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Polymer Technologies for the Solidification of Complex L/ILW Liquid Radioactive Waste: Global Case Studies of Applications and Disposal Options

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POLYMER TECHNOLOGIES for the SOLIDIFICATION OF COMPLEX L/ILW LIQUID RADIOACTIVE WASTE: GLOBAL CASE STUDIES of APPLICATIONS AND DISPOSAL OPTIONS

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ABSTRACT

For the past 20 years, a solidification technology has been applied to LRW on a global basis that provides

• U.K., Harwell & Sellafield
Operations at Harwell have incorporated the use of the N960 polymer along with other products to retrieve remote handled intermediate level waste (RH-ILW) from legacy tube stores. The tube stores were constructed in 1950 and are now undergoing decommissioning.
At Sellafield an extensive test program was initiated in 2006 to evaluate the polymers effectiveness with over 90 oil sludge types. The solidified forms were encapsulated in cement.

• France, Cadarache
Cadarache LOR waste streams, two radioactive scintillation cocktails, were treated with the polymers and solidified by STMI-AREVA. One complex waste stream consisted of organic compounds TBP, xylene, mesitylene and diphenyloxazole and water. The solidification work led to an examination of possible disposal routes in France at ANDRA and Cyclife (Socodei).

• United States, DOE Rocky Flats
Rocky Flats was the first major weapons site to undergo decommissioning in the early 2000's. Orphan waste streams were problematic as there was no pathway for treatment or disposal. The transuranic (TRU) waste streams included mixed organic waste with freon, carbon tetrachloride and trichloroethylene, used pump oil and a methanol based waste with cyclohexane. The RLW was solidified, packed in steel drums and placed in final storage at WIPP.

• Romania, Cernavoda NPP
In 2008, Cernavoda NPP began a program to solidify lubricating oil from their CANDU 6 reactors through its prime contractor, MATE-FIN. The oils contain a high valve of tritium. Over the years large volumes of oil have been treated and shipped to Cyclife, Sweden and Belgoprocess, Belgium for incineration.

Other projects in Russia, China, Kazakhstan and Slovenia will be discussed.

Do you wish to participate as a Young Professional?

No

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Do you wish to be considered for a Young Professional grant?

No

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