National Pollutant Discharge Elimination System (NPDES) issues permits to all wastewater dischargers and treatment facilities. These permits establish specific discharge limits, monitoring

and reporting requirements and may also require these facilities to undertake special measures to protect the environment from harmful pollutants.

There are significant penalties for non-compliance with the wastewater regulations.

Managing the risks:

UMass Boston makes various efforts to prevent or minimize any unauthorized pollutant from being drain disposed.

- Campus EHS personnel conduct training and awareness each semester for laboratory researchers about source reduction, and how to manage and dispose properly of hazardous waste, including collecting rinsate.
- UMass Boston posts signs to remind campus personnel of permitted and prohibited activities.
- The Laboratory Safety Manual includes information about appropriate management and disposal of chemicals.
- UMass Boston has implemented a chemical inventory system to identify the users of hazardous materials and better be able to provide training and monitor the use of the hazardous materials.
- UMass Boston periodically collects and analyzes samples of wastewater to monitor the levels of pollutants
- UMass Boston has some on-site wastewater treatment systems that handle certain potential hazards. The McCormack Building and the Wheatley Building each has a limestone chip tank used for pH neutralization. The Science Center has a pH neutralization system. In January, 2015, UMB opened a new Integrated Science Center (ISC). The new ISC also contains pH neutralization tanks. UMass Boston moved approximately 40 laboratories from the Science Building, the McCormack Building and the Wheatley Building, and the current Science Building.

Roles and Responsibilities

- Principal Investigators, faculty, researchers and laboratory personnel have responsibility for attending laboratory waste water training, ensuring that nothing prohibited is drain disposed, managing chemical usage and research activities safely and in compliance with all applicable regulatory requirements, and of notifying the EHS Office of any chemical or waste spills or releases.
- EHS Office personnel have responsibility for ensuring compliance with all applicable regulations, interacting with environmental regulators, managing permits, managing and maintaining waste water systems, providing training, investigating any exceedances, managing any corrective actions, overseeing the contractors who conduct sampling required under the waste water permit, and reporting the sampling results to the MWRA

Goals and Objectives

Goals

1. PIs, faculty, researchers and laboratory personnel will comply with regulatory requirements and UMass Boston procedures regarding drain disposal at all laboratories
2. Establish stronger association between EHS Office and Green Chemistry Program

Objectives

a) Have Laboratory Safety Committee consider new signage and additional focused training concerning drain disposal in laboratories

b) Review and evaluate sampling frequency and waste water system design

c) Hold several meetings with Green Chemistry Program to explore explore best management practices

Specific Regulations:

40 C.F.R. Part 403 - General Pretreatment Regulations for Existing and New Sources of Pollution

360 C.M.R. § 10.00 - Massachusetts Water Resources Authority Sewer Use Discharge Regulations

UMass Boston Sewer Discharge Use Permit

2.3 COOLING WATER

Campus Activity:

The Central Utility Plant uses water as a coolant during its operations to meet the cooling needs of the UMass Boston campus. The water used is drawn from Dorchester Bay/Savin Hill Cove and then discharged back to Dorchester Bay/Savin Hill Cove. It is referred to as "non-contact cooling water" because although the water runs through theSalt Water Pump House, it is kept in designated pipes and does not come into direct contact with any other materials, products, or waste products (other than heat) used by the plant.

Environmental Risks:

There are various risks that the non-contact cooling water could pose potential harm to human health or the environment:

- Discharge of non-contact cooling water that is too hot or is contaminated could harm the aquatic life and wildlife in Dorchester Bay/Savin Hill Cove
- Discharge of non-contact cooling water that is too hot or is contaminated could harm people who use Dorchester Bay/Savin Hill Cove by recreational purposes
- Discharge of non-contact cooling water that is too hot or is contaminated could harm the shellfish that can be harvested from Dorchester Bay/Savin Hill Cove water, and then also harm people who might eat that shellfish

Legal Requirements:

The federal and state regulations that govern the discharge of non-contact cooling water and other water that has been potentially altered or polluted require obtaining a permit and complying with various requirements including adhering to designated discharge limits, and conducting periodic sampling, monitoring and reporting.

Managing the Risks:

UMass Boston makes various efforts to prevent or minimize any risk from the discharge of non-contact cooling water

- UMass Boston EHS personnel and Facilities personnel comply with the requirements of the NPDES permit obtained from US EPA and MA DEP.
- UMass Boston EHS personnel and Facilities personnel conduct required sampling, monitoring and reporting as set out in the NPDES permit
- UMass Boston EHS personnel and Facilities personnel adhere to the required discharge limits for flow, pH and temperature

Roles and Responsibilities

- Facilities personnel have responsibility to maintain day-to-day operations of equipment, oversee the operation of providing cooling to the campus, operate the discharge monitoring equipment, and run the automated computer system that manages the cooling water system. Facilities personnel will conduct daily visual checks four times a week and contact the EHS Office with the results. Facilities personnel have responsibility for maintaining day-to-day operations of equipment, overseeing the operation of providing cooling to the campus, and of monitoring the discharge of non-contact cooling water to Dorchester Bay/Savin Hill Cove.
- EHS Office personnel have responsibility for managing regulatory permits, interacting with regulatory agency personnel, providing reporting data to regulatory agencies, and overseeing outside contractors who conduct required sampling

Goals and Objectives

Goals

1. EHS Office and Facilities will strengthen their working relationship
2. Improve how information is shared between the EHS Office and Facilities
3. EHS and Facilities will collaborate to develop written guidance and procedures

Objectives

a) EHS Office and Facilities personnel will share responsibility for conducting daily inspections to determine if an unusual impingement event has occurred

b) EHS Office will obtain a work station that shows “real time” data

c) Develop a “plain English” summary of the permit

d) EHS and Facilities will collaborate to develop written SOPs inspections and notifications to regulatory agencies

Specific Regulations:

40 C.F.R. Part 122

314 C.M.R. Part 3

UMass Boston Authorization To Discharge Under The National Pollutant Discharge Elimination System (NPDES Discharge Permit)

2.4 LABORATORY CHEMICALS

Campus Activity:

Hazardous materials are solid, liquid, gas, or aqueous substances with properties that make them dangerous or potentially harmful to human health or the environment. The applicable federal and state regulations have various requirements concerning the handling, labeling, storage, and transport of hazardous materials.

At UMass Boston, laboratories, particularly in the Chemistry Department, Biology Department, the School for the Environment and other science departments, store a variety of laboratory chemicals and other hazardous materials. In total, the campus has approximately 18,000 containers of chemicals stored in various locations.

The new Integrated Science Center (ISC) was opened in January 2015. Approximayely 40 laboratory groups were movedfrom the Science Building, the McCormack Building and the Wheatley Building..

Environmental Risks:

With the activities in laboratories, there are various risks that hazardous chemicals could pose potential harm to human health or the environment:

- Spills of chemicals that could cause harm to faculty, students or staff
- Spills of chemicals that could cause a release to air, water or soil
- Drain disposing of types or amounts of chemicals not allowed by the MWRA permit that could cause harm to Boston Harbor and the water.

Legal Requirements :

The federal and state regulations that govern laboratory chemicals have various requirements concerning the handling, storage, labeling and transport of hazardous materials used in laboratories. These include requirements for labeling laboratory chemical containers, storing laboratory chemical containers, taking laboratory chemical safety training, maintaining certain records, and transporting laboratory chemicals safely.

Managing the Risks:

UMass Boston makes various efforts to prevent or minimize any risk from laboratory chemicals

- UMass Boston EHS personnel conduct on-going training and awareness each semester for new laboratory researchers for how to manage, label, store, and transport laboratory chemicals.
- The Laboratory Safety Manual includes information about appropriate management of laboratory chemicals.
- UMass Boston has implemented a chemical inventory system to identify the users of hazardous materials and better be able to provide training and monitor the use of the laboratory chemicals.
- UMass Boston personnel conduct self-inspections
- UMass Boston EHS Office staff conduct periodic inspections
- UMass Boston is implementing a lab coat program
- UMass Boston has developed and implemented an emergency response plan
- UMass Boston laboratories conduct experiments using micro-scaling and “green” chemistry techniques to reduce the amount of laboratory chemicals used

Roles and Responsibilities

- Principal Investigators, faculty, researchers and laboratory personnel have responsibility for attending laboratory chemical safety training, ensuring that chemicals are managed, labeled and used safely and appropriately, using appropriate personal protective equipment, notifying the EHS Office of new chemicals, maintaining inventories of chemicals, notifying the EHS Office of empty chemical containers, and, depending on the quantity and situation, managing any chemical or waste spills or releases or notifying the EHS Office.

- Principal investigators have responsibility for providing laboratory specific training, and for ensuring that all persons working in their laboratories comply with all applicable requirements.
- Central Receiving personnel have responsibility for receiving all chemicals and contracting the EHS Office to deliver them to laboratories.
- EHS Office personnel have responsibility for delivering chemicals to laboratories, maintaining operational data sheets for all chemicals, adding new chemicals to the chemical inventory, providing chemical safety training, updating laboratory signage, providing spill kits to laboratories, responding to chemical spill/release incidents, managing contracts with outside contractors who can respond to chemical spill/release incidents.

Goals and Objectives

Goals

1. Expanding the value and use to EHS and researchers of the chemical management system

Objectives

a) EHS Office will explore a chemical reuse program

b) EHS Office will work with PIs and researchers to further promote micro-scaling and "green" chemistry

c) Convert the chemical management system to a web-based system accessible to PIs and researchers

d) EHS Office will evaluate the feasibility of having the EHS Office approve the purchase of chemicals to be used in laboratories

Specific Regulations:

29 C.F.R. Part 1910.1450

2.5 LABORATORY WASTE

Campus Activity:

At UMass Boston, laboratories, particularly in the Chemistry and other science departments, and art studios generate laboratory waste. The average laboratory in the Chemistry Department, Biology Department, and the School for the Environment may each have up to 4 gallons of laboratory waste, and laboratories in some other departments such as the Physics Department will have smaller amounts of laboratory waste. In addition, art studios generate some paint and solvent wastes.

In 2013, the most recent year that UMass Boston totaled up its hazardous waste volumes for a biennial hazardous waste report, the campus generated almost 8,600 pounds of hazardous waste from its laboratories and studios. These were largely flammable solvents (4710 pounds), organics (1,892 pounds), acids (870 pounds), bases (510 pounds), and oxidizers (375 pounds), with small amounts of mercury salts (105 pounds), reactive substances (57 pounds), elemental mercury (15 pounds) and acute hazardous wastes (5 pounds).

Environmental Risks:

With the activities in laboratories, art studios and campus operations, there are various risks that hazardous waste could pose potential harm to human health or the environment:

- Spills of hazardous waste that could cause harm to faculty, students or staff
- Spills of hazardous waste that could cause a release to air, water or soil
- Drain disposing of types or amounts of hazardous waste not allowed by the MWRA permit that could cause harm to Boston Harbor and the water

Legal Requirements:

The federal and state regulations that govern hazardous waste, have various requirements concerning the handling, storage, transport and disposal of hazardous waste. These include requirements for labeling hazardous waste containers, storing hazardous waste, taking hazardous waste training, maintain certain records, transporting hazardous waste and disposing of hazardous waste.

From 1999 to 2009 UMass Boston engaged in the EPA Project XL program. Along with the Boston College and University of Vermont, we developed alternative management programs for hazardous laboratory waste. In 2008, in part as a result of our activities under Project XL, EPA published a new rule, known as Subpart K, for the management of laboratory hazardous waste. At that time UMass Boston was advised by DEP to continue with our existing Laboratory Waste Management Plans (LWMPs) until we could formally adopt Subpart K.

Under our waste management plan we have "Laboratory Waste Accumulation Areas" and our waste tags read "Laboratory Waste." "Laboratory waste" is defined as a hazardous chemical that results from laboratory-scale activities and includes excess or unused chemicals. At UMass Boston a chemical becomes a laboratory waste when:

- it has gone through a research process or class experiment and is no longer needed, or
- it is a virgin chemical no longer needed, or
- it is a clean-up material from a chemical spill

If they choose, states are allowed to adopt regulations that are stricter than federal regulations. In addition to the substances covered by federal regulations, Massachusetts regulations consider waste oil to be a hazardous waste.

There are significant penalties for non-compliance with the hazardous waste regulations.

Managing the Risks:

UMass Boston makes various efforts to prevent or minimize any risk from hazardous waste:

- EHS personnel conduct training and awareness each semester for laboratory researchers and Facilities Department personnel about source reduction, and how to manage, label, store, transport and dispose properly of laboratory/hazardous waste.
- EHS posts signs to remind campus personnel of permitted and prohibited activities.
- The Laboratory Safety Manual includes information about appropriate management and disposal of laboratory wastes.
- EHS has implemented a chemical inventory system to identify the users of hazardous materials and better be able to provide training and monitor the use of the hazardous materials that will become laboratory wastes when no longer useful.

- Laboratory personnel fill out a container checklist which helps track the status of each of the approximately 18,000 containers of hazardous chemicals on the UMass Boston campus
- Laboratories conduct experiments using micro-scaling and "green" chemistry techniques to reduce the amount of resulting hazardous wastes produced
- Laboratory personnel conduct self-inspections
- EHS staff conduct periodic inspections
- EHS has developed and implemented an emergency response plan
- EHS staff picks up laboratory waste from laboratories, operates hazardous waste storage areas and oversees the collection of hazardous waste by outside vendors

Roles and Responsibilities

- Principal Investigators, faculty, researchers and laboratory personnel have responsibility for attending laboratory hazardous waste training, ensuring that laboratory hazardous wastes are managed, labeled and stored safely and appropriately, using appropriate personal protective equipment, conducting monthly self-inspections using the standard form, notifying the EHS Office when laboratory wastes need to be picked up, and, depending on the quantity and situation, managing any chemical or laboratory waste spills or releases or notifying the EHS Office.
- Principal investigators have responsibility for providing laboratory specific waste training, and for ensuring that all persons working in their laboratories comply with all applicable requirements.
- EHS Office personnel have responsibility for providing laboratory/hazardous waste training, conducting periodic laboratory inspections, responding to laboratory/hazardous waste spill/release incidents, managing contracts with outside contractors who can respond to hazardous waste spill/release incidents, managing hazardous waste manifests and overseeing the appropriate disposal of hazardous waste by outside contractors, with the manner of waste disposal determined based upon a hierarchy of preferred waste disposal criteria (reuse/ recycling/ incineration/ landfill).
- Outside contractors have responsibility for managing the consolidation, preparation, transport and disposal of hazardous wastes

Goals and Objectives

Goals

1. Further improving the Waste Management Program, including a review of the campus's generator status and carefully monitoring regulatory changes
2. Developing a more comprehensive waste minimization program

Objectives

a. EHS Office personnel will clarify UMass Boston's hazardous waste regulatory status and seek approval to have UMass Boston laboratories comply with RCRA Subpart K requirements as an alternative to the standard RCRA regulatory requirements

b. EHS Office will work with key stakeholders to develop a written waste minimization plan with an emphasis on routine waste, one-time waste, and acute laboratory waste

c. EHS Office will work with key laboratory personnel to evaluate the acute laboratory waste stream to determine if there can be reductions in the amount of acute laboratory waste generated by UMass Boston

d. EHS Office will work with key laboratory personnel to evaluate the hazardous waste streams to determine if there can be reductions in the amount of hazardous waste generated by UMass Boston

Specific Regulations:

The specific regulations are set out below:

40 C.F.R. Part 260	Hazardous Waste Management System: General
40 C.F.R. Part 261	Identification and Listing of Hazardous Waste
40 C.F.R. Part 262	Standards Applicable to Generators of Hazardous Waste
40 C.F.R. Part 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 C.F.R. Part 268	Land Disposal Restrictions
310 C.M.R. § 30.0000	Compliance with Massachusetts Department of Environmental Protection Hazardous Waste Regulations

3 PROCEDURES

Set out below are procedures that UMass Boston has adopted and is following as part of its EMS.

The procedures are part of the systematic approach to environmental performance used by UMass Boston that comprise its EMS. These procedures help ensure effective environmental performance through written policies, inspections, sampling and monitoring, reporting environmental incidents, training, corrective action, senior management review and senior staff involvement. All components will work together to continually improve UMass Boston's environmental performance.

3.1 ENVIRONMENTAL INSPECTIONS AND SELF-AUDITS

Overview

As part of its commitment to its Environmental Management System, U Mass Boston will conduct environmental inspections related to the EMS. Regular inspections are a key component of maintaining a campus that is safe for faculty, students and staff, protective of the environment, and in compliance with applicable regulations.

Environmental Inspections

1. Laboratory Inspections:

The Principal Investigator (PI), or the PI designated laboratory representative (a graduate student in most cases) shall conduct monthly self-inspections, with an emphasis on chemical container checks. Monthly Laboratory Self-Inspection forms cover a variety of issues: chemical storage; emergency equipment, egress, etc. Forms are maintained in individual laboratories and the EHS Office. Individual laboratories maintain records for one year. The EHS Office will review monthly inspections for compliance. Annually, EHS presents a summary of inspection findings and assessing the success of the program on a lab-by-lab basis to the Laboratory Safety Committee.

The PI is also responsible for filling monthly waste container inspection checklist posted in his/her laboratory. All laboratory waste containers should be inspected for condition and storage during every use, or once a month if not used in last 30 days.

Annual comprehensive laboratory inspections are performed by the EHS Office. The focus of the inspections is conformance with the Laboratory Safety Manual. The format of the inspections will be reviewed annually by the Laboratory Safety Committee. Comprehensive inspections cover a variety of EHS issues: chemical labeling and storage, emergency equipment, engineering controls, laboratory waste labeling and storage and other issues.

Inspections may be unannounced. However, EHS always attempts to include responsible personnel in the inspection. All departments and laboratory workers will continue to maintain Monthly Laboratory Inspection sheets to ensure compliance with the Laboratory Safety Plan.

Compliance with the Plan will also be reviewed by EHS during routine laboratory waste pick-ups. Documentation of annual inspections will be maintained in the EHS Office.

2. Facility Inspections

Inspections in other areas are conducted at various times. Waste oil storage areas, universal waste storage areas and hazardous waste storage areas are inspected weekly. Inspection logs are kept at waste storage area for one year.

3.2 ENVIRONMENTAL SAMPLING AND MONITORING

Overview

As part of its commitment to its Environmental Management System, UMass Boston will conduct environmental sampling and monitoring related to the EMS. Sampling and monitoring are important parts of maintaining a campus that is safe for faculty, students and staff, protective of the environment, and in compliance with applicable regulations.

Environmental Sampling and Monitoring

UMass Boston recognizes that its operations sometimes require that environmental samples be collected and analyzed. UMass Boston is committed to manage this process to provide timely data, accurate records and compliance with applicable laws and regulations.

The process includes sampling of the UMass Boston environment and the sampling of materials that may ultimately end up in the environment, including wastewater, photo-processing waste, soil, air, asbestos, and other materials.

1. Wastewater Sampling: UMass Boston conducts environmental sampling under the University's Massachusetts Water Resources Authority (MWRA) Sewer Use Discharge Permit. The EHS Office contracts with a service provider to collect and analyze wastewater samples from multiple locations, according to the schedules prescribed in the most recent MWRA permit. Additionally, MWRA representatives make unannounced visits to collect samples and must be escorted to discharge locations by an EHS Office representative. EHS Office staff manages the sampling logistics, keep permits current and maintains all subsequent records. Occasionally EHS also conducts diagnostic sampling for better monitoring of wastewater systems. These samples are drawn prior to discharge of wastewater to determine if any of the results are at or near a limit listed in the permit. If the sampling results are at or near the discharge limit, UMass Boston staff take actions such as cleaning out the tanks.

2. Soil Sampling: As part of soil management projects, the appropriate UMass Boston, DCAMM, or UMBA staff and Massachusetts Licensed Site Professionals (LSPs) conduct environmental soil sampling and soil vapor or groundwater sampling during various stages of a project. Samples are collected and analyzed by a contracted vendor. The EHS Office is responsible for management of this process, including record keeping and notification.

3. Air Sampling: The Massachusetts Department of Environmental Protection air permits sometimes require the collection of air samples from emission sources. UMass Boston does not currently operate under any permit which requires stack testing or other air sampling to be performed. If new construction or regulation requires such monitoring in the future, it would be the responsibility of the Facilities Management Department to conduct such tests under the direction of the EHS Office. EHS Office would receive copies of any results and reports.

4. Asbestos Sampling: Facilities coordinates demolition and renovation projects at UMass Boston. EHS Office handles asbestos characterization at the request of Facilities. EHS Office hires a vendor to collect samples. Asbestos remediation, including clearance air and wipe sampling, is carried out by a contracted vendor. EHS Office manages all reports and records.

5. Cooling Water Monitoring: EHS Office and Facilities personnel will share responsibility for conducting daily inspections of the cooling water equipment to determine if an unusual fish impingement event has occurred. EHS monitors water flow and discharge temperatures of the cooling water system to insure compliance with permit limits.

6. Other Environmental Sampling: A variety of circumstances can arise at UMass Boston which require some form of environmental sampling not specifically detailed in the paragraphs above. Some examples include waste chemical characterization, and unknown substance identification. In cases like these, sampling and analysis is conducted through EHS. EHS notifies other departments regarding the results, as necessary, and maintains records of each event.

3.3 REPORTING ENVIRONMENTAL INCIDENTS

It is essential that all environmental incidents are promptly reported and that each incident is properly investigated and addressed. All appropriate notifications must be made to the applicable regulatory authorities.

All incidents including environmental incidents are reported either to the Department of Public Safety, the Facilities department or directly to EHS. Students, faculty and staff are provided with emergency contact information at orientation and during various trainings. Emergency phone numbers are provided on wallet cards, bookmarks and on several university websites. EHS is responsible for contacting the appropriate regulatory agency. Specific regulatory notification requirements are set out in the Spill Prevention and Control Countermeasures (SPCC) Plan and the Hazardous Waste Contingency Plan.

1. At UMass Boston, an Incident Report is prepared for each environmental incident which includes the following:

    - Incident description- based on field observations, interviews and sampling when applicable
    - Incident response- immediate response procedures followed with a timetable
    - Root Cause- based upon the investigation results for example: lack of training, failure to follow procedures, faulty equipment, etc.
    - Preventive Measures that should be followed to avoid similar incidents in the future
    - Corrective Actions are specific actions that need to be addressed with responsibility assigned and a due date specified

2. Incident Reports are typically less than three pages and may include relevant attachments including photographs. All Incident Reports are distributed to the EHS Director and the Vice Chancellor for Contracts and Compliance. Wider distribution is varies depending on the type of incident and the department or individuals involved or assigned corrective actions.

3. Environmental incidents on campus include but are not limited to hazardous material spills, accidental or unintended wastewater discharges and impingements or impairment of aquatic life at the cooling water pump house.

4. An annual summary of Incident Reports is prepared by EHS to identify trends and is presented to the EHS Steering Committee for review and a discussion of new preventive measures.

3.4 EMS TRAINING AND COMMUNICATION

Overview

UMass Boston faculty and staff conduct a wide variety of research and teaching, which needs to be conducted in accordance with federal, state and local environmental, health and safety (EHS) regulations and also in accordance with UMass Boston policies and best practices.

UMass Boston conducts three levels of training to ensure that all campus faculty and staff will be able to conduct their activities in a safe manner that complies with applicable environmental regulations, policies and best practices.

Training Programs

UMass Boston provides three levels of training on how to conduct activities in a safe manner that complies with applicable environmental regulations. These trainings are conducted by a combination of UMass Boston personnel.

Awareness Training - The first level is an introductory orientation awareness training in EHS matters including the Environmental Management System. All new faculty and staff receive this basic orientation and initial training as part of "new employee" orientation and introduction to UMass Boston. This training provide general awareness of EHS concerns and basic issues, campus policies and requirements that are applicable to everyone at UMass Boston. This training is conducted by a combination of EHS Office staff, Department of Public Safety staff, and Human Resources personnel. A one-page EMS hand-out is distributed to all participants (See Appendix B).

1. Basic EMS Training I - The second level of environmental training is more detailed training for certain specific groups at UMass Boston, one group requiring more detailed environmental training are those new faculty, research staff and graduate students who work in laboratories. They receive in-person training that addresses environmental and laboratory safety issues, including MWRA waste water issues and laboratory sink disposal procedures, the handling, storage and disposal of hazardous wastes and bio-hazardous wastes, spill prevention and response, personal protective equipment and chemical safety. These trainings are conducted by the EHS Office staff. faculty and other researchers and laboratory personnel.

   A copy of the training materials is attached as Appendix C.

   A second group requiring more detailed environmental training are Facilities personnel, Marine Ops personnel, Custodial supervisors, Central Receiving personnel and other administrative staff who engage in activities that are subject to specific EHS regulations. They receive in-person interactive training in chemical safety, the handling, storage and disposal of hazardous wastes, spill prevention and response. These trainings are conducted by EHS Office staff.

2. Advanced EMS Training - The third level of training covers more advanced environmental issues for certain designated individuals at UMass Boston because of particular highly-regulated activities that they conduct. Such individuals include personnel managing the

hazardous waste program, personnel managing the laboratory waste water program, personnel managing the spill prevention and response program, personnel managing the DOT/Shipping program, and faculty and research personnel working with radioactive materials and lasers. These trainings are conducted by EHS Office staff, or by outside contractors with expertise in those areas.

In addition to traditional trainings, a broader communications plan may include presentations to departments or offices, unique EMS Alerts or signs as well a periodic email reports of postings on various campus websites.

3.5 EMS DOCUMENT CONTROL AND RECORD KEEPING

Overview

As part of its commitment to its Environmental Management System, UMass Boston will manage documents and records related to the EMS.

Document Control

UMass Boston will manage documents related to the EMS by using the following procedure:

1. The Manual and the procedures in Section 3 will be identified as being part of the "UMass Boston EMS". Some additional procedures outside the Manual may be developed.
2. All EMS procedures will be dated so that a person can determine if the document is the current version.
3. The current version of the EMS Manual and EMS procedures will be maintained in the EHS Office and on Xythos.

Record Keeping

UMass Boston will manage records related to the EMS by using the following procedure:

1. EMS records will be maintained in designated locations. Most records will be maintained at the EHS Office.
2. In certain instances, records for EHS activities conducted by UMass Boston personnel such as Facilities or Marine Operations will be maintained at the location where the activity occurs.
3. A list of records related to the EMS and where they are located will be maintained at the EHS Office

3.6 ANNUAL REVIEW OF EMS

Overview

As part of its commitment to continuous improvement in maintaining its Environmental Management System, UMass Boston will conduct an annual review to evaluate the effectiveness of the EMS in promoting compliance and in meeting established goals and objectives.

Annual Review

UMass Boston will conduct its annual review by using the following procedure:

1. The EMS Working Group will conduct an annual review to assess the implementation of the UMass Boston EMS, how well the EMS conforms to the requirements set out in the EMS Manual, and the progress made in achieving the goals and objectives that have been established as part of the EMS. In addition, the annual review will assess compliance with federal, state and local environmental laws and regulations.

2. The EMS Working Group will annually review the EMS goals and objectives and determine if existing ones should be modified or if new ones should be set.

3. The EMS Working Group will submit the results of its review along with any recommendations for improvements to the EHS Steering Committee, and also will submit any proposed modifications to existing goals and objectives or new goals and objectives to the EHS Steering Committee for review and approval.

4. The EHS Steering Committee will review the report and recommendations of the EMS Working Group and, if accepted, adopt the recommendations.

5. Modifications to the EMS will be integrated into the overall UMass Boston decision making and planning process, and in particular into decisions on capital improvements, training and maintenance activities.

6. Information from the annual review may be included in UMass Boston's community outreach program.

3.7 COMMUNITY OUTREACH

Overview

As part of its commitment to its Environmental Management System, UMass Boston will disseminate information to its community regarding the EMS, including its initiatives, goals and performance. For purposes of the EMS "community" will also include abutters and neighborhood organizations.

Community Outreach

UMass Boston will conduct community outreach by using the following procedure:

1. The EMS Working Group will prepare periodic updates and an annual report of EMS activities. The report will be presented to the EHS Steering Committee. The updates and report will be posted on the EHS Office website.

2. The Office of Community Relations will review the periodic updates and the annual report, and will post information on the Office of Community Relations website.

3. UMass Boston conducts an annual Community Day, during which neighboring community groups are invited to the campus. In addition, UMass Boston holds an annual MEPA meeting, to which members of the community are invited to the campus. The EHS Office will provide information concerning the EMS, as appropriate, during these events.

4 FUTURE PROGRAMS

Based upon an evaluation and scoring of environmental impacts and potential risks posed by activities occurring at the UMass Boston campus, the EMS Working Group and EHS Steering Committee determined that an additional six activities posed significant potential risks.to the campus and to include those six activities in the EMS for the second year.

Descriptions of those six activities and the programs at UMass Boston that address the potential risks posed by those activities are set out below.

4.1 REDUCING GREENHOUSE GAS EMISSIONS (GHG)

Campus Activity:

U Mass Boston has over 1.8 million gross square feet of building space that needs to be heated and cooled. Our power plant generates carbon emissions that in turn create gases that trap heat in the atmosphere. These greenhouse gas (GHG) emissions affect the amount and rate of climate change.

The primary campus GHG emissions are from the burning of fossil fuel, specifically natural gas. UMass Boston generated over 20,000 metric tons of GHG in FY 2013. Vehicle emissions from cars and buses are also a GHG source on campus.

Environmental Risks:

Climate change is considered by many to be one of the greatest challenges of our time. The changing climate affects society and ecosystems in a broad variety of ways. For example, climate change can increase or decrease rainfall, result in rising sea levels and coastal flooding, influence agricultural crop yields, affect human health, cause changes to forests and other ecosystems, or even impact our energy supply. As a harbor campus, rising sea levels and coastal flooding are of particular concern.

Legal Requirements and Commitments:

Massachusetts State Executive Order (EO) 484 of 2007 requires UMass Boston to reduce GHG emissions 25 percent by 2020 (below 1990 levels) and 80 percent by 2050. EO 484 also requires state facilities to have 15% renewable energy by 2015 and 30% by 2030.

In 2007, UMass Boston signed the Association of College and University Presidents Climate Change (ACUPCC) which commits the university to developing a plan for carbon neutrality, taking concrete steps to achieve that, and publishing annual progress reports.

Managing the risks:

UMass Boston's Climate Action Plan seeks to reduce our carbon emissions and also to prepare for the impacts of climate change that are inevitable.

UMass Boston has a variety of initiatives underway to prevent or minimize GHG production:

- UMass Boston is a member of the UMass System Sustainability Council which is in the process of developing GHG emission and sustainability standards.
- The new Integrated Science Complex is the first LEED Silver certified building on campus. All new UMass Boston buildings will be at least LEED Silver certified.
- UMass Boston is an active participant in the Boston Green Ribbon Commission and involved in discussions about policies such as Net Zero standards for new buildings.

- UMass Boston has a significant program to promote public transportation with over 50% of the campus using the MBTA. There are discounted MBTA semester transit passes , employee pre-tax transit program and free low-emission campus shuttles.
- In 2012, UMass Boston joined the Boston bike-share program Hubway. Additional measures are planned including an extensive bike and pedestrian network on campus now under construction.
- The campus is implementing the first phase of a 25-year Master Plan and has included sustainability as one of the guiding principles. Energy efficiency initiatives are on-going.
- Plans are underway for a new 4-megawatt tri-generation plant on campus to provide electricity, heating and cooling.
- UMass Boston has a solar demonstration project located on the roof of the Wheatley building generating 85,000 KW per year. It is designed to further stimulate discussion about renewable energy.
- UMass Boston participates in the state “Lead by Example” program, which includes detailed energy tracking and reporting. An on-going system-wide effort coordinates the activities of the five University of Massachusetts campuses including long range climate resilience planning.
- The university has an ambitious tree planting and landscaping program as part of its effort to reduce both our carbon footprint and minimize runoff.

Managing the risks associated with GHG and climate change is clearly a long-range effort. It will require bold, transformative policies and a firm ongoing commitment from the university leadership and the entire university community. Despite the best efforts of the campus to reduce GHG, it is critical to recognize that climate change will inevitably result in some unavoidable risks and impacts such as rising sea levels and coastal flooding.

Goals and Objectives

These will be set when this activity and program becomes part of the EMS during the second year of implementation.

4.2 MARINE OPERATIONS

Campus Activity:

UMass Boston has a very active marine operations program with a fleet of vessels available for charter for research, education and excursion purposes. The Columbia Point is an all-weather 64-foot vessel that accommodates 110 passengers. The Fox Point dock offers an 80-foot float with three 60-foot finger floats. Fallon Pier in front of the JFK Library is a full service docking facility with a 3 ½ ton crane and a 171-foot large vessel dock face. The Fox Point Pavilion is used in conjunction with the popular sailing and kayak programs.

Environmental Risks:

The primary environmental risk from marine operations is a spill, release or discharge of petroleum, sewage or chemicals. This could pose potential harm to human health or the environment: Discharge of petroleum or other chemicals that are used in connection with marina vessel engines or other equipment could harm the aquatic life and wildlife in Dorchester Bay/Savin Hill Cove or harm people who use water for recreational purposes. AN accidental discharge could also harm the shellfish that can be harvested from the cove and then also harm people who might eat that shellfish.

Legal Requirements:

The federal and state regulations govern the use and storage of petroleum or chemicals that could be released to a water of the United States or a water of the Commonwealth. There are various requirements describe how chemicals are stored and the development of plans to prevent a release or minimize the harm done in the event of a release. 40 CFR §122

Managing the risks:

The Marine Operations activities are incorporated in the University's Oil Spill Prevention Plans and spill clean-up equipment is stored on the Fox Point dock. The Marine Operations Safety Plan covers the overboard dumping and disposal ban and lists the Mass. Environmental Police in case of an incident.

Goals and Objectives

These will be set when this activity and program becomes part of the EMS during the second year of implementation.

4.3 OIL/USED OIL

Campus Activity:

Used Oil or waste oil is a designated subset of hazardous waste. It is considered to be hazardous but are not particularly hazardous and is used quite widely. Used oil is a petroleum product that has used as a lubricant or fluid in an engine or machinery and as a result has picked up various impurities. The applicable federal and state regulations have various requirements concerning the handling, storage, transport and disposal of used oil.

At UMass Boston, a variety of campus operations generate used oil, and some activities involving equipment in laboratories or art studios also may generate used oil.

Environmental Risks:

With the activities involving used oil, there are various risks that could pose potential harm to human health or the environment:

- Spills of used oil that could cause harm to faculty, students or staff
- Spills of used oil that could cause a release to air, water or soil
- Drain disposing of types or amounts of used oil not allowed by the MWRA permit that could cause harm to Boston Harbor and the water.

Legal Requirements:

The federal and state regulations that govern used oil, have various requirements concerning its handling, storage, transport and disposal. These include requirements for labeling used oil containers, storing used oil, maintaining certain records, transporting used oil and disposing of used oil.

There are significant penalties for non-compliance with the hazardous waste regulations.

Managing the risks:

UMass Boston makes various efforts to prevent or minimize any risk from used oil:

- Food service vendors recycle cooking oil and grease traps are cleaned out regularly.
- Campus EHS personnel conduct training and awareness for how to manage, label, store, transport and dispose properly of used oil.
- UMass Boston posts signs to remind campus personnel of the requirements.
- UMass Boston EHS Office staff conduct periodic inspections

Goals and Objectives

These will be set when this activity and program becomes part of the EMS during the second year of implementation.

Specific regulations:

40 CFR Part 279 Used Oil Management

310 C.M.R. § 30.200 - Compliance with Massachusetts Department of Environmental Protection Hazardous Waste Regulations – Provisions for Waste Oil

4.4 SOLID WASTE AND RECYCLING

Campus Activity:

Almost every office and activity at UMass Boston generates solid waste, and collectively the campus generates a huge volume and wide variety of solid waste including:

- all types of paper
- bottles and cans - glass/metal/plastics
- cardboard
- furniture, construction and demolition, and bulk goods
- office supplies, including toner cartridges
- food waste and dining products

By recycling and re-using more waste materials, U Mass Boston can save money and benefit the environment as we throw away less trash.

Environmental Risks:

With the activities involving solid waste, there are various risks that could pose potential harm to human health or the environment:

- failure to reduce, recycle or reuse solid waste represents a waste of natural resources that otherwise could have been conserved
- improper disposal could cause environmental damage to air, water or soil such as a release from landfill to a drinking water source
- Increasing the amount of space in landfills used to handle solid waste
- Increasing the amount of “greenhouse” methane gas produced from decomposing food waste

Legal Requirements:

The federal and state regulations that govern solid waste have various requirements concerning the handling, storage, transport and disposal of waste. These include requirements for bottle recycling and waste bans as well as important Statewide Master Plans which focus on pursuing zero waste generation. In addition, Massachusetts recently enacted a food waste recycling requirement that large generators must recycle food waste by sending it to a compost facility, local farm or anaerobic digestion “garbage-to-energy” facility, rather than disposing of it in a landfill.

Solid waste management is also an important contributor to greenhouse gas (GHG) emissions, which Massachusetts is bound by law to reduce 25 percent by 2020 below 1990 levels and 80 percent by 2050. UMass Boston also complies with the state Solid Waste Ban including requirements to recycle organics

Student government at UMass Boston passed a resolution in February 2012 to limit the use of disposable bottles

Managing the risks:

UMass Boston makes various efforts to prevent or minimize any risk from solid waste

UMass Boston has had a comprehensive recycling and composting program for more than a decade. Over the years, the campus has increased the scope of recyclable materials and the purchase of green and recyclable products such as paper cups, recycling bins made with recycled content. UMass Boston also follows the 3Rs – Reduce, Reuse, Recycle – from encouraging double-sided printing to purchasing benches.

- With expanded access to recycling every year, UMass Boston has diverted more than 3 million pounds of waste from landfills and incinerators in the past decade.
- UMass Boston recycles more than 700,000 lbs. of solid waste annually. .
- Since 2012, hydration stations on campus have saved more than 400,000 disposable water bottles from reaching the landfill.
- UMass Boston's composting program composts food waste organics as well as greenhouse waste.
- We compost more than 30,000 lbs. a year from dining halls, cafes, the greenhouse, and gardens.
- UMass Boston's kitchens and dining service use biodegradable and compostable bags. The campus is a leader in its zero-waste dining program.

Goals and Objectives

These will be set when this activity and program becomes part of the EMS during the second year of implementation.

4.5 STORM WATER

Campus Activity:

Storm water is water from rain or snow melt that is discharged to a storm drain that flows to a river, stream, harbor or other "water of the State". Storm water is not supposed to contain any pollutants or substances from industrial or commercial activities unless authorized by a permit. Construction projects disrupting greater than one acre of land are required to be permitted by the State. Washing vehicles and conducting maintenance on vehicles or equipment outside are often activities of concern.

At UMass Boston, there are various construction projects occurring on campus that periodically disrupt greater than one acre of land. Vehicle washing and vehicle maintenance occurring outside is a concern. In addition, any spill or release of chemicals, waste oils, or other substances into a storm drain are a concern.

Environmental Risks:

Because UMass Boston located on a peninsula surrounded by Boston Harbor, there is particular sensitivity to discharges of storm water because they immediately flow to the Boston Harbor. With the activities noted above, there are various risks that could pose potential harm to human health or the environment:

- Improper handling, use, or storage of chemicals that result in a release of hazardous substances into a storm drain could potentially cause harm to the Boston Harbor environment and to people using the Boston Harbor for recreational purposes.
- Improper management of the soil and other materials at the construction site that result in a release of soil or other substances to the storm drains and the Boston Harbor environment could potentially cause harm to the Boston Harbor environment and to people using the Boston Harbor for recreational purposes.

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Legal Requirements:

The federal and state storm water regulations prohibit storm water any containing any pollutants or substances from industrial or commercial activities unless authorized by a permit. Construction projects disrupting greater than one acre of land are required to be permitted by the State.

Managing the risks:

UMass Boston makes various efforts to prevent or minimize any risk from a release of chemicals, soil or other materials into the storm water:

- Campus EHS personnel conduct training and awareness for how to manage, label, store, transport and dispose of chemicals so that they are not accidentally released to storm water.
- For construction sites that are greater than one acre, UMass Boston obtains permits, and UMass Boston personnel and contractors prepare storm water management plans and follow the requirements for storm water management set out in the plans.
- UMass Boston EHS Office staff conduct periodic inspections of the construction sites to check on compliance with the plans.
- UMass Boston posts signs at storm water drains reminding campus personnel that any material disposed of into those drains flows to the Boston Harbor.
- Campus Facilities staff periodically sweep the parking lots and clean the catch basins to prevent debris and other substances from going to the Boston Harbor.

Goals and Objectives

These will be set when this activity and program becomes part of the EMS during the second year of implementation.

Specific regulations:

- 40 CFR Part 122 EPA Administered Permit Programs: The National Pollutant Discharge Elimination System
- 310 CMR 10.05(6) Storm water Management Standards, which have been incorporated in the Wetlands Protection Act Regulations
- 314 CMR 9.06(6) Water Quality Certification Regulations

4.6 UNIVERSAL WASTE

Campus Activity:

Universal waste is a designated subset of hazardous waste. These are wastes that are considered to be somewhat hazardous and are used quite widely. Examples of types of universal waste are fluorescent light bulbs, rechargeable batteries, electronic waste and mercury-containing devices. The applicable federal and state regulations have various requirements concerning the handling, storage, transport and disposal of universal waste.

At UMass Boston, a wide variety of operations generate used fluorescent light bulbs and rechargeable batteries, and a lesser amount of other types of universal waste.

Environmental Risks:

With the activities involving universal waste, there are various risks that could pose potential harm to human health or the environment:

- Improper handling or storage resulting in a release of the hazardous chemicals in the universal waste that could cause harm to faculty, students or staff
- Improper handling or storage resulting in a release of the hazardous chemicals in the universal waste that could cause a release to air, water or soil

Legal Requirements:

The federal and state regulations that govern universal waste, have various requirements concerning the handling, storage, transport and disposal of universal waste. These include requirements for labeling universal waste containers, storing universal waste, taking universal waste training, maintaining certain records, transporting universal waste and disposing of universal waste.

There are significant penalties for non-compliance with the hazardous waste regulations.

Managing the risks:

UMass Boston makes various efforts to prevent or minimize any risk from universal waste

- Several well-established collection and recycling programs are currently in operation on campus including e-waste, batteries, toner cartridges and light bulbs
- Campus EHS personnel conduct training and awareness for how to manage, label, store, transport and dispose properly of universal waste.
- UMass Boston posts signs to remind campus personnel of the requirements.

- UMass Boston EHS Office staff conduct periodic inspections

Goals and Objectives

These will be set when this activity and program becomes part of the EMS during the second year of implementation.

Specific regulations:

- 40 CFR Part 273 Universal Waste Management
- 310 C.M.R. § 30.1000 - Massachusetts Department of Environmental Protection Hazardous Waste Regulations – Standards for Universal Waste Management

4.7 Other Programs

Eleven environmental program areas have been identified for attention in the first two years of the EMS. Other programs areas that may need to be considered include:

- Air quality (all outdoor emissions)
- Green cleaning
- Integrated pest management
- Green landscaping
- Erosion control and shoreline stabilization
- Water conservation

The long-range plan is to eventually include health and safety topics in the management sysytem including indoor air quality, fire safety , general lab safety and worker safety programs

5 APPENDIX B – EHS STEERING COMMITTEE AND EMS WORKING GROUP

Listed below are the members of the EHS Steering Committee and the EMS Working Group.

EHS Steering Committee

- Vice Chancellor for Administration and Finance, Ellen O'Connor, Chair
- Vice Provost for Research, Zong-Gou Xia
- Vice Chancellor Government Affairs and Public Relations, Edward Lambert
- Vice Chancellor Facilities, Dorothy Renaghan
- Assistant Vice Chancellor Contracts and Compliance, Darryl Mayers
- Interim Vice Chancellor for Student Affairs, James Overton
- Vice Chancellor for Athletics and Recreation, Charlie Titus
- Chair, Laboratory Safety Committee, Robyn Hannigan
- Dean, College of Science and Mathematics, Andrew Grosovsky
- Chair, Radiation Safety Committee, Sugumaran Manickam
- Chair, Biosafety Committee, Steven Ackerman
- Co-Chair, Workplace Health and Safety Committee, Shauna Manning
- Co-Chair, Workplace Health and Safety Committee, Care Corner-Dolloff

EMS Working Group

- Peter Schneider, EHS Director
- Zehra Schneider Graham, EHS Deputy Director
- Lalitha Adusumilli, EHS Assistant Director
- Dan Winograd, Woodward & Curran
- Mike McGerigle, Facilities
- Chris Sweeney, Marine Operations
- Steven Gray, School for the Environment
- Aditi Pain, Sustainability Coordinator
- David Timmons, College of Liberal Arts
- Jennine Talbot, Campus Planning