Grouping of Radioactive Wastes During the Decommissioning of PWR NPPs

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1. Introduction

Grouping of radioactive wastes is necessary to perform the more safe and efficient management of radioactive waste during decommission of NPPs. For those purpose, the generation characteristics of radioactive waste such as waste types, generation rate, radioactivity and physico-chemical characteristics should be identified and classified during decommissioning activities. It is also important to know the waste route from generation to on site, temporary storage, treatment facility, transfer and disposal site. In each step, the information of waste characterization should be known for decommissioning activities. Therefore, the concept for grouping of decommissioning radioactive waste are proposed for the efficient management of wastes during decommissioning of Kori Unit 1.

2. Grouping of Decommissioning Radioactive Waste

2.1 Grouping of decommissioning radioactive wastes by generation Characteristics

Radioactive waste will be generated by different materials and amounts, radioactivity during decommissioning of NPPs. Thus, It is essential to group the same types of waste material, shape and radioactivity so that wastes can manage efficiently during the initial step of decommissioning. There are many kinds of radioactive waste such as various type of metal, concreate, cables and the others. The Estimated waste types generated by decommissioning are shown in Table 1.

Table 1. Estimated waste generated by decommissioning

Waste Type		Radioactive level
Metal	SF storage rack	LLW, VLLW, CW
	RV/RVI	VLLW, LLW, ILW
	Large components	LLW, VLLW, CW
	Small metals	ILW, LLW, VLLW, CW
Concrete	Scabbling	LLW, VLLW
	Debris	LLW, VLLW, CW
Wire	cable	LLW, VLLW, CW
Others	resin	VLLW, LLW, ILW
	Cutting Swarf	VLLW, LLW, ILW
	filter	LLW, ILW
	DAW	VLLW, LLW

2.2 Grouping of radioactive wastes by decommissioning activities

Grouping of radioactive waste during decommissioning can be considered by management of on site and central treatment facility. From on site for decommissioning. Radioactive wastes can be grouped clearance wastes, waste to be treated, waste to be untreated. In the central treatment facility, radioactive waste can be grouped clearable waste by washing, radioactive waste which can be decontaminated by physico-chemical decontamination technologies, volume reduction waste by super compaction or melting technology and stabilization or solidification wastes for satisfying the waste acceptance criteria. Table 2 shows the concept of grouping methodology of radioactive wastes from on-site and central treatment facility.

Table 2. Grouping of radioactive waste from on-site and central treatment facility

Division	Waste Type	
On Site	Clearance Waste(Non Additional process)	
	Waste to be treated	• Metals • Nonmetals • Super compaction(SG tube, Alloy)
	Waste to be untreated	• RV/RVI • Activated Concrete • Intermediate Waste resin /filter
Central Treatment Facility	Clearable waste by washing	
	Radioactive Waste	• Decontamination • Volume Reduction • Solidification

2.3 Grouping of radioactive wastes by radioactivity, site and package

Fig. 1 suggested the waste grouping concept according to radioactivity, waste management site and waste packages. Waste package will be determined regarding each waste type and its radioactivity during decommissioning. In present, only 200 L and 320 L of metal container are admitted to the radioactive disposal facility in KORAD. But decommissioning waste will be generated large amounts and various types at a short period. Thus, KORAD-KHNP have discussed the waste acceptance criteria of second and third disposal facility so that they can accept various types of waste package for the decommissioning wastes.

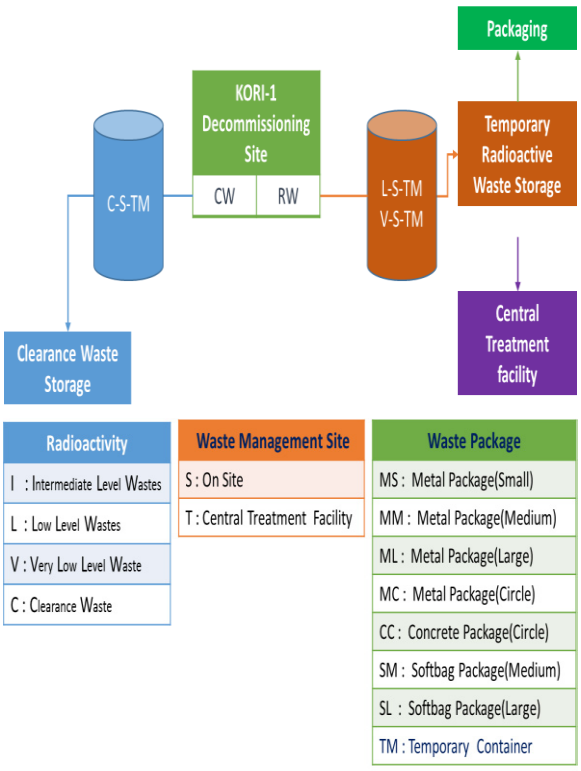

Fig. 1. Grouping of radioactive wastes according to radioactivity, site and waste package type.

KHNP will apply the appropriate size, weight and materials of packages for the different radioactivity and waste types of decommissioning wastes of KORI #1.

3. Conclusion

During decommissioning of NPPs, a lot of waste will be generated and their characteristics are varied with different materials, shape, radioactivity and so on. It is very important to appropriate grouping of waste for minimizing and efficient management of radioactive wastes. In order to achieve this, it is necessary to investigate the waste characterization during decommissioning of NPPs.

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