

Proposal Preparation

Innovative remediation products and processes are evaluated on the basis of environmental acceptability, safety, and performance. The proposer is responsible for identifying and meeting all applicable rules and regulations. Proposals must include information about each topic below that applies and provide information about any other topics that are unique or specifically associated with the product or process. Only complete applications and proposals will be evaluated.

The appearance of any innovative product, process, or equipment item on an acceptance list published by the Department does not imply that it is applicable to all cleanup situations, or that it is to be preferred over other treatment or cleanup techniques in any particular application, or that there is any exemption from requirements of providing design details in Remedial Action Plans. A site-specific evaluation of applicability and cost-effectiveness must be considered for any technology, whether conventional or new.

Proposal Content (Topics are not necessarily limited to those listed below.)

General

- Product, process, or equipment name.
- Description of the application of the product, process, or equipment, including, but not limited to whether it is:
 - in the category of bioremediation/bioaugmentation, chemical oxidation, chemical reduction, activators/ catalysts, surfactant flushing, physical/mechanical, or otherwise;
 - an in-situ application, ex situ, or both;
 - if in-situ, please specify the delivery method: via injection wells, trenches, soil mixing, or other by using other methods;
 - for the remediation of contaminated groundwater, soil, or both, free product, or air emissions control;
 - selective of, or applicable to only specific contaminants of concern; and,
 - applicable to specific geological, chemical, or physical site-specific conditions.
- Description of the underlying scientific principles on which the product, process or equipment operates.
- If the nature of the product, process or equipment is similar to others used to remediate sites in Florida, then explain the distinguishing characteristics and advantages of this particular product, process, or equipment.

Technical

- Attachment of diagrams, sketches, schematics, specifications, or flow sheets necessary to illustrate the product or process.
- List of design parameters (permeability, radius of influence, etc.): the range of each, and the optimum.
- List of operating parameters (flow rates, pressures, temperatures, pH, dissolved oxygen levels, residence times, concentrations, etc.): the range of each, and the optimum.
- Stoichiometry of chemical or biochemical reactions involved (or at the least, indicate the amount of reactants required per pound of contaminants' degradation): the theoretical minimum amount vs. the range of actual amounts typically required in the field.
- Information about the chemical composition of any chemical, nutrients or bioaugmentation formulations used in the treatment process, and the rate at which they will be applied.

- Description of any sidestreams, wastes, spent catalysts, effluents, air emissions, or residues remaining in treated groundwater or soil, and the nature, volume and fate or disposition of these materials.
- List of sampling parameters to include in the analysis of groundwater, soil, or air during active remediation and post remediation monitoring periods, to track both the progress of the cleanup and the fate of any chemicals, nutrients or catalysts that are unique to the product or process.

Performance

- Demonstrated cleanup efficiency as a percent reduction of contaminants in water and/or soil, and the remaining contaminants' concentration in the treated water and/or soil (the ability to meet cleanup criteria set forth in Chapter 62-780, F.A.C.).
- Attachment of bench scale and/or pilot test results.
- Attachment of relevant operational data to indicate the effectiveness of the process, product, or equipment (must follow department quality assurance/quality control procedures for the collection and validation of data).
- List of sites where the product, process, or equipment has been used effectively at full-scale, including the facility identification number if the sites are in Florida (maximum of three sites unless additional information is requested).

Environmental/Regulatory (Florida Administrative Code (F.A.C.), rules and statutes are available at <https://floridadep.gov/ogc/ogc/content/rules>.)

- Fate of all chemicals used and/or injected (catalysts, oxidants, nutrients, emulsifiers, etc.): their residual concentrations and byproducts concentrations. This is especially important in the case of in situ injection type aquifer remediation products and processes.
- Air emissions compliance (rules within Section 62-780.700, F.A.C., apply).
- In situ, injection type aquifer remediation products and processes shall comply with applicable portions of Chapter 62-528, F.A.C., for underground injection control (UIC) of Class V, Group 4, aquifer remediation wells. Applicable portions include:
 - disclosure of the complete chemical analysis of the injected fluid for active and inactive ingredients and potential impurities (required by law; no exceptions; handling and safekeeping of confidential disclosures for proprietary formulations is available);
 - requirement that the chemical composition (active and inactive ingredients, including impurities) of the injected fluid meet the regulatory requirements of Chapter 62-528, F.A.C, Chapter 62-550, F.A.C., Chapter 62-777, F.A.C, Chapter 62-520, F.A.C., and other regulatory requirements.
 - requirement that monitoring [of appropriate parameters with respect to both the constituents of the injected fluid and the type of contaminants present] be conducted,
 - the collection of baseline water quality samples;
 - requirement that injections be conducted in such a way that unwanted migration of injected fluids [and contaminants] is avoided; and
 - inclusion of UIC inventory information in Remedial Action Plans.
- Additionally, products and processes must comply with applicable portions of Chapter 62-520, F.A.C., for groundwater classes and standards, specifically but not limited to:
 - Section 62-520.410, F.A.C., regarding the classification of aquifers as G-I, G-II, etc.; and
 - Section 62-520.420, F.A.C., regarding standards for G-I and G-II aquifers, including citations of drinking water standards and background water quality.
- Identification of any special permits that may be needed.

Safety (Proposals must include discussion of safety topics. That the items below are considered by the Department during product and process evaluations does not relieve preparers of Remedial Action Plans from any of their obligations and responsibilities in the area of safety.)

- Bioaugmentation products must contain only naturally occurring, non-pathogenic, non-opportunistic microorganisms.
- Attachment of Material Safety Data Sheets, toxicity information, toxicological test results, etc.
- Fire and explosion safety and prevention considerations:
 - lower explosive level considerations;
 - potential for vapor migration, either passively by convection, or driven by air or other gases used, or generated by the heat of exothermic chemical reactions or the vaporization of free product by such heat;
 - the minimum tolerable distance between underground storage tanks and product piping and any in situ heat generating processes;
 - observance of National Electrical Code (typically Series 500 articles for Class I, Group D, Division 1 or 2 hazardous area requirements);
 - materials of construction that are spark-resistant and/or equipment fabrication such that the possibility of sparking due to friction or improper contacting of moving parts is minimized; and,
 - compliance with applicable National Fire Protection Association codes.
- Safe handling of chemicals: avoidance of mixing, premature mixing, or improper storage of incompatible chemicals.
- Safety devices such as pressure relief valves, rupture disks and flame arresters.
- Safe shutdown of systems in the event of power failure or unsafe operating conditions.
- Personal protection for workers, and minimization of their exposure to hazards during construction, operation, and any other phase of a project involving the innovative product, process, or equipment.

Limitations

- Identification of any limitations that may apply (i.e., not suitable for remediation of low concentrations of contaminants; not suitable for free product remediation, or free product exceeding a specified maximum thickness; not suitable for a specified range of soil permeabilities, soil types or characteristics, etc.)