

Storage solutions for tritiated solid wastes: French strategy

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Solid wastes contaminated by tritium are produced during the operation and dismantling of tritium laboratories. Often, tritiated wastes disposal is impossible due to tritium inventory or tritium outgassing.

The 2006 programme act on the sustainable management of radioactive materials and wastes is detailed in the French Law. At the end of 2008, Commissariat à l'Énergie Atomique has developed studies in order to store tritiated wastes to reduce their radioactivity before disposal.

Specifications for tritiated solid wastes and consequences for storage buildings are:

- wastes are separated by compounds (metallic, plastic, glass...),
- first wall waste must be treated to limit tritium inventory and tritium outgassing,
- 50 years are proposed for storage before disposal,
- wastes are classified according to tritium contamination level and other radionuclides concentrations (6 tritiated waste categories).

Storage solutions for tritiated wastes are discussed in terms of packaging, capacity, safety, radioprotection... for each category:

- very low level tritiated waste,
- purely tritiated waste with low outgassing (< 1,3 GBq/year/drum),
- purely tritiated waste with high outgassing (< 20 GBq/year/drum),
- uranium waste with tritium (outgassing < 20 GBq/year/drum),
- low and medium level waste with tritium (short-lived radionuclides: radioactive half-life \leq 31 years),
- high level waste with tritium (long-lived radionuclides: radioactive half-life > 31 years).