

FACT SHEET

DISPOSAL OF LOW LEVEL WASTES CONTAINING
TRANSURANIC ELEMENTS

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1) Background

Part 61 has retained the general definition of low level radioactive waste (LLW) set out in the LLW Policy Act. The Policy Act defines LLW as radioactive waste not classified as high-level radioactive waste (HLW), transuranic waste (TRU), spent nuclear fuel or byproduct material as defined in §11e.(2) of the Atomic Energy Act (uranium or thorium tailings and waste). However, TRU is not defined in the Policy Act, in other Acts, or in Commission regulations. The term "transuranic" generally means that the atomic number of the isotope is greater than uranium. Transuranic nuclides are present in trace amounts in the environment from fallout and in much of the routine wastes from nuclear power plants. NRC does not single out transuranic waste as a separate waste type. Rather, transuranic radionuclides are addressed through our rulemaking efforts as other radionuclides are addressed. At the present time, none of the low-level waste disposal sites will accept low-level waste that contains transuranic elements in concentrations greater than 10 nanocuries per gram (10 nCi/gm).

10 CFR Part 61 TRU Limits

Part 61 established concentration limits for three classes of waste based on radiological hazard and disposal requirements. Class A wastes are least hazardous and have fewest requirements for disposal. Class C wastes are the most hazardous and have the most extensive requirements. Class B wastes fall in between A and C.

Proposed Part 61 retained the 10 nCi/gm limitation in effect at existing near surface disposal facilities regardless of waste class. Based on public comments on the proposed rule, the maximum allowable concentrations for Class C waste, which establishes the upper bound for waste acceptable for routine near surface disposal, were raised by a factor of 10. The rationale for this change was the fact that waste disposed beneath 5 meters of cover would be difficult to contact even after 500 years and the fact that Class C wastes would be diluted by the other wastes whose radioactivity would have decayed to a low level by that time. In addition, the average concentrations of radionuclides for waste should be less than the maximum calculated concentrations. The limits for Class A wastes were not changed. The factor of 10 increase for Class C waste did not involve changing the performance objectives or dose limits. The Commission reevaluated its analyses to temper unnecessarily conservative assumptions and present more realistic estimates of impacts in the final environmental impact statement on the rule.

Thus, Part 61 provides that waste contaminated with long lived alpha emitting TRU nuclides at or below 10 nCi/gm would be Class A waste. Waste above 10 but below 100 nCi/gm would be Class C waste. Waste containing concentrations greater than 100 nCi/gm would be considered generally unacceptable for near surface disposal. Under Part 61 such wastes would be evaluated on a case-by-case basis for acceptability under §61.58. One potentially acceptable way to handle wastes exceeding the Class C limits would be by burial with a cover greater than 5 meters. (See fact sheet on disposal of greater than Class C wastes).

Management Options

Presently, most of the small number of licensees with wastes exceeding the 10 nCi/gm limitation are storing such wastes. Such wastes can be 1) considered on a case-by-case basis for disposal at a near surface facility with additional measures for protection as discussed above, 2) stored by the generating licensee until alternate disposal methods are developed, or 3) stored by another licensee or the Department of Energy (DOE) until alternate disposal methods are available. The volumes of such wastes are relatively small. Licensees storing wastes are principally those licensees who were involved with fabrication of fuels containing plutonium and are now decontaminating or decommissioning their facilities. Manufacturers and users of a variety of Am-241 sources also generate small amounts of wastes exceeding the 10 nCi/gm limit. Appeals have been made by NRC and industry to DOE to accept TRU contaminated wastes currently unacceptable at commercial sites for storage. DOE has refused citing legal questions and difficulties with establishing charges. Legislation pending before Congress would provide for short term (2 year) acceptance of commercial sector TRU wastes by DOE. Finally, the high level waste rule, 10 CFR Part 60, is not expected to preclude disposal of wastes other than HLW and spent fuel in the HLW repository.