

## Crystalline Silicotitanate (CST) Ion Exchange - Ceramic Waste Form

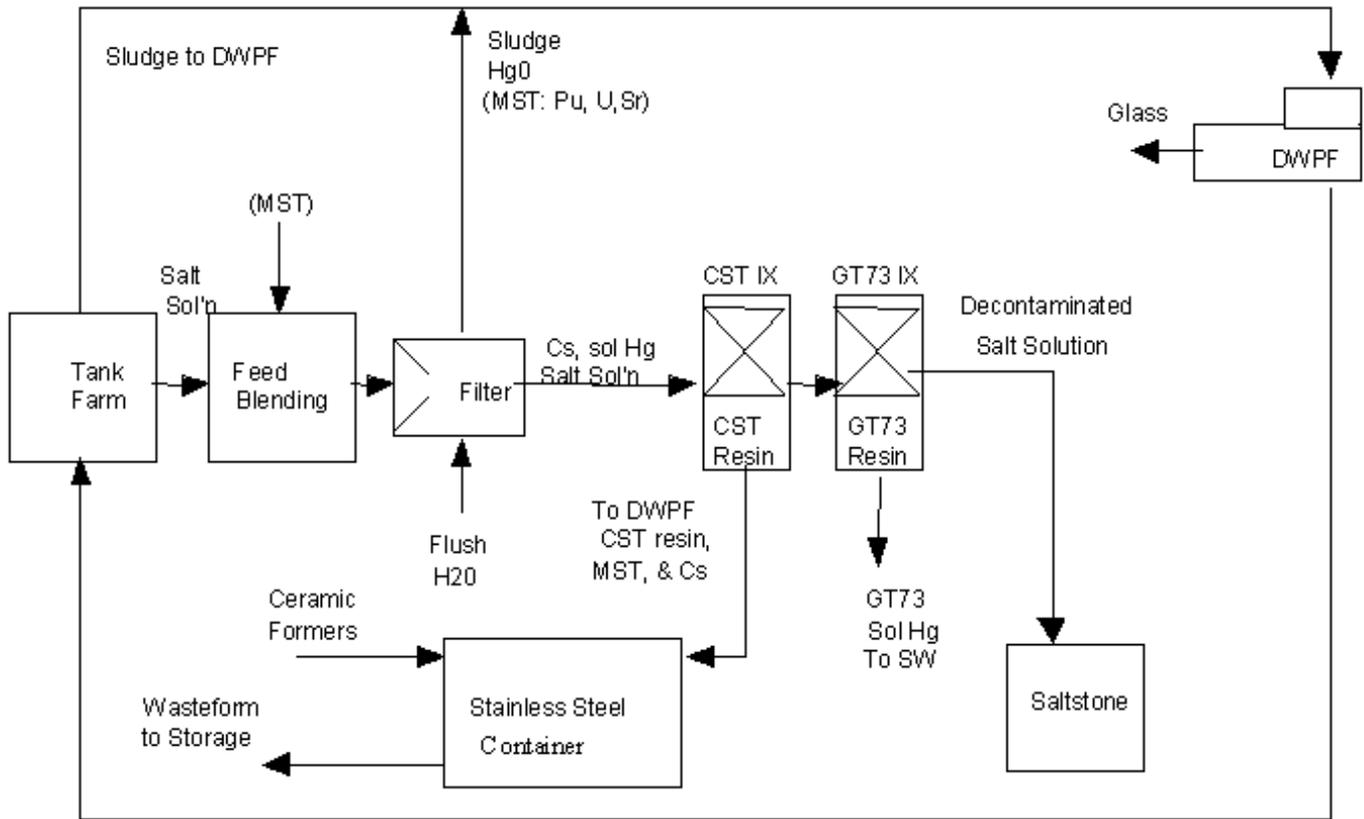
The proposed process would employ the crystalline silicotitanate (CST) resin to remove Cs from the salt solution. There may also be some level of decontamination of Sr, Pu, and U from the salt solution. If Sr, Pu and U are not adequately removed, monosodium titanate (MST) could be added to sorb these radionuclides. Filtered sludge and MST are sent to DWPF for vitrification. The Cs loaded resin would be immobilized into a durable, temperature tolerant ceramic waste form. This ceramic would be stored on-site until the Cs activity becomes negligible (~300 years). Removal of decay heat would be a key requirement during the early years of storage. The decontaminated salt solution would go to the Saltstone Facility to be made into a Class A grout after treatment to remove Hg.

### Variations:

- 1) A series of "batch and stir" CST removal steps (tanks) could be employed instead of the CST IX column(s).
- 2) Other alternatives for resin storage are possible, e.g. make the ceramic in DWPF type canisters and store in GWSB until ready for disposal in a Federal repository.

### Merits:

- 1) Non-hazardous inorganic reagent
- 2) High efficiency Cs removal
- 3) Minimal impact on current DWPF process and waste form
- 4) Potentially simpler and cheaper immobilization technology compared to vitrification



DWPF Recycle