

November 16, 2020

Ms. Mary Walker  
Regional Administrator  
USEPA Region 4  
Atlanta Federal Center 9T25  
61 Forsyth Street SW  
Atlanta, GA 30303

**Subject: 40 CFR 761.60(j) PCB Research and Development for Disposal Notification  
Perma-Fix of Florida, Inc.  
EPA ID: FLD 980 711 071**

Dear Ms. Walker:

Pursuant to the self-implementing requirements for research and development (R&D) for PCB disposal at 40 CFR 761.60(j), Perma-Fix of Florida, Inc. (PFF) hereby notifies the EPA Region 4, the Florida Department of Environmental Protection (FDEP), and the Alachua County Environmental Protection Department (ACEPD) of its intention to conduct R&D for PCB disposal activities commencing 30 days from the receipt of this notification and extending approximately through the end of July, 2021. The following paragraphs outline the purpose and scope of this R&D work.

#### Background

In response to a Department of Energy (DOE) request, PFF has been contracted to perform bench scale tests to evaluate and optimize the effectiveness of specific treatment technologies to reduce the concentrations of restricted Resource Conservation and Recovery Act (RCRA) hazardous constituents and Toxic Substances Control Act (TSCA) polychlorinated biphenyls (PCBs) in a complex mixed (i.e. hazardous and radioactive) waste. This particular waste has been identified by the DOE to the Region as one with no established treatment and land disposal options currently available under the RCRA and TSCA regulations. Hence; the need for a test-demonstrated treatment option is needed to present a viable pathway forward.

#### Waste Information

The gross volume of five (5) waste containers intended for receipt will be approximately 390 gallons. From that population it is anticipated that only 5 – 10 gallons of the RCRA hazardous and PCB remediation waste may be taken to yield a composite sample for the R&D study. The remaining waste along with all waste generated from the study will be returned to the generator at the end of the project for management. The PCB concentration of the waste is represented to be 7,000 ppm or less. This will be confirmed by sampling and analysis upon receipt. As such, the anticipated amount of pure PCB compounds treated is less than 0.06 pounds. The physical

form of the waste is liquid with approximately 1% suspended and/or settled solids by volume. The waste contains a number of listed and characteristic RCRA regulated constituents and low levels of radioisotopes. All RCRA hazardous waste codes are authorized for receipt and storage by the FDEP issued operating permit 17680-012-HO. The TSCA regulated PCBs are authorized for receipt and storage by EPA Approval (July 2013). All radioisotope types, concentrations, and total activities are authorized by the Perma-Fix Radioactive Materials License (2598-1) for receipt, storage, and R&D activities.

The study will be limited to the application of technologies that PFF is already authorized to perform under its RCRA operating permit. The sequential treatment for this study is chemical reduction, chemical oxidation, and stabilization. The permit allows in-container treatment by each of these processes, as further described below.

#### Chemical reduction

The waste profile indicates that the waste contains polychlorinated biphenyls (PCBs) and has been assigned hazardous waste codes for polychlorinated dibenzodioxins (PCDDs)/Polychlorinated dibenzofurans (PCDFs). A process that has been shown to be effective in certain cases in destroying these compounds is reductive dechlorination using the KPEG process. Waste samples will be treated by one or more cycles of KPEG and then analyzed to determine residual PCB and PCDD/PCDF concentrations. If satisfactory levels of destruction are achieved, residues from this treatment will be subjected to the next stage of treatment.

#### Chemical oxidation

Chemical oxidation will be used to reduce the concentrations of non-chlorinated organic constituents in the waste. Specifically, peroxydisulfate salts, persulfuric acid (Fenton's reagent), and/or hydrogen peroxide will be used at temperatures ranging from room temperature up to about 85° C. Higher temperatures may be employed to dry the samples afterward. Again, after one or more chemical oxidation cycles, samples will be analyzed to determine residual concentrations of organic UHCs and if satisfactory levels are achieved the residues will be subjected to the final stage of treatment.

#### Stabilization

The waste bears hazardous codes for several toxic metals. These constituents will not be destroyed or necessarily immobilized by the previous treatment technologies. PFF will employ its stabilization process to achieve this. One or more reagents may be used to reduce or oxidize metals into the optimum valence state for stabilization. Next, reagents may be added to precipitate metals in the form of highly insoluble salts. Buffers may be used to control the pH of the waste in a range of low solubility for the metals of interest. Complexing agents may also be used to sequester metals. Finally, microencapsulation of the waste in cement or another impermeable matrix may be employed.

Once samples of the final waste form are produced, they will be analyzed for constituents of concern and compared with numerical LDR UTS limits. After results have been reported to the generator and the study concluded, all unused samples, treatment residues, contaminated debris, and analytical wastes that acquired codes from the original waste will be packaged and shipped, in accordance with all Department of Transportation (DOT) requirements, to the generator's facility for storage. All waste will also be tracked in accordance with the recordkeeping requirements of 40 CFR §761.180 as applicable. Perma-fix expects to further support the DOE in preparation of a petition to EPA to allow for full-scale treatment and land disposal, using the study results as the requisite technical justification.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations ([18 U.S.C. 1001](#) and [15 U.S.C. 2615](#)), I certify that the information contained in this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Sincerely,

Richard Grondin; EVP Waste Operations  
Perma-Fix Environmental Services, Inc.

CC:

Mr. Bradley Bruselli  
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