

REPORT

on the review of the
SUPERFUND INNOVATIVE TECHNOLOGY EVALUATION (SITE) PROGRAM
DRAFT STRATEGY AND PROGRAM PLAN

prepared by the
Office of Research and Development
and the
Office of Solid Waste and Emergency Response

by the
Environmental Engineering Committee
Science Advisory Board
U. S. Environmental Protection Agency

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INTRODUCTION

Background

While most experts agree that there are a number of technologies which are suitable to prevent or mitigate releases of hazardous substances from Superfund sites, by far the most prevalent in practice has been to use some land-based containment approach. In most cases, this has meant the removal of contaminated soils from a Superfund site to a permitted RCRA hazardous waste facility. The public, the engineering community, and the Congress, have all noted that this approach can result in transferring the problem on a long-term basis from one site to another, without an ultimate remedy.

In October, 1985, the Environmental Engineering Committee of the Science Advisory Board expressed its concern, in a resolution to the Administrator of EPA, that enormous expenditures were being made under Superfund without an adequate technological data base to support rehabilitation of both public and private hazardous waste disposal sites.

In January, 1986, the Administrator responded to the Science Advisory Board, stating that he shared the Board's concerns, and noted that the Office of Research and Development and the Office of Emergency and Remedial Response (OERR) were developing a strategy for a Superfund Innovative Technology Evaluation (SITE) Program to address some of these issues. The goal of this program is to enhance the development, demonstration, and use of new or innovative technologies that are effective. The Agency expects to receive authority, under proposed amendments to CERCLA, to expend Superfund monies on such projects.

EPA convened an advisory group consisting of representatives from industry, academia, state and local governments, and other Federal agencies, to identify how to evaluate impediments to the development and use of alternative technologies, how to remove these impediments or to develop methods to promote expanded use, and how to develop a program to demonstrate and evaluate selected technologies. Dr. Raymond C. Loehr, who chairs the Environmental Engineering Committee of the SAB, is a member of this group.

At an October 21-22, 1985, meeting of the Environmental Engineering Committee Dr. John Skinner, Director, Office of Environmental Engineering and Technology, ORD, asked the EEC to review the Program, and to advise him on how best to proceed. The Agency, with the assistance of the advisory group, has produced a draft SITE Program Strategy and Program Plan, which was referred to the EEC for review in January, 1986.

This report is the result of that review.

Committee Review Procedures

A Subcommittee of the Environmental Engineering Committee, consisting of Dr. Davis L. Ford (Chairman), Mr. Richard Conway, Dr. Raymond C. Loehr and Dr. Mitchell Small, was organized to initiate the review. This Subcommittee met on the evening of February 12, 1986, and prepared a rough draft of its

comments. On February 13, 1986, at a regular meeting of the Environmental Engineering Committee, Mr. Alfred Lindsey, OEET, briefed the Committee on the contents of the draft Strategy and Program Plan. The Committee then expanded the rough Subcommittee draft, and directed Mr. Torno to complete the report and to circulate the completed draft to the Committee for their final approval and subsequent submission to the Agency.

REVIEW OF DRAFT SITE PROGRAM STRATEGY AND PROGRAM PLAN

General

The Agency has produced a draft plan, which incorporates some important components necessary to the implementation of an effective research, development and demonstration program. The document's major strengths include:

- A. A clear exposition of the problem, and the goals and objectives of the Program.
- B. A succinct summary of the impediments to the development and use of alternative technologies.
- C. The emphasis on getting the Program moving, without waiting to be sure that all problems have first been resolved.

To be effective, the Plan must: (a) have the endorsement of the Administrator and other senior officials of EPA, (b) be recognized as a long-term (at least 5 years) effort and commitment, (c) be adequately supported with personnel and funds on a sustained basis and (d) have dedicated EPA personnel at Headquarters, at specific research laboratories and in the regions. If this is not clearly understood by senior EPA administrators, the SITE Program will not achieve the desired success and will result in a waste of scarce resources, including an unfortunate diversion of EPA personnel.

Specific Comments

- A. Liability is a key concern relative to the SITE program. The Committee recognizes that the CERCLA reauthorization legislation addresses this issue and cannot be finalized at this time. However, the Committee believes that "hold harmless" clauses or the limitation of liability to the contractor's insurance coverage will be necessary before the SITE program can be successfully implemented.
- B. The Committee believes that the technology orientation initially will be in the areas of immobilization and thermal oxidation. The other candidate technologies, such as chemical or biological removal, would take longer to evaluate, but should be considered as viable options.

- C. The Committee believes that the institutional barriers have been recognized in the report and agrees that these barriers should be minimized to the greatest extent possible. The permitting is critical and a RCRA RD&D permit may be the most expeditious way of permitting a demonstration project as compared to the "Part B" route. The Committee recognizes that the cost effectiveness of emerging or demonstrated technology would be difficult to assess in the early stages. It is also noted that time is required before the O&M costs can be accurately evaluated.
- D. It is critical that delisting of treatment residues be addressed. This could be a major impediment or constraint for some of the candidate technologies.
- E. A thorough review of factors affecting the successes and failures under previous demonstration grant programs should be made in addition to the review of the 1977 Innovative Technology Program under Title II. Examples of demonstration technologies previously evaluated include the UNOX process, the Zimmerman process, and the PACT process.
- F. The Committee strongly believes that there should be a singular responsibility for the demonstration program structure. As presently outlined, it is not clear who has overall responsibility, ORD or OSWER.
- G. The solicitation for innovative technologies more clearly should include the regulated community and the engineering consultants. Moreover, it is imperative that the international community be made aware of this program, as they could have a significant incentive to become involved from both a technological and commercial basis.
- H. The criteria for evaluating technologies are of utmost importance. Some minor clarifications are required with regard to (a) permanence of solution if successful, (b) state of technology development (probability of success), and (c) regulatory compliance.
- I. The SITE management in EPA should try to obtain more senior people from other sources including (but not limited to) the Corps of Engineers, the Navy civil engineering program, retired military, or retired industry personnel, to insure professional management of these projects (the Committee notes that the Agency already has a program to use retired individuals - the Senior Environmental Employment (SEE) Program, which is administered in the Office of Exploratory Research).

- J. The Program should demonstrate the technical and economic feasibility of a number of innovative technologies. Limited resources will permit only a few demonstrations (probably less than thirty) during the life of the Program. To have the greatest impact, particularly in the early years when it is important to show some successes, the technologies should be demonstrated at actual CERCLA sites to indicate the ability of a technology to solve all or part of a real problem.
- K. The Plan should better define "fully proven" - there is a point at which EPA can (and probably should) say that a specific technology is acceptable, with all that such a judgement implies.

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