

W A S T E E N C A P S U L A T I O N

Background

Columbia Energy & Environmental Services (Columbia Energy) has partnered with Llyon Technologies to provide a chemically engineered radioactive waste encapsulation system at the molecular, crystalline and physical level for waste disposal. The process transforms active chemical contaminants to an inert and non-reactive state.

The L-TEM™ is comprised of a select range of fine grain-sized materials used as additive products and consisting of alkali and alkaline earth elements. These are combined in a computer modeled and pre-engineered process, which when hydrated, form a complex chemical reaction and a resultant stable matrix. The matrix immobilizes and both molecularly and physically encapsulates radiological solids, sludges or other industrial wastes and converts them to monolithic products.

At the chemical level, the process employs pre-sized crystalline cages that are naturally pozzolanic. Contaminate molecules are chemically attracted to these cages and are transformed into an inert, non-reactive state. At the physical level, the chemical reaction accelerates the crystallization process by forming long needle connections within the matrix of the combined host materials and the L-TEM™ binder blend.

Advantages

Advantages of the L-TEM™ waste encapsulation process over traditional grout or cement include:

- ▶ Significant reduction or elimination of leachability potential and permeability
- ▶ Matrix maintains and alkaline state which is resistant to acidic degradation resulting in long-term stability

