



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

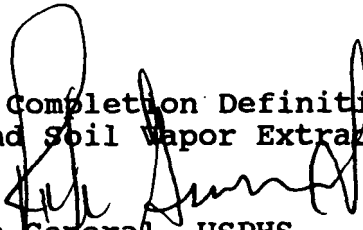
OSWER Directive 9320.2-06
EPA540-F-93-019
PB93-963327

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OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: NPL Construction Completion Definition at
Bioremediation and Soil Vapor Extraction Sites

FROM: Richard Guimond 
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Acting Assistant Administrator

TO: Waste Management Division Directors
Regions I, IV, V, VII
Air and Waste Management Division Director
Region II
Hazardous Waste Management Division Directors
Regions III, VI, VIII, IX
Hazardous Waste Division Director
Region X
Director, Environmental Services Division
Regions I, VI, VII, X

PURPOSE

This memorandum supplements EPA's policy for categorizing NPL sites as Construction Completions. Technologies addressed under this directive are:

- 1) in-situ soil vapor extraction (SVE),
- 2) in-situ bioremediation, and
- 3) ex-situ bioremediation.

A description of these technologies is attached.

BACKGROUND

According to the current policy, inclusion of a site in the Construction Completion category may occur at most sites when physical construction activity has ceased and cleanup goals are achieved. Generally, this is documented in a preliminary closeout report after a pre-final inspection is performed and only minor "punch list" items remain, or when only non-construction aspects of the remedy, such as institutional controls, need to be implemented (See OSWER Directive 9320.2-3C and 58 FR 12142). EPA has recognized an exception to this policy

at sites where response action is being undertaken for the purpose of aquifer restoration. At these sites, Construction Completion may be declared when the installation of the treatment facility and extraction wells are completed. Follow-on work to operate the system until cleanup goals are met is minimal and would generally be limited to the installation of additional extraction wells.

Field experience has shown that certain other remedies resemble aquifer restoration actions, in that little day-to-day activity, other than routine operation of a treatment facility, takes place once the treatment facility is built. Accordingly, this directive expands the policy which applies to aquifer restoration remedies to include certain applications of in-situ SVE, in-situ bioremediation, and ex-situ bioremediation.

IMPLEMENTATION

The basic process for determining Construction Completion at NPL sites remains unchanged. Regions shall continue to be responsible for identifying and recommending sites for the Construction Completion list in accordance with OSWER Directive 9320.2-3C. When making such recommendations at sites where SVE or bioremediation have been implemented, Regions should consider both the nature and extent of anticipated post-construction activity. Generally, if significant post-construction activity is likely, the site will not qualify for inclusion on the Construction Completion list. Post-construction activity includes further actions taken during the treatment phase of a project, as well as any final site closure activities beyond typical demobilization activities for the remedy selected.

The many variations in applying these technologies to sites make establishment of specific criteria for determining Construction Completion difficult. Regions may only declare Construction Completion at SVE and bioremediation sites when the treatment unit has been constructed, is operating as designed, and studies show that the technology will achieve cleanup goals. Additional consideration should be given to ensuring protection against direct contact with contaminated soils during the treatment process. Safeguarding measures shall be taken, such as stockpiling contaminated soils in an enclosed storage area, to ensure all pathways of exposure are eliminated.

Once the Region determines that a site should be included on the Construction Completion list, the Region prepares a draft preliminary closeout report. Unlike many aquifer restoration remedies, in-situ SVE and bioremediation treatment units are generally constructed and operated by the same contractor. Therefore, a pre-final inspection is not initiated upon completing the construction of the treatment unit. A thorough

inspection analogous to the pre-final inspection shall be conducted and documented by the Region before preparing the preliminary closeout report.

Even though the site is declared a "Construction Completion", the operable unit involving bioremediation or SVE remains classified as an ongoing remedial action. The operable unit remedial action will not be complete until cleanup goals specified in the Record of Decision are achieved and a remedial action report has been submitted to and approved by EPA.

Headquarters will continue to comment on completion decisions through review of the preliminary closeout report as described in previous guidance. The Hazardous Site Control Division (HSCD) serves as the clearinghouse for Construction Completions; therefore, all draft preliminary closeout reports should be sent to the following address for Headquarters review and comment:

John J. Smith, Chief
Design and Construction Management Branch
Hazardous Site Control Division (5203G)
U.S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

If you have any questions regarding this directive, you may contact your HSCD RD/RA Regional Coordinator at (703) 603-8830.

Attachment

cc: Superfund Branch Chiefs
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The policies set forth in this directive are intended solely as guidance. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the policies provided in this directive, or to act at variance with the directive, on the basis of an analysis of specific circumstances, and to change them at any time without public notice.

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TECHNOLOGY DESCRIPTIONS

In-situ Soil Vapor Extraction

In-situ SVE units are designed to physically remove volatile compounds from soil layers located above the water table. The process employs vapor extraction wells alone or in combination with air injection wells. Vacuum blowers induce air through the soil layers, which strip volatile compounds from the soil and carries them to the surface via extraction wells. Volatiles are controlled by adsorption onto activated carbon, incineration, or condensation by refrigeration. SVE systems vary in size, but consist of several extraction wells and surface blower/collection units.

Since SVE is in-situ, construction activity is primarily limited to the installation of extraction wells, blowers, and collection unit. Like aquifer restoration, the typical SVE site requires minimal post-construction activity. An example is the installation of additional extraction wells.

In-situ Bioremediation

In-situ bioremediation uses additives to degrade organic contaminants in soils and aquifers. Additives are injected into the soil or aquifer under pressure through wells or spread on the surface for infiltration to the contaminated material. The type of additive used at a particular site varies, but generally consists of either an oxygen source, nutrients, or perhaps microorganisms.

In-situ bioremediation is similar to aquifer restoration remedies, in that it generally requires minimal post-construction activity once the initial installation of injection wells and surface equipment is completed.

Ex-situ bioremediation

Ex-situ bioremediation uses microorganisms to degrade organic contaminants in excavated soil, sludge, and solids. Several variations of ex-situ bioremediation exist, and the amount of post-construction activity varies from site to site. Two common applications of ex-situ bioremediation are: slurry-phase bioremediation, in which soils are mixed with water to form a slurry; and solid-phase bioremediation, in which soils are

placed in a liner, tank or building and tilled with water and nutrients. Variations of the latter process are called land farming or composting.

Ex-situ bioremediation can be similar to aquifer restoration remedies. When physical construction is completed, the contaminated material is safely stored, and only routine activity such as tilling remains to be done. Because of the different approaches to ex-situ bioremediation, decisions on declaring Construction Completion at these sites should be handled on a site specific basis.