

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

Technology Information	
Area	4, 5 and 6 (Select the number from "Areas of Technologies Requested")
Title	Rapid analysis technology and capability
Submitted by	UK National Nuclear Laboratory (NNL)
<p>1. Overview of Technologies (features, specification, functions, owners, etc.)</p> <p>New Technology on the Market</p> <p>The NNL has just developed a system that undertakes automated sequential extraction that allows the local analysis of liquid samples providing alpha, beta and gamma spectroscopy including Sr-90. The system is being launched in the UK in the next few months and aims to allow lab based analysis to be done in the field by offering a means to obtain alpha, beta and gamma spectroscopic analysis of samples quickly and cheaply. By bringing the lab to the sample the technology significantly reduces analysis, transport and operational time. The system is less than 600 cm by 300 cm foot print and is light weight.</p> <p>Capability and Core Skills</p> <p>NNL has over 25 years experience providing radiometric measurement and analysis. We provide high quality data which is underpinned with ISO17025 accreditation and have a proven track record of exceeding customer's expectations. Analytical support has been provided to all 18 UK nuclear power stations analyzing routine and diverse sample matrices including effluents and a wide range of operational and waste decommissioning samples. The radionuclide determination involve chemical separations, isotopic fingerprint analysis and on going monitoring effluent programs, and handle activity levels ranging from free release to 20mSvh⁻¹. This experience includes analysis of a wide range of sample types for Sr-90 and tritium.</p> <p>Case Study: Liquid Effluent Monitoring</p> <ul style="list-style-type: none"> Challenge <p>Monitoring of effluent discharge and pond water samples was required by EDF Energy to allow the sites to meet statutory reporting requirements.</p> <ul style="list-style-type: none"> Solution <p>NNL's analysis regime includes quarterly and annual analysis of effluent, pond water and Tritiated waste storage tanks for various determinants including tritium and Sr-90.</p> <ul style="list-style-type: none"> Benefits 	

NNL has delivered quality assured measurements within tight time scales enabling EDF Energy to meet statutory reporting requirements.

The NNL has a high level of expertise with regards measurement and analysis. NNL has used this experience to advise other UK laboratories on analysis, quality assurance and technical best practices.

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

- Technology readiness level

For the new technology providing in the field analysis, TRL is 5

- Challenges

- Others (referential information on patent if any): Please enquire

【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