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(54) Dewatering nuclear wastes.

(57) 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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EUROPEAN SEARCH REPORT

Application Number

EP 86 30 7775

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	DE-A-1 614 497 (SIEMENS) * Claim 1 * ---	1	G 21 F 9/00
A	CHEMICAL ABSTRACTS, vol. 82, no. 10, 10th March 1975, page 446, no. 64141x, Columbus, Ohio, US; & HU-A-8 973 (EROMU ES HALOZATTERVEZO VALLALAT; MAGYAR TUDOMANYOS AKADEMIA IZOTOP INTEZETE) 28-10-1974 * Abstract * ---	1	
A	US-A-4 040 973 (K.SZIVOS et al.) * Claim 1 * ---	1	
E	EP-A-0 196 843 (NUCLEAR PACKING) * Claims 1-20 * -----	1-70	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

G 21 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	08-02-1989	PEETERS J.C.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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