



ANNOUNCEMENT

**Application
Receipt Date:**
May 11, 1990

Request for Applications NPIR-004-90

Innovative Restoration Technologies for Treatment of Heavy Metals at Superfund Sites

SUMMARY: The purpose of this Request for Applications (RFA) is to solicit proposals which will result in the development of innovative cost effective methods for the treatment of heavy metals at Superfund sites. Treatment in this announcement refers to removal of heavy metals from the site. The research and development projects being solicited are envisioned to be completed within two years, and the effort should result in a practical end product with the potential application to remove heavy metals at Superfund sites. Biological techniques which utilize genetically engineered microorganisms can be included in this solicitation but will require the proposer to provide any special clearances needed for such projects.

DATES: The original and eight copies of the application must be received no later than the close of business, May 11, 1990, to be considered.

ADDRESSES:

The applications must be sent to:

Grants Operations Branch (PM-216F)
U.S. Environmental Protection Agency
Washington, DC 20460

Application Kits may be obtained from:

Research Grants Staff (RD-675)
401 M Street, SW
Washington, DC 20460

or by calling on (202) 382-7445

FOR FURTHER INFORMATION CONTACT:

Donald F. Carey (telephone (202) 382-7445)

SUPPLEMENTARY INFORMATION:

I. Background

As a consequence of unforeseeable accidents, past neglect, or lack of knowledge of sound environmental management practices, certain locations within the United States have become contaminated with heavy metals. These contaminants have permeated and adsorbed onto soils, diffused into interstitial saturated zones, dissolved into ground waters and migrated to subsurface aquifers.

In many instances these contaminants have exhibited physical and chemical properties which make them difficult to remove from the environment. They may exist in subsurface deposits difficult to access; they may strongly adsorb on soil structures and be only slightly soluble in the aqueous phase; and they may be extremely toxic even in dilute aqueous concentrations.

Problems have already been encountered during the inspection of sites under investigation, and available technology has not been very effective in providing solutions for all of the situations encountered.

II. Scope

Research and development efforts which employ physical, chemical and biological techniques for the treatment of heavy metals are solicited. In addition techniques which promote mobilization of such contaminants for the purpose of making them more amenable to subsequent treatment are solicited.

The research must be an effort to do more than to merely demonstrate a particular technology that is already being applied. Efforts should be made to further extend the application to other types of soil or mixtures of heavy metals where a technology has previously been successfully demonstrated with single contaminants in sandy soils. Methods for treatment of complex mixed wastes containing heavy metals including those that are relatively insoluble are of particular interest.

The topics listed below are provided as examples only and are not meant to be all inclusive.

- Physical methods for subsurface mixing to enhance mobilization and mass transfer of heavy metals
- Treatment applications: soils and sludges
- Improvement in nutrient and chemical reagent delivery systems for biotreatment or chemical methods for heavy metals removal
- Improvements in heavy metal reaction product recovery and separation systems

III. Mechanisms of Support

Assistance under this RFA will be through the U.S. Environmental Protection Agency's Research Grants Program and thus limited to non-profit research organizations and educational institutions. Responsibility for the planning, direction, and execution of the proposed research will be solely

that of the applicant. Approximately 1.5 million dollars will be available from fiscal year 1990 funds and it is estimated that 7 to 10 proposals will be supported. This RFA is for a single competition with a deadline of receipt of May 11, 1990 for applications.

IV. The Application

Each application will consist of APPLICATION FOR FEDERAL ASSISTANCE forms (standard forms 424 and 424A), separate sheets providing the budget breakdown for each year of the project, curriculum vitae for the principal investigator, abstract of the proposed project, and a project narrative. All certification (drug free work-place, etc.) forms must be signed and included with the application. Attachments, appendices or other materials included in addition to those identified above will not be forwarded to the reviewers. Application forms, instructions, and other pertinent information are contained in the Federal grant application kit.

V. Special Instructions to the Applicants

A. Proposals must be for research which does not include:

1. Large demonstration projects.
2. State-of-the-art or market surveys.
3. Preparation of materials and documents such as process designs or instruction manuals.

B. Treatment technologies to be considered in this RFA must meet the following requirements:

1. The net result of the technology must be the removal of the heavy metals from the site to reduce their toxicity and concentration in soil and subsurface water. Processes in which the net result is to transfer contaminants between media or to immobilize a contaminant in situ are not acceptable.
2. Providing the technology meets the definitions in statement 1, efforts which improve only a portion of the overall process such as improving mass transfer or reaction steps which limit the process are acceptable.
3. In all technology to be considered the soil phase must remain in place through mechanical devices which promote local mixing of the soil may be incorporated in the process.
4. Processes in which ground water is used to add chemical and biological agents or to remove products of subsurface reactions at the surface are permissible.

5. "On-site" or "pump-and-treat" processes where heavy metals are removed from contaminated water after being brought to the surface are acceptable.

C. Proposals must include:

1. Clearly stated hypotheses and relevant experimental questions.
2. Definition of data and analyses needed to scientifically evaluate the hypotheses and questions.
3. No more than a total of 35 pages (regular size type - no smaller than elite, single or double spaced, standard 8-1/2" x 11" pages) one side only including application forms and all enclosures, covers or attachments. Proposals exceeding 35 pages will not be reviewed.

A letter of transmittal is not necessary. If one is furnished it must not be attached to every copy of the proposal. If a letter of transmittal is attached to every copy of the proposal it will be counted as page 1 of the proposal.

4. A budget of \$200,000 or less for the project period which should not exceed two years in duration.
5. CVs or resumes not exceeding 2 pages for each principal investigator, focusing on education, positions held and most recent or related publications.
6. Identification "RFA NPIR-004-90" printed in the upper right-hand corner of the EPA assistance applications form. The absence of this identifier from an application absolves EPA of any responsibility if it is not reviewed along with the other applications responding to this RFA.

VI. Application Review

All applications in response to this solicitation will be reviewed at a single meeting of a scientific peer panel which will evaluate and rank each proposal according to its scientific merit as a basis for recommending agency approval or disapproval. The panel will consider:

- quality of research plan (including theoretical and/or experimental design, originality, and creativity),
- qualifications of the research team,
- availability and adequacy of facilities and equipment, and
- appropriateness of the proposed budget.

United States
Environmental Protection
Agency

Center for Environmental Research
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Cincinnati OH 45268

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