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# Project XL: IBM East Fishkill



## WHAT IS PROJECT XL?



Project XL, which stands for “eXcellence and Leadership,” is a national initiative that tests innovative ways of achieving better and more cost-effective public health and environmental protection. The information and lessons learned from Project XL are being used to assist U.S. Environmental Protection Agency (EPA) in redesigning its current regulatory and policy-setting approaches. Project XL encourages testing of cleaner, cheaper, and smarter ways to attain environmental results superior to those achieved under current regulations and policies, in conjunction with greater accountability to stakeholders. It is vital that each project test new ideas with the potential for wide application and broad environmental benefits. As of June 2001, over fifty pilot projects are being implemented and several additional experiments are in various stages of development.

## SUMMARY OF THE IBM EAST FISHKILL PROJECT

The International Business Machines Corporation (IBM) East Fishkill facility in Hopewell Junction, New York manufactures semiconductor and electronic computing equipment. IBM East Fishkill’s manufacturing operations produce a wastewater treatment sludge that is designated as F006 hazardous waste under Resource Conservation and Recovery Act (RCRA) regulations. The sludge currently is disposed of in a permitted landfill approximately 350 miles away. Through Project XL, IBM East Fishkill will test an innovative method for recycling this waste stream as an ingredient in cement. The waste contains high concentrations of calcium (a necessary ingredient in cement production) and very low levels of hazardous contaminants, comparable to levels found in typical raw

**Table 1: Comparison of IBM F006 Sludge to Cement Manufacturing Raw Materials**

Constituent	Typical Raw Mix (%)	IBM F006 Sludge (%)
SiO <sub>2</sub>	14.3	13.09
Al <sub>2</sub> O <sub>3</sub>	3.03	5.94
Fe <sub>2</sub> O <sub>3</sub>	1.11	0.36
CaO	44.38	41.33
MgO	0.59	0.89
S	nil	nil
SO <sub>3</sub>	0.07	8.45 (a)
Loss on Ignition	35.86	28.65
K <sub>2</sub> O	0.52	0.04
Na <sub>2</sub> O	0.13	0.08
Total	99.99	98.83

(a) Present as Sulfates

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materials used to produce cement (see Table 1.)

The Resource Conservation and Recovery Act (RCRA) regulates the use of hazardous wastes as secondary materials when the secondary materials are used on land. Cement manufacturers, who normally would accept the sludge for recycling, decline to use it because they would be required to get RCRA permits, and because the cement produced using the sludge would be considered a hazardous waste-derived product. Thus for IBM, the most practical option under the current regulatory system is simply to treat and dispose of the sludge, rather than realizing its recycling potential. EPA has agreed to provide site-specific regulatory flexibility to the IBM East Fishkill facility sludge in order to implement this recycling scenario. The Final Project Agreement (FPA) for this XL project was signed on Sept. 29, 2000.

**SUPERIOR ENVIRONMENTAL PERFORMANCE**

By implementing this XL project, IBM East Fishkill will achieve superior environmental performance by:

- Recycling hazardous waste in a commercially available product rather than transporting the waste for disposal in a landfill;
- Increasing landfill capacity to handle other wastes that cannot be recycled; and,
- Reducing the amount of raw materials that must be mined and transported to a kiln to make cement, thereby reducing the environmental impacts of surface mining.

**REGULATORY FLEXIBILITY**

To implement the terms of the FPA, EPA proposed in the Federal Register a site-specific exclusion to the RCRA definition of solid waste for IBM East Fishkill's wastewater treatment sludge [June 6, 2001, Volume 66, Number 109, pp. 30349-30361]. Subject to comments received during the public notice process for this proposal, EPA will either promulgate the rule in final form, modify the rule as necessary to address comments, or will decide not to go final with the rule. If significant changes to the rule are necessary based on comments received, EPA will re-propose the rule to allow for further public notice and comment. The proposed federal rule sets parameters for the concentrations of hazardous constituents in the recycled sludge, defines management conditions to ensure that the sludge is not released to the environment, and establishes a means of assessing the effectiveness and safety of using the sludge as an ingredient in cement. As long as IBM's sludge meets these and other conditions in the proposed rule, EPA is confident that cement made using IBM's sludge (in addition to conventional ingredients) will be no different than cement made using conventional means. EPA currently has no plans to require cement companies involved in this project to label or otherwise identify cement made using IBM's sludge not to track or monitor its use by consumers. In fact, placing constraints on the cement product (as opposed to controls on IBM's sludge itself and its management) would discourage cement companies from recycling the sludge because of the unnecessary stigma that would

accompany such constraints.

**STAKEHOLDER INVOLVEMENT**

IBM and the EPA have involved many stakeholders in this project, including the Common Sense Initiative/Metal Finishing Subcommittee, the Atlantic States Legal Foundation, local community groups and national environmental groups.

**ADDITIONAL INFORMATION**

It should be noted that implementation of this project will have no effect on the drinking water aquifer which underlies Hopewell Junction nor on vehicular traffic entering or leaving the IBM East Fishkill facility. Since the sludge is a solid material in the form of large, flat chunks, it is possible to easily clean up any spillage, and the aquifer would not be threatened in the event of a spill of IBM's sludge. The proposed rule for this XL project, published in the Federal Register on June 6, 2001, was under preparation since the FPA for the project was finalized on September 29, 2000. Discussions for the project were initiated in the summer of 1999, long before EPA or IBM became aware of the contamination of the aquifer that supplies drinking water for the community affected by the Shenandoah Road Groundwater Contamination Superfund Site. Thus, the timing of the June 6 Federal Register Notice for this project is completely unrelated to the recent agreement EPA reached between EPA and IBM concerning this groundwater contamination. Moreover, there is no connection between the wastewater treatment sludge that is at the center of this XL project and the tetrachloroethylene (PCE) which contaminates the drinking water of some homes in Hopewell Junction.

**CONTACTS**

Regional Contact: Sam Kerns 212/637-4139  
 EPA/XL HQ: Mitch Kidwell, 202/260-2515  
 State Contact: Larry Nadler, 518/402-8633  
 Project Sponsor: Salvatore J. Tranchina, 845/892-1629

**FOR ELECTRONIC INFORMATION**

More information about Project XL is available on the Internet at <http://www.epa.gov/ProjectXL>, or via Project XL's Information Line at 202-260-5754.

**PROJECT TIMELINE**

- Project Timeline:
- Summer, 1999 – IBM informally approached Region 2 about participating in Project XL to make recycling of its sludge more feasible. Region 2 encouraged IBM to submit a proposal.
  - 9/27/99 – IBM submitted its formal proposal for its F006 sludge recycling project to the Office of Reinvention Programs, Region 2, and NYSDEC.
  - 10/99 - 4/00 – EPA, NYSDEC, and IBM conducted numerous conference calls and meetings in order to reach consensus on moving forward with project development. In support of this goal, Region 2 obtained samples of the raw feedstock for five cement kilns and had them analyzed to provide additional data required by HQ. IBM also began analyzing its

- sludge, at EPA's request, for MACT parameters.
- 5/19/00 – Region 2 notified IBM of EPA's formal acceptance of its proposal for recycling F006 sludge (following months of discussion with HQ, NYSDEC, and IBM).
- 6/6/00 – IBM submitted its Stakeholder Outreach Plan to Region 2.
- 6/15/00 – EPA and IBM met with the Atlantic States Legal Foundation (ASLF) in Syracuse, NY to proffer involvement in IBM's XL project to ASLF.
- 7/25/00 – IBM submitted its first draft of the Final Project Agreement (FPA) for its XL project to HQ, Region 2, and DEC.
- 8/4/00 – EPA (Region 2 and HQ) and NYSDEC submitted their initial comments on IBM's 7/25/00 draft FPA.
- 8/10/00 – IBM hosted a meeting of potential stakeholders for this XL project. Thirteen people attended, including private citizens as well as representatives of environmental groups and the cement industry. Samuel Sage, of ASLF, was contracted by IBM to facilitate stakeholder participation in this project, especially in the public comment period for the draft FPA.
- 8/14/00 – IBM submitted its revised draft FPA to HQ, Region 2, and DEC.
- 8/18/00 – Region 2 concurrently distributed a preliminary concurrence draft of the FPA to the EPA team for this project the Office of Policy, Economics and Innovation, the Office of Enforcement Compliance and Assurance, the Office of Solid Waste, and the Office of General Counsel in HQ and Region 2's Office of Policy and Management, Office of Regional Counsel, and the RCRA Compliance Branch), NYSDEC, IBM, IBM's consultant (William F. Cosulich Associates, P.C.), and the facilitator for IBM's stakeholder meetings (Catherine Allen of Marasco Newton Group).
- 8/21/00 - 8/28/00 – Concurrence review and needed revisions of the FPA were made and EPA, NYSDEC and IBM senior management concurrence was obtained.
- 9/1/00 – A Notice of Availability of the draft FPA was published in the 9/1/00 *Federal Register*. The formal two-week period for receiving comments on this draft ended on 9/15.
- 9/6/00 – IBM hosted a public meeting of citizen stakeholders (i.e., stakeholders other than EPA and NYSDEC) to facilitate their contribution of comments on the draft FPA. Five citizen stakeholders attended this meeting, and their memorialized comments (and also one from the facilitator) were the only public comments received on the draft FPA.
- 9/29/00 – Signatures of all parties to the FPA were obtained, and the FPA stage of the project was completed. A ceremonial signing of the FPA is planned for October 16, 2000.
- 6/6/01 – The Notice of Proposed Rulemaking for IBM East Fishkill's XL project, with a 30-day public comment period, was published in *Federal Register*. If deemed advisable after the public comment period has ended, the final rulemaking will allow the project to advance to the implementation stage after appropriate action by the state (i.e., an Enforcement Directive pending promulgation of an analogous state rule).

