

# A Comparative Study on Domestic and Overseas WTS for Implementation of the Integrated Radioactive Waste Tracking System

Sun Il Kim, Hak Yun Lee, Ki Tae Yang, and Jong Soon Song\*

Chosun University, 309 Pilmun-daero, Dong-gu, Gwangju, Republic of Korea

jssong@chosun.ac.kr

## 1. Introduction

To efficiently manage information on domestic radioactive waste, it is necessary to build and operate a comprehensive national database (DB) to which the latest information technology (IT) is applied. Recently major advanced countries in nuclear power are digitalizing various safety regulation data and disclose it to the general public through the communication network.

Currently, domestic nuclear power plants, Korea Atomic Energy Research Institute and Korea Nuclear Fuel Company, Ltd. developed their own radioactive waste tracking systems, but these management systems are implemented only for classification and recording information at the basic level.

## 2. Main Title

### 2.1 Key radioactive waste management systems in Korea

**2.1.1 DREAMS (Digital Realtime Enterprise Management System).** Korea Hydro & Nuclear Power Co., Ltd.'s enterprise resource planning (ERP) includes the RAdiation Management (RAM) system for managing the workers' history management function and the radiation work permit system, and the Rad-Waste Management (RWM) system for managing the solid radioactive waste management function and the liquid/gaseous radioactive waste discharge permit and result function.

**2.1.2 WACID (Waste Comprehensive Information Database).** It is an integrated information system that Korea Institute of Nuclear Safety developed to objectively and accurately

manage safety management information regarding domestic radioactive waste and spent nuclear fuel. Depending on the characteristics of the data, KINS developed individual database modules, such as low and intermediate-level waste, spent nuclear fuel, liquid/gaseous radioactive effluent and decommissioning waste.

### 2.2 Key foreign radioactive waste management systems

**2.2.1 NMMSS (Nuclear Material Management & Safeguard System).** It is an integrated system that the US DOE is using for nuclear materials inventory and cycle management, related reporting function, data collection transaction module, and safe management of material balance.

**2.2.2 WWIS (WIPP Waste management Information System).** It is used for history management and nuclide information management related to the disposal of the waste, collected, loaded and treated by the US DOE and the TRU waste, and it is designed to transfer related data and information to NMMSS.

**2.2.3 IWTS (Integrated Waste Tracking System).** This system has a radio network system, and uses a wireless scanner so that workers can scan the barcode on the drum and view and enter the history of the database. (excluding applications related to spent nuclear fuel and high-level waste)

**2.2.4 MIMS (Manifest Information Management System).** INEEL of the US DOE uses this web-based information disclosure system for organizing, searching and viewing the types of low-level waste, the concentration of nuclides, the disposal history of each disposal site by period

**2.2.5 Low-Track.** It is implemented as a submodule of MIMS, and it has the 2-D bar code module, the data transfer function and the regular reporting function with regard to waste management.

**2.2.6 ReVK (RevkRestoff-Verfolgung und Kontrolle).** This system traces the material flow of decommissioning waste. It was developed to efficiently provide the information required by operators and regulatory agencies.

Table 1. Key domestic and foreign radioactive waste management systems

System Name	Nation	Function
DREAMS -RAM,RWM	KOREA	-Inventory management -Waste Tracking System -Safety management -Print the report -ERP system
NMMSS	USA	-Inventory, Material balance management - track material flow - Data transaction
WWIS	USA	-Inventory management -waste information input/output -Data transfer function -Print the report -Waste Rating
MIMS	USA	-Waste information input/output -Search history by repository -Print the report(web)
Low-Track	USA	-Search for disposal waste information -Search history by repository -Print the report(web)
IWTS	USA	-Real-time waste information input/output -Inventory management -bar-code
ReVK	Germany	-Dismantled waste information / print -Inventory management -bar-code

### 3. Conclusion

Different waste-generating organizations, e.g. Korea Nuclear Fuel Company, Ltd., NPP sites and Korea Atomic Energy Research Institute have different radioactive waste tracking systems. Currently the Korea Radioactive Waste Agency, which accepts radioactive waste, manages only the final data of organizations generating radioactive waste, and as it does not adequately manage all process data necessary for waste certification, repeated or periodical monitoring is required.

This paper analyzed the characteristics of the domestic and overseas waste management systems that is required before implementation of the waste tracking system of organizations which accept radioactive waste. If the above analysis results, the classification standards and characterization standards, prescribed in existing international standards and guidelines are used, it will be helpful to the building of the waste lifecycle database.

### REFERENCES

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