

US EPA ARCHIVE DOCUMENT

*Request for Sites to Host Innovative Technology Demonstrations/Evaluations for
Cleanup of Methyl t-Butyl Ether*

Issue Date: September 15, 1999

Due Date/Time: November 4, 1999, 5:00 P.M. EST

Attached is the Host Site Application (HSA) for demonstrating treatment technology for treating MTBE-contaminated aquifers in California. To be considered for this demonstration program, respondents must submit an original application and ten (10) copies by the due date to:

**Ms. Ruth L. Goller
U.S. Environmental Protection Agency
National Risk Management Research Laboratory
26 W. Martin Luther King Drive
Cincinnati, OH 45268**

Questions regarding this HSA should be directed to:

**Dr. Stephen G. Schmelling 580-436-8540
schmelling.steve@epa.gov**

**Dr. Carl Enfield 513-569-7489
enfield.carl@epa.gov**

NOTE: *EPA will not accept applications containing confidential business information (CBI). Applications received containing CBI will be returned to the applicant without review.*

Table of Contents	Page
Host SITE Solicitation	
Introduction.....	3
Solicitation Objectives.....	3
Solicitation Structure.....	3
Section 1. Program Requirements and Areas of Interest.....	3
Sites of Primary Interest	4
Section 2. Application Requirements and Evaluation Criteria.....	6
General.....	6
Review and Selection Process.....	6
Solicitation Schedule.....	6
Outline of Evaluation Criteria.....	7
I. Site Description.....	7
II. Site Characterization Factors.....	7
III. Regulatory Factors.....	8
IV. Logistical Factors.....	9

Host Site Solicitation

Introduction

The U.S. Environmental Protection Agency (EPA) is engaged in an effort to demonstrate and verify the cost and performance of new environmental cleanup and drinking water treatment technologies for fuel oxygenates, particularly MTBE and its byproducts. This solicitation focuses on parties responsible for cleanup of MTBE-contaminated aquifers and their technology needs. Specifically, its purpose is to solicit sites to host demonstrations of innovative technologies to treat MTBE-contaminated aquifers. Following selection of the host site, another solicitation will be instituted to select appropriate technologies for demonstration at the selected host site. The purpose of the latter solicitation is to demonstrate and verify field application of innovative remediation and drinking water technologies on actual contaminated sites. The results of the evaluations will provide reliable engineering, performance, and cost information for treatment decision makers and technology vendors.

Solicitation Objectives

The purpose of this Host Site Application (HSA) is to solicit sites in California that are available to host full-scale demonstrations of innovative and alternative technologies to treat fuel oxygenates (specifically MTBE) contaminating aquifers. Through this program, sites can assess **one or more** innovative technologies under controlled conditions for planning and evaluating remedial or treatment options.

This solicitation should be of interest to private firms and federal and state agencies that have regulatory or financial responsibility for on-site remediation and drinking water treatment of fuel oxygenate contaminated aquifers.

Solicitation Structure

This HSA consists of two (2) sections:

- Section 1: Abstract of program requirements and areas of interest for this solicitation.
- Section 2: Application requirements and a description of the criteria used to evaluate applications.

SECTION 1. PROGRAM REQUIREMENTS AND AREAS OF INTEREST

The host site must be able to provide or leverage funding to bear the cost of preparing the site for the technology demonstrations. Site preparation activities include providing power, site access, and physical support for the process (paving, concrete pad, containment, etc.). Proper disposal of waste generated during the demonstration is also the responsibility of the site applicant. Experience has shown that technology vendors may need assistance from the host site to cover expenses incurred during the demonstration.

EPA provides support for specific tasks in the demonstration including test plan preparation, rigorous sampling and analysis, and report writing.

Funds are not exchanged between EPA and site representatives. Prior to the demonstration, a no-funds agreement is signed by the site representative(s) and EPA to define the areas of responsibility.

The application developed in response to this HSA will be the basis for the agreement with EPA and must, therefore, contain sufficient details about the proposed site and the actual contaminants involved.

Sites of Primary Interest

EPA has an interest in receiving responses from any site that has a specific fuel oxygenate problem that requires cleanup. The primary fuel oxygenate of interest nationally is methyl-*t*-butyl ether (MTBE) and its byproducts, such as *t*-butyl alcohol (TBA). MTBE and TBA are highly water soluble, not easily strippable, not readily biodegradable, and have relatively low sorption coefficients for soil or activated carbon. Thus, these contaminants are often highly mobile in the subsurface and may migrate significant distances in groundwater with relatively little retardation or biodegradation in contrast to other fuel constituents such as benzene, toluene, ethylbenzene, and xylenes (BTEX). These compounds present potential risks to human health and the environment as contaminants in groundwater supplies.

Sites contaminated with fuels containing these oxygenates generally consist of source areas and groundwater contamination plumes that migrate downgradient from these source areas. Contaminant nature and distribution often are fundamentally different in source areas, where contaminant mass and concentrations are high and contaminants may be present as both non-aqueous phase liquids and dissolved in groundwater, than in the downgradient plume, where contaminant concentrations are significantly lower. Based on these fundamental differences, different technologies are often required for remediation of source areas and the downgradient plume. Thus, there is a need to study MTBE removal from both the source area using *in-situ* technologies and from groundwater that is extracted either during remediation of the downgradient plume or during production of potable water from wells. The source material needs to be treated for several reasons:

- The vast majority of the contaminant mass is associated with the source area.
- When the source is gone, pump-and-treat systems or other technologies work in a more timely manner.

Wellhead treatment is necessary because of the public need to use the water directly for human consumption or the need to meet certain concentration standards prior to discharge. *Ex-situ* treatment technologies are the most likely candidates for cost-effective use in wellhead treatment; thus, a site for demonstration of wellhead treatment technologies must be able to accommodate such a requirement. Both source and wellhead treatment are equally important for

inclusion in this research demonstration, although it is not necessary for one site to accommodate both source and wellhead treatment technologies simultaneously.

The host site **must** meet the following criteria as a minimum to qualify for evaluation of MTBE cleanup and treatment technologies:

- Good site security.
- Convenient accessibility by field personnel, equipment, and instrumentation.
- Availability for a minimum of six months to two years after selection of the demonstration technologies.
- Support of all stakeholders, i.e., regulatory bodies, site owner, and community.
- Access to downgradient areas for sampling and construction (for source treatment only).
- No unresolved legal problems regarding site ownership, responsibility, and liability.
- Minimal constraints on publication of results (research data will be public domain, but the site owner will be given the opportunity to review the data prior to publication).
- Well-characterized site with respect to source and downgradient contaminants and hydrogeologic setting. Well-characterized hydrogeology includes NAPL distribution, heterogeneity, hydraulic potential surface, and permeability of individual hydrologic units.
- In-place well heads where the MTBE concentration in the water ranges from 0.1 to 10 mg/L (for wellhead treatment).
- A well-defined, accessible source area that can be experimentally manipulated and where the nature and distribution of MTBE and other contaminants are known.
- For studying treatment of the source area, a site large enough to enable the simultaneous evaluation of at least two technologies. For studying treatment at the well head, a site large enough to accommodate evaluation of one or more *ex-situ* technologies. More than one site may be selected if not all criteria are met at one site.
- An unconsolidated formation with no fractured bedrock for evaluation of *in-situ* source area treatment technologies.

Desirable but not mandatory criteria include the following:

- Shallow groundwater that is reachable without unreasonable cost. However, if multiple monitoring wells are already situated within the plume area, this criterion is less important.

- A confining layer 30-40 feet from the surface; this criterion is less important for the study of *ex-situ* technologies.
- Space for installation of skid-mounted equipment.
- A permeable aquifer $> 10^{-3}$ cm/sec (for *in-situ* treatment technologies).

SECTION 2. APPLICATION REQUIREMENTS AND EVALUATION CRITERIA

GENERAL

Each site must submit an application to be considered for acceptance by EPA. EPA may select more than one applicant. Each site may choose to evaluate multiple technologies. The application should follow the "Outline of Evaluation Criteria" shown later in this section. The general descriptions of evaluation criteria in this outline are provided to assist the applicant in addressing the criteria; they do not represent comprehensive discussions of each element.

The number of pages presented in the proposal **should not exceed twenty (20)**, including charts, tables, diagrams, and drawings. Font used shall be 12-pt. Times New Roman, and the typing shall be single-spaced with margins set at 1-inch all around. A summary of previously acquired data is particularly important as part of the application, and reports or papers covering the offered site may be appended to the proposal. References may also be attached as an appendix, but they will be counted toward the 20-page limit for application length. More detailed site characterization data and information may also be included in the application, and this information will not be counted within the 20-page limit. **Do not include proprietary data or confidential business information in the application.**

An original and ten (10) copies of the application are required. After review of all applications, EPA may request a meeting with the site representative to discuss questions or concerns raised during the review process.

REVIEW AND SELECTION PROCESS

Applications will be reviewed by a panel made up of representatives from EPA and other State agencies. Applicants will be selected on the basis of their readiness and suitability for hosting a field-scale demonstration, their applicability to fuel oxygenate contamination problems, their amenability to innovative technology remediation, and their potential for providing information addressing problems common to a large number of fuel-contaminated sites. Selection or rejection of a proposed site by EPA will reflect a judgement based on the material presented in the application and the needs and resources of EPA. All applicants will receive a written response outlining the results of the review. EPA reserves the right to reject any and all applications based on technical review or insufficient EPA funds.

SOLICITATION SCHEDULE

This solicitation for host sites will be conducted according to the following schedule:

Solicitation issue date:	September 15, 1999
Pre-Solicitation Meeting at EPA Region IX	September 29, 1999
Solicitation due date	November 4, 1999
Peer-review completed:	December 17, 1999
Compilation of review comments	January 15, 2000
Responses to accepted applicants	January 20, 2000

OUTLINE OF EVALUATION CRITERIA

The following is an outline of the evaluation criteria that the application should follow.

- I. Site Description
- II. Site Characterization Factors
- III. Regulatory Factors
- IV. Logistical Factors

The following section discusses this outline in greater detail. Suggested page lengths for addressing each factor and relative weights are also listed. The weight factor is an indication of the importance of the selection criterion.

I. Site Description (1-2 pages, 10% weight)

1. Description of site/facility: site name, location, owner and operator.
2. Site history: previous use of the site and the method or means of site contamination. Drawings showing the locations of contamination and infrastructure, photos showing history of contamination and infrastructure, and diagrams may be used as appropriate.

General Guidance: Application should have a good description of site history and facility. It should be well written, clear, with relevant diagrams. There should be neither large gaps in information nor contradictory information that would lead the reviewers to question the applicant's basic knowledge of the site.

II. Site Characterization Factors (5-10 pages, 45% weight)

- A. For demonstration of source treatment technologies:
 1. Contaminants present at the site including MTBE and other contaminants both at the source and at downgradient wellheads.
 2. Levels of contamination present at the site both at the source and downgradient at appropriate wellheads.
 3. Contaminated medium or media including geologic strata, heterogeneity, hydraulic potential surface, distribution of contaminants at the site, and permeability of individual hydrologic units.
 4. Current remediation, treatment, or monitoring efforts underway.

5. Detailed site geology and hydrology.
6. Utilities for equipment and instrument operation.

B. For demonstration of wellhead treatment technologies:

1. Contaminants present at the site including MTBE at well heads.
2. Levels of contamination present at the site at appropriate well heads.
3. Current remediation, treatment, or monitoring efforts underway.
4. Utilities for equipment and instrument operation.

General Guidance. Primary interest will be in sites that have either MTBE contamination problems in combination with other fuel contaminants at a well-characterized source area or low concentrations of MTBE near the edge of the plume at the entrance to a well head. If there are other compounds present that will interact with MTBE or cause analytical interference, then this should be noted, and relative levels of the various compounds should be given. Vertical and horizontal extent of contamination should be known and well characterized. Location of contamination including depth below the surface and depth to the water table should be given. Information on the permeability of the site's geologic formations is highly desired.

III. Regulatory Factors (2-3 pages, 10% weight)

1. Summary of Risk Assessment Findings.
2. Cleanup or treatment goals.
3. Summary of existing remedial action plans.
4. Summary of state and/or federal regulatory agency's involvement with site.
5. Schedule for proposed remedial action.

General Guidance. If a risk assessment has been performed, the results should indicate that site remediation is necessary. If cleanup goals have been set, then these should be presented and should be realistic.

It is desirable that the applicant have support of the appropriate regulatory agency in pursuing demonstration and implementation of innovative technologies. For example, a joint submission from both the site owner and the regulatory agency would be advantageous. If there is a remedial action schedule for the site, then the schedule should be flexible enough to allow time to organize a fuel oxygenate demonstration (approximately three months is needed initially to plan the demonstration and another 9 to 21 months for the actual conduct of the demonstration).

IV. Logistical Factors (3-5 pages, 35% weight)

1. Site accessibility.
2. Infrastructure Support (water, utilities, excavation services, test area, etc. for demonstration).
3. Ecological Factors.

General Guidance. The site must be accessible and be able to provide needed utilities for the demonstration. There should be space available to carry out the demonstration (space is needed for equipment, support area, skid-mounted equipment for *ex-situ* treatment technologies, etc.). It is desirable that the applicant be able to provide or otherwise leverage logistical support for the demonstration. Aside from utilities and accessibility, logistical support also includes items such as excavation, demolition, disposal, and assistance in technology vendor's expenses. If logistical problems are foreseen, then applicant should be committed to resolving these issues.

With respect to the actual technology demonstration following selection of the host site, it is important that a technology not have any adverse effect on the ecology, e.g., endangered species, wetlands, other protected areas present, etc. The presence of these ecological factors may necessitate use of innovative technologies for eventual cleanup. If this is the case, then the site may be of higher interest to the Fuel Oxygenate Program. In the solicitation response, the applicant should specify the presence of any special ecological concerns that might impact a decision to select the site.