

[Form 2 (to be reported to Committee on Countermeasures for Contaminated Water Treatment and to be disclosed to public)]

Technology Information	
Area	1 (Select the number from "Areas of Technologies Requested")
Title	Underground Zeolite Wall System
Submitted by	The SimplyInfo.org Research Team
<p>1. Overview of Technologies (features, specification, functions, owners, etc.)</p> <p>Use of an underground trench filled with Clinoptilolite (a type of zeolite) has been proven to be an effective passive groundwater contamination removal system. A narrow trench dug with a one pass trencher and filled with this variety of natural zeolite provides both a blockade and sorption of strontium 90 in contaminated groundwater while allowing water to pass through. This technology, while developed for strontium 90 capture does have the potential to capture cesium 137 and 134 at the same time.</p> <p>Such a system installed between an underground contamination plume and the nearby body of water or escape route of the groundwater can stop the migration of contamination. Exact locations for potential implementation at Fukushima Daiichi would need to be identified based on groundwater flows and plume locations. The uphill area where leaking tanks are currently located may be one candidate application for this technology.</p> <p>Please see the attachment for specifications, details of the functions of the system and diagrams.</p> <p>Owners: Any patentable technology may be owned by University of Buffalo, West Valley Environmental Services and AMEC Geomatrix as these were the stakeholders in the original implementation at the West Valley Nuclear Site. All equipment suggested to complete the project are based on capability or adherence to technical standards. "Like for like" equipment could be exchanged to suit availability in Japan. Brands of equipment suggested are to clarify the concept. We have no affiliations of any type with the brands or companies used as representative suggestions.</p>	
<p>2. Notes (Please provide following information if possible.)</p> <ul style="list-style-type: none"> - Technology readiness level (including cases of application, not limited to nuclear industry, time line for application) 	

This is a proven technology already in use at the West Valley Nuclear Site in New York state in the US. The concept was fully tested before implementation by the University of Buffalo Civil Engineering Department.

This concept has been in use at West Valley Nuclear Site since October of 2010 after extensive testing. Please see the attached document for a detailed overview of the project at West Valley Nuclear Site and applicability to Fukushima Daiichi.

- Challenges

The challenges for this project would be existing underground structures and total load capability of the zeolite media. Due to Fukushima Daiichi having many underground structures and utilities, care would need to be taken to identify those before committing to a trench location. Utilities no longer needed could be severed but would need to be analyzed for potential to disrupt the filtration wall and potentially capped. Due to the large volumes and high levels of contamination within the groundwater at Fukushima Daiichi, the zeolite may reach maximum sorption and need to be replaced earlier than in the case study at West Valley Nuclear Site.

- Others (referential information on patent if any)

The original concept and working examples of this technique may fall under patents of the University of Buffalo or their partner companies. Representative suggestions of brands or types of equipment may be subject to their own patents with the manufacturer.

3.

【Areas of Technologies Requested】

- (1) Accumulation of contaminated water (Storage Tanks, etc.)
- (2) Treatment of contaminated water (Tritium, etc.)
- (3) Removal of radioactive materials from the seawater in the harbor
- (4) Management of contaminated water inside the buildings