



Florida Department of Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

October 5, 2009

Gwyn Isenhouer
Technical Sales Manager
JRW Bioremediation LLC
14321 West 96th Terrace
Lenexa, KS 66215

Re: **LactOil™**

Dear Ms. Isenhouer:

The Bureau of Waste Cleanup (Bureau) hereby accepts LactOil™, a slow-release soy microemulsion carbon substrate, for the remediation of halogenated aliphatic and aromatic hydrocarbons, perchlorates, heavy metals and acid mine drainage. Reductive biological processes are employed for remediation using LactOil™.

The Bureau does not provide endorsement of specific or brand name remediation products or processes. It does, however, recognize the need to determine their acceptability in the context of environmental regulations, safety and the protection of public health. For that reason, the Bureau issues an "acceptance" letter, not an approval. In no way shall an acceptance be construed as certification of performance. Additionally, vendors, upon receipt of an acceptance, must market their product or process on its own merits regarding performance, cost, and safety in comparison to competing alternatives in the marketplace.

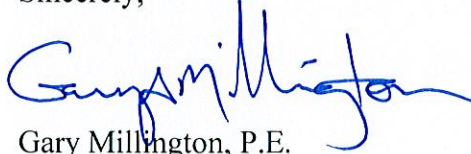
Remedial Action Plans that propose the use of an accepted product or process should include a copy of the acceptance letter in the plan's appendix, and reference it in the text of the document. It is not a requirement that a particular remediation product or process have an official acceptance letter in order for it to be proposed in a site-specific Remedial Action Plan. The plan, however, must contain sufficient information about the product or process to show that it meets all applicable rules and regulations.

The Bureau reserves the right to revoke its acceptance of a product or process if it has been falsely represented. Additionally, Bureau acceptance of any product or process does not imply it has been deemed applicable for all cleanup situations, or that it is preferred over other treatment or cleanup techniques in any particular case. A site-specific evaluation of applicability and cost-effectiveness must be considered for any product or process, whether conventional or innovative, and adequate site-specific design details must be provided in a Remedial Action Plan

Gwyn Isenhouer
October 5, 2009
Page 2

submitted for Department review and approval. If you have any questions, please contact me at 850.245.7502.

Sincerely,



Gary Millington, P.E.
Program and Technical Support Section

Enclosure: Regulatory Information

c: Tom Conrardy, P.E. – FDEP/Tallahassee
Rob Cowdery, P.E. – FDEP/Tallahassee
Rick Ruscito, P.E. – Petroleum Cleanup Section 6

REGULATORY INFORMATION

- a. Regulations: Chapters of the Florida Administrative Code (F.A.C.) that may be applicable, either in part or in their entirety, include but are not necessarily limited to Chapter 62-550, F.A.C., for primary and secondary water quality standards; Chapter 62-520, F.A.C. for groundwater classes and standards; Chapter 62-522, F.A.C., for groundwater permitting and monitoring requirements; Chapter 62-528, F.A.C., for underground injection control, particularly Part V, for Class V, Group 4 aquifer remediation projects; Chapters 62-780, 62-782, and 62-785 F.A.C., for cleanup criteria; and Chapter 62-777, F.A.C., for cleanup target levels.

Users of LactOil™ shall comply with all applicable regulations. This includes meeting applicable groundwater cleanup target levels for the contaminants of concern, the residual concentrations of LactOil™ ingredients, and any byproducts of concern produced by chemical and biological reactions induced by the ingredients during the timeframe of the cleanup project. For the “ingredients of concern” in LactOil™ that are present in excess of their groundwater standards, the timeframe is that which is permitted for a temporary injection zone of discharge.

- b. Underground Injection Control permit: Per Rule 62-528.630(2)(c), F.A.C., Class V injection-type aquifer remediation wells are exempt from the permitting requirements of Rule 62-528.635, F.A.C., when authorized by a Department-approved Remedial Action Plan or other enforceable mechanism, provided the requirements of the rules governing the remediation project, as well as the construction, operation, and monitoring requirements of Chapter 62-528, F.A.C., are met. Per Rule 62-528.630(2)(c), F.A.C., the issuance of an enforceable, site-specific Remedial Action Plan Approval Order by the Department for injection-type aquifer remediation constitutes the granting of a Class V injection well construction/clearance permit.
- c. Underground Injection Control notification: Remedial Action Plans proposing in situ, injection-type aquifer remediation shall include information pursuant to Rules 62-528.630(2)(c)1 through 6, F.A.C., for the inventory purposes of the Underground Injection Control program. Reviewers of those plans, upon issuance of an enforceable Remedial Action Plan Approval Order by the Department, must submit a completed copy of the Underground Injection Control inventory notification form.
- d. General information about temporary injection zones of discharge: For in situ aquifer remediation, the composition of an injected fluid must meet the primary and secondary drinking water standards set forth in Chapter 62-550, F.A.C., and the minimum groundwater criteria of Chapter 62-520, F.A.C., pursuant to underground injection control Rule 62-528.600(2)(d), F.A.C. Aquifer remediation fluids that do not meet these requirements must seek permission for a temporary injection zone of discharge. Depending on the chemical composition and the physical properties of the fluid, it will be necessary to obtain an injection zone of discharge by either one or both of the following methods: by Rule 62-522.300(2)(c), F.A.C., or by variance from Rule 62-522.300(3), F.A.C.

Rule 62-522.300(2)(c), F.A.C., allows a temporary injection zone of discharge for closed-loop re-injection systems, the prime constituents of the reagents used to remediate site contaminants, and the secondary standards for groundwater, provided a Department-approved

remedial action plan addresses the duration and size of the zone of discharge, and groundwater monitoring of the injected chemical species of concern.

In order to obtain permission for a temporary zone of discharge by way of Rule 62-522.300(2)(c), F.A.C., a site-specific Remedial Action Plan must indicate: (a) the chemical species of concern in the fluid to be injected that will be present in excess of their allowable concentrations; (b) the size of the zone that is needed; (c) the amount of time that the zone will be needed; and (d) a groundwater monitoring plan for the injected chemical species of concern. In most cases, monitoring on a quarterly basis should be sufficient. The size of the temporary injection zone of discharge in item (b) above will usually be the radius of influence when the treatment system is a single injection point. For a multiple point system, the zone of discharge can usually be expressed and illustrated as the total area of the cluster formed by all the injection points, located side-by-side with overlapping radii of influence.

- e. Specific zone of discharge information for LactOil™: LactOil™ is typically injected as a 10% solution (1 part LactOil™ and 9 parts water). Site-specific remedial action plans should indicate whether or not a temporary zone of discharge is needed for chloride (a remediation by-product), total dissolved solids (TDS) and total recoverable petroleum hydrocarbons (TRPH). If a temporary zone of charge is necessary, the issuance of the site-specific Remedial Action Plan Approval Order also constitutes the granting of permission for the temporary injection zone of discharge.
- f. Utilization of wells: If a remediation site happens to have an abundance of monitoring wells, then the Bureau has no objection to the use of some wells for the application of LactOil™. However, no “designated” monitoring well, dedicated to the tracking of remediation progress (by sampling) shall be used to apply LactOil™. This will avoid premature conclusions that the entire site meets cleanup goals. By making sure that designated tracking wells are not also used for treatment, there will be more assurance that the treatment process has permeated the entire site and that it did not remain localized to the area immediately surrounding each injection well.
- g. Avoidance of migration: For injection-type, in situ aquifer remediation projects, pursuant to Rule 62-528.630(3), F.A.C., injection of LactOil™ shall be performed in such a way, and at such a rate and volume, that no undesirable migration of either the LactOil™ or the contaminants of concern in the aquifer results.
- h. Abandonment of wells: Upon issuance of a Site Rehabilitation Completion Order, injection wells shall be abandoned pursuant to Section 62-528.645, F.A.C., and the Underground Injection Control Section of the Department shall be notified so that the treatment wells can be removed from the injection well inventory-tracking list.