BOSTON COLLEGE
LAB XL BALANCED SCORECARD

Indicator	Plan	Do	Check	Learning	Act (Adjust Plan)
EPI #1. Removal of old chemicals from shelves	Reduce amount of chemicals in storage in labs	Have labs do clean-outs of out-of-date, unnecessary chemicals	If successful expect to see: 1. Decrease in number of chemicals in inventory 2. Increase in number of virgin chemicals in waste.	1. We experienced resistance from lab workers based on arbitrariness of definitions of "out-of-date" and "unnecessary." 2. Researchers consider chemicals an investment, not just a consumable.	*2006 Goal: Research chemical purchasing data to identify ways that purchases can be decreased. Continue to research inventory management system.* 1. Continue to use clean-outs as opportunities for chemical reduction. In research labs, best opportunity to get clean-outs is around lab moves and personnel changes. 2. Encourage labs to examine chemicals as they do annual inventories and clean out unusable chemicals. 3. In teaching labs, ongoing tracking of chemicals used can lead to annual or biennial chemical clean-outs.

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EPI #2. Annual HCOC inventory	Reduce number of Hazardous Chemicals of Concern in labs.	1. Labs submit total chemical inventory as per Local Emergency Planning requirements. 2. EHS reviews total inventories to identify and track HCOCs.	If successful expect to see: 1. Fewer HCOCs stored in labs.	The issue in labs is not quantity, but more importantly the proper handling of HCOCs.	*2006 Goal: See #1.* 1. Establish program of regular reminders on checking HCOCs. 2. Chemistry Department has created a list of SOPs for common HCOCs.
EPI #3. Pollution Prevention Assessments	Identify activities that will lead to a reduction in hazardous waste produced by labs.	Researchers examine particular experiments and practices to identify methods to reduce waste volume.	If successful expect to see: 1. Reduction in waste volume. 2. Better purchasing controls and housekeeping practices.	1. It is impossible to determine the effectiveness of small waste reduction activities when they are masked by 35,000 pounds of total waste. 2. There is currently no mechanism for normalizing waste production against some known measure like grant money, lab space, etc.	*2006 Goal: Collect references on toxic and waste reduction opportunities that can be used in training and marketing.* 1. Identify small scale activities where it is possible to measure total flow-through. 2. Identify sources and direct researchers to information about product substitution and waste minimization in their fields. 3. Continue to emphasize preferred waste management practices that have less toxic outcomes (e.g. separating halogenated and non-halogenated wastes).

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EPI #4. Chemical redistribution	Reduce the volume of waste disposed by allowing chemicals to be offered to other labs when deemed "waste" by the generator. (This applies to virgin chemicals.)	Inventory discarded usable chemicals and make available to other labs.	If successful expect to see: More virgin chemicals being removed from clean-outs, disposal of virgin materials decreasing.	1. There is not a regular waste stream of discarded usable materials. These materials come primarily from clean-outs. 2. Researchers are extremely hesitant to use discarded material of "unknown" origin. The fact that a chemical is discarded makes it less desirable than borrowing the same chemical from a trusted source.	*2006 Goal: Work at waste reduction from the perspective of purchasing and housekeeping controls and inventory management. "Buy only what you need."* Continue to use waste clean-outs as an opportunity to offer chemicals for reuse. However, it is not cost effective to maintain a stock of discarded chemicals.
EPI #5. Annual accounting of hazardous waste produced by labs.	Tracking annual waste production from labs will provide information on waste reduction opportunities.	Data are collected from hazardous waste manifests and lab waste pick-up forms.	Comparison of annual waste totals reported in annual Project XL report, Table 3.	In order to measure waste reduction we need to have a way to say "The total waste volume has increased due to growth, but we are producing less waste per X."	*2006 Goal: Work with institutional and sponsored research departments and waste generators to determine if there is a formula for normalization.* Symposium to be held in FY 06.
EPI #6. Environmental awareness survey	Environmental awareness of lab workers should increase with training and working within the EMS framework.	Conduct an annual environmental awareness survey.	Results reported in annual report.	Surveys can provide useful attitudinal information as well as information on content knowledge.	*Goal: Redesign the survey to become a means of measuring changes in behaviors and attitudes resulting from activities implemented in other parts of the EMS.*

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EPI #7. Training	Training in the EMP will lead to changes in behaviors, practices and attitudes, ultimately leading to waste reduction.	Conduct annual initial and refresher waste training.	Compliance audits and annual surveys indicate effectiveness of training.	Training, personal contact, and communication are keys to an effective management system. Communication which includes inquiry is especially useful in honing training content.	*2006 Goal: Expand training to include written and online resources.* Provide incentives (like web-based forms) to direct people to additional resources. Expand training successes from Chemistry to all departments.
EPI #8. EMP Effectiveness	Completion of this scorecard is a systematic way to measure the success of the EMP.			Review of the scorecard suggests some larger strategic goals to apply to laboratory waste management.	*2006 Goal: Create a summary of the next steps proposed in this report and use them to develop or adjust programs. Use them also as a measuring stick for success of the Project in 2005-6.* Provide a cost accounting analysis for waste management. Adjust management plan procedures based on results of audits. - Create new labels - Create waste pick-up feedback form

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EPI #9. Conformance with the EMP	Audits of the labs are a measure of lab workers' conformance with the EMP.	Lab audits occur numerous times throughout the year.	Review and report audit scores.	Program improvements increase when audits are done more frequently and from the perspectives of different types of auditors.	*2006 Goal: Develop audit reporting steps that can be delivered to the lab workers, the PIs, and departmentally.* Publish generic audit findings in newsletters and on the web. Use audit scores to shape training program content.

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