

Establishment of Source Classification for Radiation Protection Optimization to Public

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Introduction

❖ Radiation protection principles recommended by ICRP

- ICRP recommended justification, optimization and dose limit as radiation protection principles.
- ICRP 103 recommendation has been emphasized radiation protection optimization as a key part of radiation protection.

❖ Necessity of establishment of source classification for public

- To perform radiation protection optimization for public, dose constraint should be established.
- Dose constraint is a prospective and source related criteria on the individual radiation dose.
- Therefore, source classification should be established to setting dose constraint for public.

Objectives

❖ To establish source classification for radiation protection optimization to the public

- To analyze international organizations source classification
- To analyze domestic source classification
- To establish source classification based on analyzed source classification

Material and Methods

❖ IAEA source classification

- IAEA emphasized that dose constraint should be established for radiation protection optimization for the public.
- Therefore, IAEA presented a source classification for setting dose constraint.
- The source classification is grouped into five categories.

Table 1 : Source classification presented by IAEA

Organization	Classification
IAEA	1. Nuclear Fuel Cycle Facility
	2. Using RI Facility
	3. Naturally Occurring Radioactive Material
	4. Research Facility
	5. Transportation

❖ UNSCEAR source classification

- UNSCEAR established source classification for collecting radiation dose data from several countries.
- The source classification is grouped into six categories.

Table 2 : Source classification presented by UNSCEAR

Organization	Classification
UNSCEAR	1. Naturally Occurring Radioactive Material
	2. Nuclear Fuel Cycle Facility
	3. Medical Facility
	4. Industrial Facility
	5. Military Facility
	6. Others

❖ Korea source classification

- Korea established source classification for collecting radiation dose data for management occupational radiation dose according to NSSC notice 2017-76.
- Also, it established RAWIS, KISOE to manage radiation dose for occupational dose.
- The source classification is grouped into nine categories

Table 3 : Source classification presented by Korea

Country	Classification
Korea	1. Nuclear Power Plant
	2. Industrial Facility
	3. NDT Facility
	4. RI sales and Production facility
	5. Research Facility
	6. Educational Institution
	7. Public Institution
	8. Military Facility
	9. Medical Facility

Result and Discussion

❖ Source classification for public

- Figure 1 shows the source classification to perform radiation protection optimization for public.
- Source classification for public was established based on international organizations and domestic source classification.
- In Korea nuclear power plants began to be decommissioned. Decommissioning site can cause radiation exposure to public.
- Therefore, the site after decommissioning of the nuclear power plant was added to source classification.

Source Classification	
1. Nuclear Power Plant	7. Industry
2. Research Institute	8. Public Institution
3. Decommissioning Site	9. Sale Institution
4. LILW Disposal Facility	10. Educational Institution
5. Spent Fuel Dry Storage Facility	11. NDT Facility
6. Nuclear Fuel Cycle Facility	12. Medical Facility

Figure 1 : Source classification presented in this study

Conclusion

- ❖ In this study, a source classification was established for public to perform radiation protection optimization
- ❖ The source classification established grouped into twelve categories
- ❖ The result of this study will be used as a prior study for setting dose constraints when performing radiation protection optimization for the public

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