PROJECT XL PROPOSAL - Laboratories at Academic Institutions

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I. Introduction

The following academic institutions propose to implement an alternative system for managing hazardous wastes generated from laboratory activities: Boston College, University of Massachusetts-Amherst, University of Massachusetts-Boston, University of Vermont (hereinafter referred to as the "Participants "). The Participants seek to carry out a pilot project as part of EPA's "Project XL" program, and to test the extent to which performance-based management and treatment standards can promote more effective environmental management at their institution and in their laboratories and can achieve superior environmental benefits.

II. Description of the Problem

It is the Participants belief that the hazardous waste generating activities and best management practices in laboratories at academic institutions are inherently different from the manufacturing and industrial operations that have served as the model for the current hazardous waste laws and regulations (See Table 1-Tab 1). These institutions generate small quantities of diverse types of hazardous wastes in hundreds of research laboratories throughout their campuses. Attempting to apply an industrial-type hazardous waste program to such activities and operations is inefficient and cumbersome. At academic institutions, a disproportionate amount of environmental, health and safety (hereinafter called "EH&S") resources, in the form of staff time and budget, is currently dedicated to laboratory compliance with RCRA regulations. As a result, the regulations discourage EH&S staff, researchers and other personnel from focusing on waste minimization and the integration of environmental goals with prudent health and safety practices.

Laboratories must currently comply with numerous environmental, health and safety laws and regulations. Management of hazardous materials in the laboratory is principally regulated by means of the Occupational Safety and Health Administration's ("OSHA") Chemical Hygiene Plan ("CHP") standard under 29 CFR 1910.1450. Recognizing the unique character of laboratories and the specialized state of knowledge of laboratory personnel, OSHA promulgated a performance-based laboratory health and safety standard which requires the development of a

CHP to ensure that laboratory workers are adequately protected from the risks associated with hazardous materials. Laboratories must also conform to the National Fire Protection Association (NFPA) Standards for Fire Protection for Laboratories (NFPA 45) and for Flammable and Combustible Liquids (NFPA 30), and comply with local fire codes, which effectively limit the total quantity of flammable and combustible materials in the laboratories and prescribe certain requirements for containers and storage.

Federal and state hazardous waste laws then overlay additional regulatory requirements at the point of hazardous waste generation, which further restrict hazardous waste accumulation and treatment options. These regulations, as noted previously, constitute a poor fit for laboratories where a large variety of chemicals are used in small amounts on a sporadic basis. This mismatch between the regulations and the reality of laboratory work creates significant confusion, both in laboratories and in the regulated community, about how the regulations are, and should be, applied to laboratories. One consequence of this confusion is that the management of laboratory wastes represents the single most significant cost associated with college and university EH&S programs. In addition, many universities manage substantial, unproductive paperwork; laboratory workers remain confused about the myriad of often conflicting regulations that apply to the same chemical pre- and post-experiment; and research efforts can be slowed by meeting regulatory requirements which do not further environmental practices or generate environmental benefits. In Table 2 (Tab 2), specific examples of RCRA compliance challenges for laboratories and academic institutions are provided.

III. Project Overview

The principal objective of this proposed Project XL is to implement flexible, performance-based standards for managing hazardous wastes in laboratories. Central to this proposal is the granting of an exclusion under 40 CFR 261.4(c) for hazardous wastes (hereinafter, called "laboratory process byproducts or byproducts") that are produced in laboratories (hereinafter called "Laboratory Process Units or LPUs") where an Environmental Management Plan is being implemented. The LPU concept is modeled after the manufacturing process unit exclusion at 40 CFR 261.4(c) in which hazardous wastes are excluded from regulation until they exit the unit.

Under this proposal, an LPU can be a laboratory room, or group of laboratory rooms, within a building, that is managed by a laboratory supervisor and which share to a significant degree equipment, materials and/or personnel. Thus, laboratory process byproducts, are excluded from RCRA regulation until they exit the LPU at which point a waste determination will be made by the organization and compliance with applicable RCRA regulations will be required. This distinction between the institution-level and the LPU is graphically depicted in the flowchart appearing as Figure 1(Tab 3). This flowchart illustrates certain important points. First, Figure 1 reflects the fact that the flexibility associated with extending the waste determination until after the byproduct exits the LPU promotes reuse and recycling. Second, Figure 1 illustrates how the plan's pro-active system commits institution-level EH&S personnel to evaluate opportunities to minimize wastes and provide feedback to laboratory personnel. Third, the flowchart clearly differentiates between the institution's management of hazardous waste and the LPU's management of laboratory process byproducts. Finally, Figure 1 illustrates how small-scale treatment of hazardous waste may be incorporated into the model.

A. Specific Project Elements

This Project XL proposal is comprised of two parts. Component #1 seeks to test the development and implementation of the Environmental Management Plan for use in the LPU. Component #2 seeks to test the small-scale treatment of laboratory process byproducts.

Component #1:

Three of the Project XL Participants seek to test the development and implementation of the Environmental Management Plan. They are:

- Boston College in Chestnut Hill, Massachusetts
- University of Massachusetts in Boston, Massachusetts
- University of Vermont in Burlington, Vermont

Each of these institutions seeks RCRA regulatory relief in the laboratory in order to permit the development and implementation of the proposed Laboratory Environmental Management Standard (see Tab 4). Under this proposed Standard, each of the Participants would identify participating LPUs and develop an implement an Environmental Management Plan. It is important to note that this plan is designed to more effectively integrate environmental policies and procedures with health and safety policies and procedures and to achieve a more effective Environmental Management System (hereinafter called "EMS"). The conceptual relationship between the institutional EMS and the Environmental Management Plan is illustrated in Figure 2 (Tab 5). Table 3 in Tab 6 compares the components of the proposed Laboratory Environmental Management Standard to OSHA's Chemical Hygiene Plan, RCRA compliance requirements and the ISO 14001 Environmental Management System criteria. This chart illustrates, and comments from stakeholders support the principle, that implementation of such a plan will constitute best management practice in laboratories.

The Participants in this component of the Project XL in effect propose regulatory relief that would expand the exclusion under 40 CFR 261.4 to grant an exclusion to laboratory process byproducts within an LPU from the requirements of 40 CFR Parts 262 through 265, 268, 270, 271 and 124 and state equivalent regulation. Table 4 (Tab 7) describes this proposed regulatory relief and describes the Federal and state regulations which would be affected by it. In those circumstances where regulatory flexibility is sought (e.g., extension of the three day grace period in satellite accumulation area, transport of laboratory process byproducts to a central accumulation area without a manifest), the purpose is to align safe chemical handling practices with procedures governing all hazardous materials at the institution and to allow the institution to determine the most effective, efficient system for managing these hazardous materials. Safety will not be compromised.

2. Component #2:

One institution, the University of Massachusetts-Amherst, seeks to pilot the small-scale treatment of laboratory process byproducts without a RCRA permit. The University of Massachusetts-Amherst does not intend, as part of the initial group of Participants, to develop

and implement an Environmental Management Plan in LPUs. In exchange for regulatory flexibility from traditional RCRA Part B permitting requirements (40 CFR Parts 124, 264 and 265, 268, 270 and 271), the University of Massachusetts-Amherst, will develop and implement a comprehensive and verifiable process for evaluating and potentially treating small-scale quantities of laboratory process byproducts. This process parallels a similar approach, used by institutions with radioisotope byproduct material licenses, to approve the possession and use of radioactive materials by investigators who demonstrate (1) a need for and (2) the capability to adequately control such materials. Applications are approved by the organization's Radiation Safety Committee or equivalent group.

As noted previously, established methods for the treatment of hazardous chemicals in laboratory settings are well documented. For example, *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals*, devotes an entire section of the book (i.e., 7.D) to guidance on procedures for the laboratory scale treatment of surplus and waste chemicals (see Tab 8). This section provides specific step-by-step treatment procedures for acids and bases, organic chemicals and inorganic chemicals.

The University of Massachusetts-Amherst proposes to implement a decision-making process (see Tab 9) for the treatment of laboratory process byproducts. The process for decision-making is designed to consider safety first, allow maximum flexibility to the research community to safely treat byproducts, insure accountability and create internal incentives for risk reduction and waste minimization. In addition, small-scale treatment will conform to the minimum performance based treatment standards defined in the Laboratory Environmental Management Standard.

The proposed process for treatment decision-making is described on the following pages. It is purposefully designed to be broadly applicable to the review of small-scale treatment. In summary, a policy-making group (operating as a subcommittee of the Chemical Safety or Chemical Hazards Committee), called the *Small-Scale Treatment Committee* would, with technical staff support, develop program guidance and would grant approval for the small-scale treatment of hazardous waste. A separate committee, the *Technical Review Committee*, would screen initial applications and provide ongoing operational support. The overall guidance document would be found in an Institution's Laboratory Health and Safety Manual or Chemical

Hygiene Plan. The steps in this proposed process are described below.

1.	Waste Stream Proposed for Treatment	Researchers, or other laboratory personnel, using hazardous chemicals would be encouraged to submit a treatment protocol for their hazardous waste to a *Technical Review Committee*, comprised principally of personnel with Environmental, Health and Safety and pollution control responsibilities. This application would include, but not be limited to, a brief description of the experiment, the waste material, treatment objectives and options, volume, location, treatment process monitoring, experience of key laboratory personnel and waste disposal requirements.
2.	Initial Review by EH&S Technical Committee	The *Technical Review Committee* (TRC) would conduct a preliminary review of the proposed treatment protocol to assess safety considerations, technical adequacy and financial feasibility. The Technical Review Committee would have the authority to respond negatively, positively or to suggest process modifications. A recommendation would then be conveyed to the Small-Scale Treatment Committee (i.e., UMass XL Committee).
3.	Review by Small Scale Treatment Committee (i.e., UMass XL Committee)	The *Small-Scale Treatment Committee* (*SSTC*) would review the proposed treatment protocol and the TRC's recommendations. The *SSTC* could be comprised of members of the Chemical Hazards Committee, or a new group, similar to a Radiation Safety Committee, consisting of a cross-section of individuals with technical competence, administrative authority and support staff responsibility. Approval, approval with conditions or modifications or disapproval would be rendered by the *SSTC*.
4.	Operational Controls (Pilot Run and Setup Review)	If the proposal is supported by the SSTC, all operations would be reviewed and inspected by certain members of the *SSTC* team for compliance with the approved treatment protocol. Such review and inspection would include, but not be limited to: (a) evaluation of any equipment and its setup prior to treatment; (b) process monitoring as specified in the approval protocol; (c) description of any preliminary and post-treatment analyses and review of data against the stated treatment objectives; and (d) verification of disposal procedures if waste disposal is the final endpoint.

5.	Monitoring	Sanctions for non-compliance or violations of agreed upon treatment protocols will be enforced by personnel with EH&S responsibilities within the institution. Reports of the effectiveness of the program and adherence to treatment protocols will be reported back to the *SSTC*. The *SSTC* will address the possible need for changes to the policy.
6.	Documentation	A record of the decision-making, treatment process and results will be maintained for each proposed hazardous waste minimization/elimination. The record will be filed by the *SSTC* while the exemption is in place. It will be available for regulatory review.
7.	Cost Savings Analysis	Cost savings would be evaluated and verified by EH&S staff as a method for promoting waste minimization. Based on the financial analysis, a portion of the savings will be returned to the laboratory or researcher.

The University of Massachusetts, Amherst would commit to conformance with the following small-scale treatment standards. (These standards are identical to the minimum performance criteria in Appendix B of the Laboratory Environmental Management Standard.)

- Treatment methods shall not result in the release of hazardous constituents into the sewer which are prohibited or in excess of the regulatory limits set by the POTW.
- Treatment methods shall be designed to minimize any hazard that could result in an explosion, fire or the generation of airborne toxic constituents.
- Management of hazardous materials shall conform with all applicable environmental, health and safety requirements and the standards, plans and procedures articulated by the organization.
- Small scale treatment may be conducted only following a waste analysis and determination by the organization.
- A procedure shall be developed, implemented and maintained for the small scale treatment of hazardous waste.
- A treatment plan shall be developed and implemented for each small scale treatment of waste and include, but not be limited to, treatment protocol, environmental, heath and safety controls, security measures, monitoring and measuring, container management and specific emergency preparedness and response measures.
- Eligibility for small scale treatment shall be first reviewed for approval/disapproval by Environmental, Health and Safety (EH&S) professionals who are competent on the basis of education, training and experience.

- Small scale treatment protocols and procedures shall be reviewed by an organizational treatment committee including, but not limited to, EH&S professionals, management, laboratory workers and interested parties, including community members.
- Small scale quantities of hazardous materials collected and aggregated from LPUs in a central area shall be treated only by trained and qualified professionals.
- Criteria shall be specified to define trained and qualified professionals under this standard.
- Approved treatment shall occur within time periods specified by RCRA, and corresponding state regulations, for the accumulation of hazardous waste.
- Residuals remaining after treatment shall be subject to hazardous waste determination.
- The quantities of all hazardous materials and wastes before and after treatment shall be recorded and the records maintained for a period of three years.
- A list of pre-approved small scale treatment protocols shall be maintained and updated as appropriate.
- Treatment shall be based upon accepted practices as outlined in "Prudent Practices," protocols included in the Environmental Management Plan or identified in other technical, peer-reviewed sources (to be documented).
- Quantities for treatment shall not exceed 55 gallons, or weight equivalent.
- Treatment methodologies and competencies shall be shared with LPUs, other institutions and organizations with laboratory activities.
- All small scale treatment shall require notification to EH&S and be documented.

The University of Massachusetts in effect proposes regulatory relief that would expand the exclusions under 264.1(g) and 265.1(c) to grant an exclusion to the small-scale treatment of laboratory process byproducts, by the organizational generator of such byproducts, from the requirements of Parts 264 and 265, respectively, and state equivalent regulations. This regulatory relief would be conditional on conformance with certain planning, implementation, monitoring and documentation requirements designed to protect human health and the environment.

Table 5 (Tab 10) describes the proposed regulatory exclusion and describes generally the Federal and state regulatory relief and regulatory clarification associated with the approval of this Project XL Proposal. Because of the broad nature of this exclusion, we have not, in the context of this proposal, described in detail all sections of parts 264 and 265 from which the University of Massachusetts would be exempt.

IV. Project XL Criteria

A. Environmental Results

This XL Project supports the increasingly accepted view that an effective EMS, together with more flexible performance-based standards, will achieve environmental performance that is superior to what would be achieved through strict compliance with current regulation. While the goals of this project are quite clear, the institutions implementing the Laboratory Environmental Management Standard are presented with two substantial challenges in demonstrating environmental performance improvement. First, the environmental impact–the quantity of hazardous wastes generated from laboratory activities is (relative to industrial generated quantities) quite small and non-routine. As a consequence, waste quantification may be materially impacted by a number of variables such as types of experiments undertaken, laboratory decomissionings and size of containers used in laboratories. Second, Component #1 of this project involves implementing an integrated system for managing hazardous wastes associated with laboratory activities. While effective implementation of the system can be verified, the relatively small quantities of hazardous waste involved may not result in significant volume reductions of hazardous waste. Thus, if gallons of waste are deemed the major indicator of success, the quantified outcomes may fail to impress. This having been said, we believe that real environmental progress is attainable through this Project XL and success can be ascertained from certain key benchmarks. The Participants are committed to (i) the evaluation and validation of the effectiveness of the alternative environmental management system and (ii) the identification and development over time of "next generation" management goals, such as enhanced chemical inventory systems.

<u>Component #1</u>

The Participants in Component #1 -- Boston College, University of Massachusetts-Boston and University of Vermont -- commit to collecting data to measure environmental performance using the indicators described below.

Environmental Management Plan

Goal	Measurement	Measured at What Level
Minimize usage of hazardous chemicals	Measure quantity of laboratory process byproducts redistributed for reuse within the institution. Unit of measure to be determined (tbd), however a good unit might be per square foot of chemical intensive* research space.	Institution
Reduce Hazard and Risk	Measure the number and the cost of spills or accidents as to which EH&S is notified. Measure on a per unit basis. Best unit might be per square foot of chemical intensive research lab space. Measuring the cost of response, cleanup and follow-up would measure the seriousness.	Institution
	Measure the institutional inventory (e.g., log) of hazardous waste and pickups associated with laboratory activities per unit. This measurement will provide LPU "generation" information. Best unit would be per square foot of chemical intensive research lab space. Track over time.	Institution
Enhance Environmental Awareness and Training	Measure the number or percentage of laboratory workers trained in EMS/EMP.	LPU or Institution
	Measure the number of local schools for which the organization provided technical expertise in the management and reduction of hazardous waste.	Institution
Reduce Cost	Measure percentage of waste disposed as labpacked waste to total hazardous waste disposed.	Institution
	Calculate annual waste disposal costs and compare on a per unit basis.	Institution
Implement Effective Environmental Management System	Conduct survey of LPUs pre and post implementation using EMS inspection protocol (to be developed by LCEE)** to evaluate system effectiveness - with focus on system development and continuous improvement - and verify system implementation.	Institution

*It will be important to distinguish between a low usage laboratory (e.g., entomology or certain teaching laboratories) and a chemical intensive laboratory (e.g., research or organic chemistry lab) to generate meaningful results.

** The purpose of developing and using an inspection tool is two-fold. First, and most importantly, the goal is the development of an internal tool to conduct self-inspections to track progress in implementing the Environmental Management Plan. Second, the goal is to develop collaboratively with stakeholders, a mechanism to provide reasonable assurance to regulators that the institution's Environmental Management Plan contains all the requisite elements and is implemented in LPUs.

Each Participant may augment this performance data with additional environmental performance evaluations consistent with their specific needs.

Component #2

The University of Massachusetts-Amherst fully expects to demonstrate waste minimization, hazard reduction and reinvestment of cost savings of the project in education and technical assistance. They commit to the collection of data to measure environmental performance using the indicators described below.

Treatment

Goal	Measurement	Measurement Level
Minimize hazardous waste disposed off-site	Measure the quantity of hazardous waste declassified to non-hazardous or lower hazard	Institution
Minimize risks in laboratories	Measure the number or percentage of experiments using practices or chemicals with reduced hazard properties	LPU or Institution
Enhance environmental education and training	Measure the percentage of students in laboratories participating in environmental training	LPU or Institution
	Measure the number of students receiving advanced education in chemical treatment and alternative management practices	Institution
Reduce costs associated with managing hazardous wastes	Track treatment operating costs - personnel, equipment and certain supply costs	Institution
	Determine return on investment for environmental treatment projects.	Institution
	Calculate waste disposal savings	Institution
Reduce costs associated with managing hazardous wastes	Track savings redirected to research and educational initiatives.	Institution

Cost Savings and Paper Reduction

Laboratory waste management currently accounts for the most substantial expense for environmental, health and safety programs at colleges and universities. For example, a large institution is likely to pay hundreds of thousands of dollars per year in hazardous waste disposal costs. Universities have a significant interest in and motivation to pursue waste minimization. As discussed in the section on environmental results, each of the Participants will track hazardous waste disposal costs to measure cost savings. Component #1 should produce, over time, cost savings as a result of the reduction in time spent by EH&S professionals responding to a reactive system (e.g., 3-day waste pickups) for managing hazardous wastes in laboratories and an increase in time spent on proactive (e.g., waste minimization guidance) activities. Component #2 should produce cost savings and economic opportunities as a result of avoided hazardous waste disposal costs.

If the regulatory relief is granted, the Participants are likely to reduce a certain amount of paperwork associated with RCRA compliance. While the implementation of a more comprehensive, integrated system for managing laboratory process byproducts or documentation associated with small scale treatment is likely to generate some paperwork, it is believed that this redirected effort will yield meaningful efficiency gains.

C. Stakeholder Support and Plan

There is significant stakeholder support for this project. Efforts are underway in states such as California, North Carolina and Colorado to amend or clarify the hazardous waste regulations as they apply to laboratories. Credible, established organizations such as the National Research Council, the American Chemical Society and Government-University-Industry Research Roundtable have been advocating for regulatory change in this arena for years. These stakeholders have supported our efforts to reform the regulatory model and have provided us with information, guidance, and critical review in the development of this proposal.

A national stakeholder meeting was held November 12, 1997 to outline our proposal and solicit technical guidance. A list of attendees is included in Tab 11. Following that meeting, more than 70 people, representing both "direct participants" and "commenters" were sent on December 4, 1997 an "exposure draft" which described the alternative laboratory environmental management standard for managing hazardous waste in laboratories. A list of individuals receiving copies of that December 4, 1997 draft are included at Tab 12. Additionally, many stakeholders received copies of the draft, or successive iterations: through the LAB-XL Web Page; at meetings with internal and external stakeholders at the XL Project institutions; through word of mouth; and at the New Safety Conference held in Princeton, NJ on January 7-9, 1998. During the development of the proposal, the Laboratory Consortium for Environmental Excellence (LCEE) hosted two additional meetings for the purpose of discussing the exposure drafts, crafting the XL Project proposal and seeking feedback and guidance from Region I EPA officials. ML Strategies, Inc. received e-mail, oral or written responses to the proposed exposure draft from more than thirty individuals and organizations, including representatives of regulatory agencies such as EPA, the Massachusetts Department of Environmental Protection and the Vermont Department of Environmental Conservation, and not-for-profit environmental

organizations as the Tellus Institute and Ecologia. ML Strategies, Inc., has, to date, found that large, national environmental organizations have not expressed significant interest in participating in this project because of their strategic priorities and limited resources.

At the local level, each Participant has employed the stakeholder checklist (See Tab 13) to guide their actions in soliciting and involving local stakeholders in the development of this XL Project. To date, all of the institutions have made efforts or scheduled meetings to discuss the XL Project with stakeholder groups or individuals consistent with the stakeholder guidance checklist included at Tab 13. These activities have included the following. Boston College hosted a meeting of external stakeholders at which the second draft of the Laboratory Environmental Management Standard was discussed. Attendees included the sales representative from a hazardous waste vendor, the Newton, Massachusetts fire captain and a representative from the Massachusetts Water Resources Authority. The Boston LEPC director and students associated with on-campus environmental organizations were personally invited, but unable to attend. The University of Massachusetts-Amherst identified three local XL Project participants, each of whom received copies of the second draft of the Laboratory Environmental Management Standard, and has also presented the treatment model to the university safety committee and other researchers. The University of Vermont has conducted discussions with internal stakeholders, including presentations to the Chemical and Biological Safety Committee and meetings with the Vice-President of Administration, the Provost and the University Environmental Council. The University of Massachusetts-Boston has presented the Laboratory Environmental Management Standard to the Safety Committee and arranged for both internal and external stakeholder meetings. Additionally, all of the institutions have placed or will soon place information on the XL Project on their perspective Web Pages and in campus communications (e.g., list serve or campus newspaper).

Planned future actions to involve stakeholders include the following:

- EH&S staff from each of the Participants will continue to meet with key internal stakeholders and solicit their feedback;
- Each Participant will identify external community stakeholders and meet with these individuals to solicit their feedback;

- Each institution will distribute a press release, or equivalent communication, to solicit additional stakeholders who may be interested in participating or commenting on the project.
- Selected representatives from the Participants and ML Strategies, Inc. will conduct additional meetings with EPA Headquarters and EPA Region I personnel at their earliest convenience to discuss this XL Project proposal.
- Selected representatives from the Participants and ML Strategies, Inc. will meet with the Vermont Department of Environmental Conservation and the Massachusetts Department of Environmental Protection to discuss this XL Project proposal.
- Distribute copies of this draft proposal to the stakeholder list, including state regulatory agencies, and solicit further feedback.
- Host a final stakeholder workshop March 21-23, 1998 using the consensus building process and retreat format developed by the Santa Council for Environmental Excellence.

D. Innovation/Multi-Media Pollution Prevention

This XL Project is innovative from multiple perspectives, including regulatory, management and educational. First, Participants will test the replacement of prescriptive regulatory requirements with a performance-based standard. Second, Participants will experiment with the integration of OSHA-based health and safety requirements for hazardous chemicals with RCRA's mandates for management and disposal of hazardous waste so as to allow a comparison to the old model in which OSHA and EPA impose different regulatory requirements on the same chemical in a laboratory. Third, this initiative tests the assumption that a more effective environmental management system and a more sensible treatment model for laboratories will promote waste minimization and more effective environmental education within their institutions. This latter element is especially significant in that the LCEE is committed to sharing this project's products -- relevant guidance, information and technical expertise – with small colleges and secondary schools that do not have the funds or expertise to adequately manage their hazardous waste.

E. Transferability

As discussed in Section C, the search for an alternative system for managing hazardous wastes in laboratories is currently a source of discussion in California, North Carolina and other regions of the country. Environmental, health and safety managers at small, medium and large institutions are extremely interested in developing a more sensible, efficient and effective system for managing hazardous wastes in laboratories.

The LCEE has already received support from other academic institutions and states (i.e., Minnesota) interested in testing this alternative regulatory model. For this reason, it is our hope to include language in the final project agreement so that initial Project XL participants may be joined, subject to EPA approval, by additional LCEE members at a later project phase with minimal additional transaction or legal costs. These "later adopters" could be extremely helpful in building upon the "lessons learned" at the early adopter institutions and refining further the Project XL concepts and management techniques. This would, in turn, serve to test further the utility and transferability of the alternative Project XL approach as a national model applicable across the country to institutions of varying size, organizational structure and management strategy.

Feasibility

Developing and implementing the Environmental Management Plan or the small-scale treatment process will require considerable, focused effort. However, the costs associated with implementation of this project by each Participant involves the commitment of personnel resources, as opposed to financial resources. Each Participant possess skilled personnel and senior management commitment, as well as financial resources, to complete the proposed Project XL.

G. Monitoring, Reporting and Evaluation

As described in Section C, each institution will collect data to measure environmental

performance using selected indicators. XL Project information will be shared with stakeholders and the public through the Web Page http://esf.uvm.edu/labxl. Such information may include, but not be limited to, best practices, news, activities from other regions, and lessons learned. The institutions will also commit in the Final Project Agreement to two reports as described below.

Initial Report

To identify the initial environmental benefits expected to be derived from this project, a report will be prepared which summarizes the projected environmental benefits. This report will be completed within fifteen (15) months after the Project XL start date and will include information specific to each Participant.

Final Report

No later than thirty-two months after the Project XL start date, the Participants will submit a final report evaluating the costs and benefits of this Project. This final report will include an evaluation of relevant performance indicator quantitative and qualitative data. Upon submission of the final report, the LCEE or its member institutions may petition EPA and the relevant state to request an extension of any variances or exemptions pursuant to other sections of a final project agreement.

H. Shifting of Risk Burden

This proposal is consistent with the goals of protecting laboratory worker health and safety. In fact, the format and approach are consistent with OSHA's laboratory performance-based standard. Table 3 (Tab 6) illustrates the similarities between the Environmental Management Plan and the Chemical Hygiene Plan. We regard the areas of overlap as opportunities to integrate policies and procedures governing the effective management of hazardous chemicals and hazardous waste. With respect to the small-scale treatment of hazardous wastes, the treatment process will involve small quantities of hazardous chemicals and will be conducted by technically qualified individuals using established procedures. The "safety first" laboratory culture will also be the priority when conducting small-scale treatment.

V. Final Project Agreement

This draft proposal is designed to elicit general feedback and specific regulatory commentary from EPA, state regulators and national and local stakeholders. It is the hope of the parties that over the next two months, consensus can be reached on the key issues and a Final Project Agreement can be developed and signed as promptly as possible following the stakeholder retreat to be conducted from March 21-23 under the auspices of the Santa Fe Council for Environmental Excellence. It is recognized that the Final Project Agreement will set forth the parties' plans and intentions with regard to this Project XL.