

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

Technology Information	
Area	6. Understanding the groundwater flow
Title	Control of Offsite Discharge
Submitted by	Atomic Energy of Canada
<p>1. Overview of Technologies (features, specification, functions, owners, etc.)</p> <p>Atomic Energy of Canada Limited can provide two solutions to aid in understanding, controlling and dealing with offsite discharge of radioactivity at Fukushima Daiichi: First, a gamma sediment probes can be towed in contact with the seabed near the utility. The reconnaissance will identify zones of freshwater seepage and possible transport of radioactivity to the sea. The technology uses a radiation detector to locate the Bremsstrahlung radiation from 90Sr and 90Y and the gamma radiation from 137Cs. The technology also uses electrical conductivity contrasts between the upwelling groundwater and the seabed. A reconnaissance survey in the immediate offshore areas can provide detailed information of locations and importance of groundwater discharging to the sea without the use of boreholes. After locating discharge areas the flux of water and contaminants can be measured using in situ seepage meters and piezometers. Then the area can be monitored and decisions made as to remedial methods. Second, reactive sand packs may be useful to allow construction below the water table in contaminated areas. This technology is the emplacement of a sandpack, around the wells that are screened in the contamination zone. The sandpack material reacts with and sequesters the contaminants as water is pumped out. This can achieve a degree of contaminant treatment in-situ and reduce the costs of storing, securing and treating the water before it can be released. In the preferred situation, the contaminants remain underground and the extracted water is suitable for surface release as it is pumped from the ground. This has recently been submitted for publication. In its first application a granular zeolite (clinoptilolite) was used to provide in situ primary treatment of 90Sr during construction of a permeable reactive barrier.</p>	

2. Notes (Please provide following information if possible.)

- Technology readiness level (including cases of application, not limited to nuclear industry, time line for application)

- Challenges

- Others (referential information on patent if any)

【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
- (5) Management measures to block groundwater from flowing into the site
- (6) Understanding the groundwater flow