

US EPA ARCHIVE DOCUMENT

**NEW ENGLAND UNIVERSITY  
LABORATORIES PROJECT XL**

**FIRST YEAR PROGRESS REPORT**

**JUNE 28, 2001**

**for**

**BOSTON COLLEGE**

**UNIVERSITY OF MASSACHUSETTS BOSTON**

**UNIVERSITY OF VERMONT**

**FIRST YEAR REPORT 06/28/01  
NEW ENGLAND UNIVERSITY LABORATORIES PROJECT XL**

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**I. INTRODUCTION**

The purpose of the First Year Progress Report is to summarize environmental performance data and evaluate it against the initial environmental performance baseline that was submitted to EPA on June 28, 2000. This First Year Report also provides additional performance information with respect to nine environmental performance indicators (EPIs), as required under the terms of the Final Project Agreement signed September 28, 1999. The EPIs are described below in Table 1.

Performance reports have been completed by each of the New England Universities Lab Project XL Participants, Boston College, University of Massachusetts Boston and the University of Vermont and are included in this package at Tabs A, B and C respectively.

Under the terms of the FPA, a first year performance report was due December 28, 2000. A First Year Status Update Report was submitted on that date; however, that status update did not include certain quantitative data because of delays in the approval of the University of Vermont's Environmental Management Plan (EMP), pre-scheduled hazardous chemical inventories that historically take place in the spring at each institution and the benefits associated with capturing full calendar year data.

This report is, therefore, designed to fill those data gaps, where possible, and provide a fuller sense of progress to date.

**TABLE 1. LIST OF ENVIRONMENTAL PERFORMANCE INDICATORS (EPI)**

#	Performance Type	Purpose	EPI	Goal
1	Pollution Prevention and Risk Reduction	Annual surveys of Hazardous Chemicals of Concern	HCOC on shelf that exceed institution defined "shelf-life"	All HCOC on shelf are within their defined "shelf life"
2	Pollution Prevention	Verify annual surveys of Hazardous Chemicals of Concern	Surveys completed	100% completion of surveys each year
3	Pollution Prevention	Conduct pollution prevention opportunity assessments	Assessments completed	One opportunity assessment per laboratory per year <sup>1</sup>
4	Pollution Prevention	Measure hazardous materials reuse and redistribution	Amount reused or redistributed within the institution (normalized and compared with and without RCRA in the lab) and cost savings	Twenty (20) percent increase in reuse/redistribution from baseline over life of project (with attendant reduction in waste disposal)
5	Pollution Prevention	Measure laboratory waste generation rates	Total laboratory wastes per institution (normalized and compared with and without RCRA in the lab) and cost savings	Ten (10) percent reduction of hazardous waste from baseline over life of project

<sup>1</sup> An opportunity assessment conducted for one laboratory waste stream may be broadly applied to other laboratories

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#	Performance Type	Purpose	EPI	Goal
6	Environmental Awareness and Risk Reduction	Assess environmental awareness of laboratory workers	Survey scores	Scores demonstrate improvement over life of project (note: the same people will not necessarily be tested)
7	Environmental Awareness	Provide environmental awareness training to a more diverse group	Students in teaching labs and laboratory workers receiving training	Increase number or percentage of students and lab workers receiving training
8	Compliance	Evaluate environmental management program effectiveness	Objectives and targets	Achievement of objectives and targets
9	Compliance	Audit environmental management plan conformance <sup>2</sup>	Report of auditor <sup>3</sup>	Reported improvement

**II. SUMMARY OF PERFORMANCE RESULTS**

Performance data at all three institutions are summarized in Table 2 on the next page. For more detailed information and explanation, the full reports for each institution are included at the appropriate tab.

The results to date suggest that performance, as measured by the nine EPIs, includes some significant successes and also includes room for continuing improvement over the course of the pilot project.

Each institution has clearly been successful in the following areas:

- Obtaining senior administration commitment and receiving program buy-in from key departmental stakeholders;
- Improving the awareness of environmental compliance policies and procedures through enhanced training programs (EPI#6);
- Increasing the number of laboratory workers receiving training (EPI#7);
- Managing chemical waste programs (EPI#8), as measured by achievement of health and safety departmental objectives and targets, and by EPIs 6 and 9 which indicate that the underpinnings of an effective management system (e.g., successful training and compliance assessment programs) are being met and can be built upon to achieve the “beyond compliance” goals measured by other indicators; and
- Improving compliance with laboratory policies and procedures (EPI#9) based on the internal and external audits.

<sup>2</sup> EPA and the States are expected to evaluate program conformance to the XL Participant’s Environmental Management

<sup>3</sup> This internal EMS audit will assess laboratory conformance to the XL Participant’s Environmental Management Plan in accordance with audit protocols developed by the institution.

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**Table 2. Summary of First Year Environmental Performance Results**

<b>4 Year Project Goal</b>	<b>Boston College</b>	<b>UMass Boston</b>	<b>UVM</b>
All HCOC on shelf are within defined "shelf life".	EH&S believes there is a decline in these materials on the shelf, but does not currently measure or track this EPI due to a variety of reasons explained in its report.	EH&S believes there is a decline in these materials on the shelf, but does not currently measure or track this EPI due to a variety of reasons explained in its report.	Environmental Safety Facility (ESF) believes there is a decline in these materials on the shelf, but does not currently measure or track this EPI due to a variety of reasons explained in its report.
100% completion of HCOC surveys each year.	Complete chemical inventories are conducted, but HCOCs have not yet been defined.	Complete chemical inventories are conducted. HCOCs have been defined, but the HCOC specific surveys are pending the rollout of the new barcoding system.	Has not achieved 80% completion of its HCOC surveys.
Pollution Prevention Assessments Each Year	P2 programs implemented for mercury thermometers, electronics and silver recovery.	P2 programs implemented for mercury thermometers.	P2 programs implemented for mercury thermometers, photographic wastes and art department chemical wastes.
20% percent increase in reuse/redistribution	Infrastructure for program now in place. Materials have been collected but not redistributed.	Infrastructure for program now in place. Materials have been collected but not redistributed.	Program is operational but has not shown 20% increase. The program is integrated with a source reduction initiative called Chemsources.
Ten percent reduction of hazardous waste per institution.	Goal not met for calendar year 2000.	Goal was met for calendar year 2000.	Goal was not met for calendar year 2000.
Scores on Environmental Awareness Survey show improvement.	Significant improvement demonstrated.	Significant improvement demonstrated.	Significant improvement demonstrated.
Increase number or percentage of lab workers receiving training.	Number of lab workers receiving training has increased.	Number of lab workers receiving training has increased.	Number of lab workers receiving training has increased.
Achievement of objectives and targets.	Core Lab XL objectives and targets (e.g., implementation, training, audits) have been achieved. EPIs demonstrate mixed success.	Core Lab XL objectives and targets (e.g., implementation, training, audits) have been achieved. EPIs demonstrate mixed success.	Core Lab XL objectives and targets (e.g., implementation, training, audits) have been achieved. EPIs demonstrate mixed success.
Improvement in conformance with laboratory policies and procedures.	Audits demonstrate significant compliance (and improvement).	Audits demonstrate significant compliance (and improvement).	Audits demonstrate significant compliance (and improvement).

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Institutions have generally been successful in the following pollution prevention areas, but room for continued improvement is available in achieving the following goals:

- Defining and implementing a process for pursuing pollution prevention opportunities (EPI#3) and carrying out targeted P2 program improvements;
- Successfully implementing the institution's program for reusing and redistributing hazardous materials from the laboratory (EPI#4);
- Reducing the quantity of waste generated from laboratories (EPI#5) -- this year's numbers are greatly affected by the amount of research activity and lab cleanouts stimulated by entrance into the XL program (See Table 3 below for a summary comparison of laboratory waste generation at the different institutions);
- Understanding of environmental impacts and pollution prevention by laboratory workers, as measured by the Environmental Awareness Survey (an element of EPI#6).

**Table 3. Laboratory Waste Generation Data (un-normalized)**

	<b>2000 Data</b>	<b>1999 Data</b>	<b>Percent Change</b>
Boston College	38, 754 lbs.	24, 862 lbs.	+57%
University of Massachusetts Boston	4, 928.34 lbs.	5, 584.76 lbs.	- 11.76%
University of Vermont	38, 269 lbs.	36, 701 lbs.	+ 4%

The Lab XL institutions have not been successful in achieving the risk management related EPI goals #1 and 2, as each institution has wrestled with how best to measure and track the information, as described below:

- None of the institutions have determined, yet, how best to track and measure whether HCOCs in laboratories are within their defined "shelf life" (EPI#1).
- BC and UMass Boston conduct complete chemical inventories, per local Fire Department requirements, BC has not yet developed a subset list of Hazardous Chemicals of Concern (HCOCs) nor conducted surveys for these targeted chemicals. (EPI#2)
- UMass has defined its HCOCs but is currently not evaluating the HCOCs on the surveys until it rolls out a new chemical bar coding inventory system which will support tracking of these chemicals. (EPI#2)
- UVM conducts the surveys, but the percentage of completed surveys does not meet the project goal. (EPI#2)

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It is important to recognize that the New England University Laboratories Project XL is a four-year pilot project. We have learned that achieving performance goals, as measured by the EPIs agreed upon in the FPA, is affected by a host of interdependent variables including:

- (a) Resource constraints, both within the academic departments and at the health and safety departmental levels which necessitate prioritizing certain tasks (e.g., training) over other important goals (e.g., shelf-life audits);
- (b) Need for greater lead time for implementing communications and support programs which allow for the organizational behavior change associated with this environmental management model;
- (c) Unforeseen changes in research activity and research interests occurring at each institution;
- (d) Cleanout activities, the result of historic chemical management practices, that are now being addressed and that affect short term project goals of reduced waste generation;
- (e) Potential contradictions between source reduction activities (e.g., chemical purchasing only what you need) and reuse/redistribution efforts that are dependent on unused material; and
- (f) Use of novel performance indicators that may or may not be the perfect match for the desired outcome.

This XL Project continues to be a valuable learning experiment. Boston College, UMass Boston and UVM are complex organizations at which researchers in multiple departments pursue hundreds of chemical processes in order to bring new knowledge to the disciplines of chemistry, biology, physics and medicine, among others. Implementing and sustaining effective compliance programs that also support pollution prevention in this “research environment” is a unique challenge. Over the short life of this project, each institution is beginning to learn how to accomplish this formidable task.

As the progress reports from the individual schools indicate, we are off to a successful start, but there is much that we have learned that still needs to be integrated into the individual schools’ programs as the overall project moves forward. We continue to believe that these program improvements will enable us to achieve the overall project goals within the 4-year pilot program schedule.

### **III. COMMUNICATION TO STAKEHOLDERS**

This status update will be available on the Lab XL Web Page at <http://www.c2e2.org>. Each University will also post their status update on its own web page. The EH&S web sites are as follows:

University of Vermont - <http://esf.uvm.edu/uvmemp>

University of Massachusetts Boston – <http://omega.cc.umb.edu/~ehs/index.htm>

Boston College – <http://www.bc.edu/ehs>



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Information regarding the availability of the update will be posted to the XL and Safety listserves, managed by Ralph Stuart at UVM, announced in each campus newsletter and communicated to individuals or organizations. Additionally, individuals identified as key stakeholders during the XL negotiation process, or other interested parties identified since September 28, 1999, will receive a communication that this status report is available.

In addition, the UVM Environmental Council is preparing a grant application to provide support for technical assistance designed to provide for greater stakeholder involvement from the Burlington, Vermont community. If the grant is received, we expect this work to begin in the summer of 2001.

**IV. FOR MORE INFORMATION**

For more information about the New England Universities Laboratories Project XL, contact Thomas Balf at the Campus Consortium for Environmental Excellence, at One Financial Center, Boston, MA 02111 (617) 951-1181 or at [tbalf@nexep.com](mailto:tbalf@nexep.com) Interested parties may also communicate with the XL University contacts directly at:

Ralph Stuart, UVM: 802-656-5403: [rstuart@esf.uvm.edu](mailto:rstuart@esf.uvm.edu)

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**V. STATUS UPDATES FROM THE XL INSTITUTIONS**

See inserts at Tabs

- A Boston College
- B University of Massachusetts Boston
- C University of Vermont