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

Technology Information	
Area	6 (Select the number from "Areas of Technologies Requested")
Title	Equipment for ^{90}Sr and ^{3}H control (measurements) in the water
Submitted by	Khlopin Radium Institute

1. Overview of Technologies (features, specification, functions, owners, etc.)

Equipment for "on-line" ^{90}Sr (and ^{137}Cs) measurements consists of 2 water pampers, control unit and Cherenkov sensor (about 1 l sensitive volume for flowing water flood). It's allow to get results of ^{90}Sr and ^{137}Cs activity of 2- 10 Bq per 1l for the measurement times of 100 - 1000 s.

The maximum of ^{90}Sr and ^{137}Cs activity is about 1000 Bq per l.

It's possible, using smaller Cherenkov sensor to measure activity up to megaBq per l.

And, of course, to complete by additional scintillation NaI detectors to measure the gamma-emitting radionuclides.

This equipment has used at PO "MAYAK" for "on-line" ^{90}Sr and ^{137}Cs measurements of refined discharged wastewaters.

The weights are:

- sensor about 3 kg,
- control unit - 1 kg
- passive (Pb) shield - up to 250 kg

It's possible to make the version of the equipment for "field" work.

The liquid scintillation counting with periodicity water sampling were used to control of the Tritium concentration in discharged wastewaters.

Water sample (about 0.2 – 1 l) treated with purification procedure (using membrane or thermal distillation) and then be measured by liquid scintillation counter. The liquid scintillation counter has the passive (Pb) shield. It takes from 5 m (10000 Bq per l) up to 3 h (2 Bq per l) to analysis.

KRI have used that equipment to measure the discharged wastewater and surface water.

The weights are:

- purification unit about 5 kg,
- control unit - 20 kg
- passive (Pb) shield - up to 700 kg

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

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

It's take about 2- 4 monthes to make the ^{90}Sr - ^{137}Cs or Tritium equipment, and up to 10 sets per year.

- 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