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NS MAYPORT
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MEMORANDUM AND COMMENTS FROM FLORIDA DEPARTMENT OF ENVIRONMENTAL
PROTECTION ON RESPONSE TO COMMENTS REGARDING BIOAUGMENTATION
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNIT 15 NS MAYPORT FL
6/16/1995
FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Florida Department of
Environmental Protection

Memorandum

TO: Jim Cason, P.G., Remedial Project Manager, Technical Review Section

THROUGH: Tim Bahr, P.G., Supervisor, Technical Review Section **TB**

FROM: Greg Brown, P.E., Professional Engineer II, Technical Review Section **GB**

DATE: June 16, 1995

SUBJECT: Response to Comments on Bioaugmentation Corrective Action by FIFCO International, Inc.; SWMU 15, Naval Station Mayport, Florida.

I reviewed the subject document dated May 31, 1995 (received June 14, 1995). For the record, I will repeat the general comments communicated to the Navy in my letter dated January 13, 1995. These general comments have not been satisfactorily or explicitly addressed by the Navy to date. I will then present my concerns in light of the Navy's responses to earlier project-specific comments.

GENERAL COMMENTS

- The Navy needs to assure beyond a reasonable doubt that the demonstrations will be "fail safe" and will not increase risks to human welfare or the environment at NS Mayport.
- The demonstration projects are for assessment of technology feasibility only. They will not be used to justify SWMU "closure".
- The Navy must institutionally frame the demonstrations at the permitted SWMUs within the context of the HSWA permit. HSWA related details are EPA's responsibility, but the Department expects consistency with the HSWA permit and with RCRA in general.

PROJECT-SPECIFIC COMMENTS

Comment 7.

- **COMMENT:** (FDEP Letter, January 13, 1995). What are the site-specific wastes this technology is being applied to, how are existing conditions going to be measured, how is treatment performance going to be monitored, and how will the efficacy of the treatment be determined?
- **RESPONSE:** (FIFCO Letter, May 31, 1995). Site specific contaminants are provided in Section 1.4 of the RAP dated

MEMORANDUM
Jim Cason, P.G.
June 16, 1995
Page Two

January 1995. The treatment performance will be monitored by the Oversight Contractor.

- **CONCERN:** The response is acceptable. The Department has, however, the following concerns. Demonstration projects are typically structured around an experimental design that attempts to confirm or reject the hypothesis that the innovative technology is effective. Experimental designs also typically measure the effects of various input parameters on the effectiveness of the technology. The RAP does not attempt to do this. At best, the results will be qualitative and anecdotal. This is acceptable if collection of qualitative and anecdotal data to support NELP technologies is the Navy's objective. It may make transfer of this technology to other site applications difficult, however.

Comment 8.

- **COMMENT:** (FDEP Letter, January 13, 1995). Please explain: (Page 1) Claims to co-metabolize and/or "stabilize metal salts". (Page 2) Also claims "metal salts will be at acceptable levels in 30 days".
- **COMMENT:** (FDEP Letter, January 13, 1995). (Page 2) Claims BAC-TERRA can work in environments up to 240 degrees F. At atmospheric pressure, this is above the boiling point of water. Since most life forms are made up principally of water, how does BAC-TERRA work at these extreme conditions.
- **RESPONSE:** (FIFCO Letter, May 31, 1995). Metal salts are stabilized through the metabolic processes of the micro organism contained in Bac-Terra tm, BR-650. The chemical salt is respired by certain organisms present in Bac-Terra tm, BR-650 releasing oxygen and allowing the free electrons released as a consequence of the ATP degradation to supply the necessary electrons to the metal ion to stabilize it into a non bio available form (Elemental). Levels of metal salts are expected to be at acceptable levels within 30 days, however, this is dependent upon the combination and concentration of co contaminants present. It is our expectation to have these metal salts to acceptable levels by the end of the project. Many organisms in the thermophilic and hypertermophilic range are capable of surviving and reproducing at levels above the boiling points of water. These are present when crude oil is being produced by nature.
- **CONCERN:** This response is acceptable. The Department has, however, the following concerns. What are acceptable levels

of metal salts? As discussed in Comment 7, it will be difficult to confirm or reject FIFCO's claims based on the present RAP strategy.

Comment 12.

- COMMENT: (FDEP Letter, January 13, 1995). (Page 3) How will head space analysis using a FID provide useful information on pesticide contamination?
- RESPONSE: (FIFCO Letter, May 31, 1995). FID will only measure VOC and SVOC. It will be the responsibility of the Oversight Contractor or the Florida Department of Environmental Protection to develop and recommend protocol testing beyond that recommended in the RAP, if considered pertinent to the project objective goals.
- CONCERN: This response is acceptable. The Department has, however, the following concerns. FIFCO is correct in noting that the FID will only measure VOC. The Navy should describe the relationship and delegation of responsibilities between FIFCO, the Navy, and the "oversight contractor".

Comment 14.

- COMMENT: (FDEP Letter, January 13, 1995). (Page 4) Please explain how IDW decontamination fluids will be used "for the subsequent bioremediation".
- RESPONSE: (FIFCO Letter, May 31, 1995). IDW decontamination fluids will not be used for subsequent bioremediation.
- CONCERN: Response is acceptable.

Comment 15.

- COMMENT: (FDEP Letter, January 13, 1995). (Page 4) Pesticides not identified as COCs in confirmatory sampling discussion.
- RESPONSE: (FIFCO Letter, May 31, 1995). All samples will be analyzed under protocol established by DON, FDEP and the oversight contractor.
- CONCERN: This response is acceptable. The Department has, however, the following concern. The Navy should describe the relationship and delegation of responsibilities between FIFCO, the Navy, and the "oversight contractor".

Comment 17.

- COMMENT: (FDEP Letter, January 13, 1995). Preliminary RFI data indicates that pesticide contamination is in soil near the surface. (Page 2) Proposed injection scheme would place BAC-TERRA solution below known contamination.
- RESPONSE: (FIFCO Letter, May 31, 1995). Based on the RFI data provided, the modification of the application system addressed treatment of the surface contamination zone. Only for pesticide area.
- CONCERN: This response is acceptable. The Department has, however, the following concerns. The new reagent distribution system places the reagent below the surface contamination and still does not appear to be effective. Excavated soils that are characteristic or listed hazardous wastes should be properly managed.

Comment 18.

- COMMENT: (FDEP Letter, January 13, 1995). (Page 5) The infiltration capacities of soils at Mayport are high. The proposed application method does not appear effective. How will the BAC-TERRA solution permeate the horizontal soil matrix between injection points? Possible impacts to groundwater are not discussed.
- RESPONSE: (FIFCO Letter, May 31, 1995). The modification of the application system should enhance the horizontal penetration of the soil matrix. However, based on past application experience in similar soil environments, horizontal penetration of the soil matrix is not considered a significant impediment to the demonstration test since the application operations will be monitored throughout the demonstration test.
- CONCERN: Refer to concerns summarized for comment 17.

MEMORANDUM
Jim Cason, P.G.
June 16, 1995
Page Five

Regardless of the Department's concerns, the Navy appears to be committed to this technology demonstration as described in the referenced document. I recommend that the demonstration be conducted as long as the Navy adequately addresses the general comments described at the beginning of this memorandum and obtains all required permits. Since this is a RCRA SWMU undergoing corrective measures under a HSWA permit, the Navy should recognize that it will be liable for any unpermitted releases of hazardous substances to the environment as a result of this technology demonstration.