

Integrated Soil and Water Treatment System for Source Areas of PFAS-Impacted Sites

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Background/Objectives. Ventia and CleanEarth Technologies have formed a partnership to treat soil and groundwater in Australia and New Zealand using the CleanEarth Technologies process.

The presentation will outline the results of bench-scale testing that was used to develop an integrated soil and water treatment system for the treatment of poly- and perfluoroalkyl substances (PFAS) impacted soil source zones. The presentation will summarize the individual components of the treatment process with a focus on the strengths and limitations of each component. The results will be compared to other PFAS treatment technologies in the marketplace, and will outline our current understanding of the mechanism of treatment of PFAS, summarize the economics and future research.

Approach/Activities. The treatment process is two stage a physical/chemical and water treatment system designed to solubilize the PFAS to the aqueous phase with subsequent downstream treatment of the process water. This treatment train results in low levels of total PFAS and leachable concentrations in the treated soil. This presentation will provide more detail on the CET treatment method for PFAS contaminated soil.

Results/Lessons Learned. Laboratory scale treatment trials are currently being undertaken on soil obtained from a PFAS impacted site in Australia. The laboratory treatment trials are the first step in the development of a PFAS treatment system scheduled to be trialled in Australia in 2018. Results to date of the lab scale testing are summarized below:

- Average concentrations post-TOP assay of PFOS, PFOA and PFHxS before treatment were 210, 5.8 and 50 mg/kg, respectively; and
- 100% of treated soil satisfied the national Australian criteria for reuse on-site.

At the current state of the process development, the effectiveness of this technique to achieve the national Australian criteria for reuse will be influenced by the soil type and the starting concentrations of PFAS in the soil. Sites with a finer grained soil profile will result in a higher proportion of the soil requiring chemical treatment. This results in an associated higher unit cost of treatment and a greater proportion of the treated soil only meeting the criteria for off-site disposal.

A physical chemical treatment approach can effectively treat the source areas of PFAS contaminated sites. This represents a new treatment option for this class of contaminated site.