1. Introduction

The decommissioning of nuclear power plants in Korea was decided due to the permanent suspension of the Kori Unit 1. A large amount of radioactive waste may be generated when decommissioning nuclear power plants. In particular, high-activated reactor vessel internal (RVI) is evaluated as Intermediate-level radioactive waste, and there is a risk of radiation exposure to the treatment.

In this paper, it describes the low and intermediate-level radioactive waste container that occurs during decommissioning at nuclear power plants.

2. Main Subject

2.1 Classification of Decommissioning Waste

Most of the radioactive waste generated by decommissioning the nuclear power plant is metal and debris type soil and concrete. Most are low-level or very low-level radioactive wastes, and high-activated RVI which is classified as intermediate-level radioactive wastes. The radioactive waste generated in decommissioning is classified as Table 1.

<table>
<thead>
<tr>
<th>Waste Classes</th>
<th>Typical Characteristics</th>
<th>Disposal Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Level Waste (HLW)</td>
<td>4,000 Bq/g for alpha-emitting radionuclide having a Half-life longer than 20 years</td>
<td>-Deep geo.</td>
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<tr>
<td>Intermediate Level Waste (ILW)</td>
<td>Less than HLW, More than concentration Limit of LLW</td>
<td>-Deep geo. -Silo</td>
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<tr>
<td>Low Level Waste (LLW)</td>
<td>More than 100 times of CW level, Less than concentration limit of LLW</td>
<td>-Deep geo. -Silo -Eng. barrier</td>
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<tr>
<td>Very Low Level Waste (VLLW)</td>
<td>More than concentration limit of CW, Less than 100 times of CW level</td>
<td>-Deep geo. -Silo -Eng. barrier, -Landfill</td>
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2.2 Disposal of Oversea Waste Best Practice [2]

US : The BUD (Beneficial Use Determination) release criterion for foundations and slabs, as well as for materials used as backfill (i.e., concrete, asphalt, soil). Reactor vessel and internal were cut off in the water and high-activated structures were removed while operating a purge system capable of removing nuclides in the air. In addition, the use of reusable containers (Fig. 1) has reduced costs.

Fig. 1. Inter-Modal, Reactor Head and Pressurizer.
Spain: The standard of disposable waste containers was diversified to facilitate disposal. Plastic bag, metal drum and metal box etc. were used (Fig. 2).

Fig. 2. Packages at E1 Cabri Disposal site.

Germany: Volume 1.32 m³ to 10.8 m³ waste containers used, small volume containers (MOSAIK II) were packed with high-activated waste, and large volume containers were packed with low-level radioactive waste (Fig. 3).

Fig. 3. MOSAIK II and Steel Container.

Sweden: Reactor vessel internal, which are highly radioactive wastes exceeding the disposal standard, were packed and stored in BFA box (Fig. 4). The BFA box is metal container with 3.4 x 1.5 x 2.3 m, thickness 10 cm. The container can pack 23 tons of waste.

Fig. 4. BFA Boxes for High Activity Waste in Sweden.

3. Conclusion

The intermediate-level radioactive wastes generated when decommissioning the nuclear power plants have high radiation dose and are difficult to pack. The large amount of radioactive waste treatment and disposal has a large impact on the cost of decommissioning. Considering the limited radioactive waste disposal volume and considering the disposal stability such as employee radiation exposure, more efficient waste disposal is needed.

REFERENCES