[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	Methods for blocking ground water ingress into buildings or in the ocean
Submitted by	R&D Center for expertise of projects and technologies

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

We suggest a method for ground water blocking using discharge wells injection of solutions in the form of hydrogels on the basis of liquid glass, oxalic acid, aluminum sulphate or aquaaurate (polyoxyaluminum chloride). The wells are drilled to a depth of single or double waterproof layers (depending on geomorphologic characteristics of the soil), 1 m apart from one another. The proposed solutions have a wide range of viscosity and gel time that allows using them for injection into various permeability soils. Injection solutions are made by mixing 2 solutions: aqueous solution of liquid glass and aqueous solution of oxalic acid and aluminum sulphate or aquaaurate. Gel time and viscosity depend on those solutions proportion. The soil treatment process has several phases such as soil moisture and soak treatment, gel processing, soil-gel combined structure processing. Water-soluble polymer modifiers can be used to improve waterproofing properties of the gels.

Benefits of the proposed method:

1. The materials employed possess resistance to ground waters and their components, as well as mechanical reliability and radiation stability.

2. The injections solutions are easy to prepare, their composition and, therefore properties are flexible depending on the soil permeability.

Work on the impervious barriers development has been being carried out under the contract with Rosatom for one of their enterprises since 2008.

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