PCB DESTRUCTION USING FENTON-LIKE REACTIONS IN PACIFIC SOILS

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The final phase of PCB contaminated soils remediation on Saipan, CNMI, an Island in the Pacific is underway. The contamination resulted from World War II activities with PCB. The contaminated soils have undergone 3 phases of work, with the last phase nearing completion. Phase I comprised shipping what was thought to be limited quantities of contaminated soils to the mainland for incineration. This was followed subsequently by the innovative technology demonstration of on-site destruction by Shell Company's Terratherm Process. The treated contaminated soils from sources which included a contaminated but inactive Cemetery were desorbed to < 1ppm PCBs. HED received the USACE Chief of Engineers Award for this IT demonstration. Limited residual quantities of PCB contaminated soils and equipment were shipped to the mainland. Compliance limits have changed over the years including a revised acceptable concentration for "leave in place" of 50 to 10 to the current < 1 ppm PCBs. The third and final phase also requires sensitive coordination during excavation of soils from an active Cemetery in addition to cleaning up adjacent open space and portions of the real estate in a local village. Off-island shipments of HTRW/TSCA materials or residuals is currently against the law after the successful litigation by the Sierra Club. An alternate method of cleaning soils will be used, employing indirect thermal desorption with a new process, a Modified-Fenton's Process, developed by Corps staff, in a unique cooperation between POD and NAD, comprising the Honolulu Engineering and New England Districts. This unique, cross continental, in-house engineering program is described, with a discussion of the results of bench tests of the Modified-Fenton's process using contaminated Pacific Island Soils from the Saipan test site. The results obtained are not only important for the Saipan project, and extra-continental USA TSCA remediation projects with residuals, but also demonstrates an application of the real functional mechanism for remediation of soils by insitu oxidation.