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

Technology Information	
Area	5 (Select the number from "Areas of Technologies Requested")
Title	Development of automated sensor for $^{90}Sr/^{90}Y$ determination in surface and graoundwaters based on Cherenkov counting
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1. Overview of Technologies (features, specification, functions, owners, etc.)

Design of on-line, automatic sensor based on detection of Cherenkov Radiation.

The device is aimed to detect ^{90}Sr via its daughter ^{90}Y in aqueous streams using Cherenkov radiation.

To register high-energy β-particles of daughter ^{90}Y in the stream, the water is passed through the vessel emplaced between two PMTs. The volume of water visible for PMT is 0.2-0.5 L. The chemical pretreatment is not required. The device is mobile and could be easely transported.

The major advantages: simplicity of use, discrimination from α–radiation and low-energy β–radiation, automatic measurements, possibility to sample groundwater from wells.

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

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

  The prototype was used to measure the radioactivity of marine water and various simulated solutions.

  The modification for Fukushima purposes would take around 3 months.
- Challenges

  High concentration of other high-energy β–immited
- Others (referential information on patent if any)

  Russian Patent application: #2012128027 "Flow-through Cherenkov detector for the measurements of beta-radioactivity of aqueous media".

  No analogues of such device exist according to our knowledge.

【Areas of Technologies Requested】

(1) Removal of radioactive materials from the seawater in the harbor

(2) Management of contaminated water inside the buildings

(3) Management measures to block groundwater from flowing into the site

(4) Understanding the groundwater flow