

Title (en)
Dewatering nuclear wastes.

Title (de)
Entwässerung von Kernabfällen.

Title (fr)
Drainage de déchets nucléaires.

Publication
EP 0257159 A2 19880302 (EN)

Application
EP 86307775 A 19861008

Priority
US 89942686 A 19860821

Abstract (en)
A method of predictably dewatering a slurry that contains radioactive particles to a condition for safe permanent storage. Interstitial water is removed from the slurry, and then a sufficient quantity of adsorbed water is removed from the particles so that at the permanent storage temperature the particles will be just unsaturated with respect to adsorbed water. The dewatering endpoint is set to at least unsaturate the particles at the permanent storage temperature. This minimum volume of adsorbed water removal is necessary to assure the subsequent uptake of any condensed water that develops during storage in a sealed container. An upper dewatering endpoint is preferably set so that the volume of adsorbed water removed from the particles does not excessively unsaturate the particles, so that the sealed storage container that eventually confines the dewatered particles will not burst if the particles later become exposed to ambient water or water vapor. This upper dewatering limit is both particle- and container-specific and is set to assure that any increase in particle volume, if the particular particles become further hydrated at the permanent storage temperature, will not exceed the volume of compressible gas, typically air but alternatively an inert gas, in the particular container. Systems and apparatuses for dewatering nuclear wastes are also provided. In one embodiment, a disposable container with a top region and a bottom region is provided with a waste influent port for introducing a slurry of radioactive particles into the container bottom region and with an air inlet port for introducing relatively dry air into the container top region. A vapor collector manifold is selectively disposed in the container bottom region to draw air uniformly through the particle bed. A vapor outlet port, connected to the vapor collector manifold, is provided to remove the humidified air that has passed through the particle bed from the container.

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