

## SUBJECT 8

### RADIOACTIVE AND CONVENTIONAL WASTE MANAGEMENT

#### While in operation

##### **Radioactive waste**

The reduction in the volume of solid radioactive waste is one of the objectives adopted at the design stage and which aims to lessen the unit's impact on the environment.

Concerning fuel, the EPR unit uses the same types of enriched uranium or plutonium elements (mixed fuel) as the previous generation reactors but it does so more efficiently due to its neutronic design and the use of high combustion rate fuel: it therefore consumes less fuel (17%) and produces less irradiated material - and therefore waste (26%) - for the same amount of energy produced. The spent fuel is removed for reprocessing after it has been used and the residual waste created is packaged, to ensure the radioactive matter is confined, in glass representing once conditioned 5 m<sup>3</sup> per year of high activity long-lived<sup>14</sup> waste and in concrete packages representing once conditioned 4 m<sup>3</sup> per year of long-lived intermediate level waste. This waste is stored in La Hague.

The production of operating waste is limited to 80 m<sup>3</sup> per year thanks to the materials chosen to build the reactor and, from the moment the unit is started up, the zoning<sup>15</sup> of premises so as to reduce the possible contamination of conventional equipment by radioactive equipment. Short-lived low level waste, a by-product of the operating process, is sorted, treated and stored in the EPR unit's Radioactive Waste Processing Building so as to reduce the volume of waste as much as possible (compaction) and to ensure the radioactive material is confined through suitable packing. The waste is sent, after monitoring, to the approved storage facilities in Soulaines and Morvilliers or to the Centraco incineration and fusion facility following inspection.

##### **Conventional waste**

Conventional waste produced during the operating stage is also subjected to a strict management procedure so as to reduce its volume. It is sorted and stored in an adapted temporary location on the site. The quantity of waste produced annually is estimated at 600 tonnes, for which an energy or material conversion rate of 80% is targeted.

#### During the construction phase

Waste produced during the construction phase is treated, like during the operating phase, in a temporary location specifically created on the building site. The materials extracted during the earth-moving works, excavated material and rocks, are reused as much as possible on the site as fill and in the making of concrete after grinding.

☞ **TO FIND OUT MORE**, please see:

- **Document 6** *Pièce B - Chapter IV.2.6: Radioactive and conventional waste*
- **Document 6** *Pièce E - Chapters VI.2.1.3, VI.2.2.5, VI.3: Measures foreseen regarding terrestrial ecosystem and public health*

<sup>14</sup> Lifetime of a radioactive substance depends on its radioactive period, which is the time after which its activity has reduced by a half because of the natural decrease of the radioactive source.

<sup>15</sup> Separation of zones presenting contamination risks from other zones by means of doors, chambers, ...