

# Conflicts and Proposals on Physical Protection Related Law of Intermediate and Low-level Radioactive Waste Disposal Facilities

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## 1. Introduction

Radioactive waste is generated in the process of generating electricity using nuclear power or in using radioactive materials in various fields. In order to protect such radioactive waste, radioactive waste disposal facility is defined as a nuclear facility in the Act on Physical Protection and Radiological Emergency (hereinafter refer to as “APPRE”). In this paper, we analyze related laws and regulations affecting physical protection of intermediate and low-level disposal facilities (hereinafter refer to as “ILDF”) and propose a plan for strengthening the physical protection level of ILDF.

## 2. Radioactive waste disposal facilities

Currently, the cave disposal facility is operating in the first stage in Korea, and the surface disposal facility is being prepared through the second stage project. In Korea, the type of disposal is limited by the level of radioactive waste by law. The table below summarizes these.

Table 1. Restriction on the disposal of radioactive waste

Disposal method	Target waste
Shallow Disposal	Embedded Ultra-low(UL)
	Surface Low, UL
	Cave Intermediate, Low, UL
Deep Disposal	High, Intermediate, Low, UL

According to the regulation on the classification of radioactive waste and its own disposal standards, it is divided into intermediate level, low-level and ultra-low-level radioactive waste. When the second stage project is completed, wastes below intermediate level will be operated in surface form. Disposal in embedded type is limited to ultra-low level radioactive materials in domestic law and is limited to less than 100 times concentration of its own disposal.

## 3. Physical protection of disposal facilities

As mentioned in the introduction, disposal facilities should be classified as a nuclear facility in accordance with APPRE. In addition, domestic technical standard on management of ILDF describes physical protection standards. Disposal facilities have many obligations under APPRE, but most of the content is in order to comply with physical protection requirements.

In general, nuclear facilities have requirements for physical protection against unauthorized removal and sabotage in use and storage, both at fixed sites and during transport. However, in ILDF, unlike nuclear power plants, there are protection requirement exemptions. Intermediate and low-level radioactive wastes are generally classified as out-of-class nuclear material according to APPRE’s classification. Therefore, it does not fall under unauthorized removal and sabotage requirements of nuclear materials in transit, and there is no protection requirement against unauthorized removal of nuclear materials in use. In conclusion, ILDF must satisfy the protection requirements for sabotage of nuclear facilities that do not use or store nuclear material. The main contents of the protection requirements are access control, detection of illegal intrusion, planning and training, education, evaluation of physical protection regulation, and cyber security response. Since the protection requirements are described simply and minimum requirements are strong, nuclear facility licensee establishes and operates the facility physical protection regulations in detail.

## 4. Conflict with relevant law and regulation

### 4.1 Disaster and safety management basic law

According to this law, the head of relevant central administrative agency can designate the national infrastructure as needed. Currently, ILDF is

designated as the national infrastructure. However, the national infrastructure is not closely linked to the military and police because to the focus on disaster such as earthquake, tsunami, ship sinking.

#### 4.2 Integrated defense law

In this law, national important facilities are designated and managed in three stage in consideration of importance and value. If we look at the meaning of the military and police in terms of domestic protection, you can see how important it is to protect the facility by being classified as national important facilities.

Unfortunately, ILDF is not included national important facilities under this law and is not included in the national security target facility designated by NIS.

#### 4.3 Security business law

Although a facility is equipped with physical protection systems, security guards are a key issue that is to protection of facilities. According to current definition of security business law, special security guards can be operated in case of national important facilities, and therefore it is decided whether they are general security guards or special security guards according to integrated defense law. Therefore, ILDF is a nuclear facility based on APPRE, but operates a general security guard in accordance with security business law.

### 5. Suggestion

The basic idea is that APPRE is the most specific description of physical protection for nuclear facility, so we believe that physical protection level of facility should not be restricted according to other relevant laws. I would like to suggest various suggestions to solve this problem. First is a method of requesting minister of national defense through head of administrative agency or commander of regional army in accordance with procedure for designating national important facilities. Although there is an advantage to be able to carry out without changing procedure, it is difficult to participate in NSSC because national important facilities deliberation committee decide and members concerned with military are determined. Second is to add nuclear

facility defined in APPRE to definition of special security services in article 2 of security business law. In this case, although it is not a national important facility, special security guard can be operated and strict requirements and duties of special guard defined in security business law can be applied to ILDF. Good results can be obtained from point of physical protection, for example, possession of weapons, strict qualification, and strike prevention. These measures increase level of protection of facility sufficiently, but there is a limit to support of military and police due to absence of national important facilities. The last way is to reflect on current APPRE in consultation with relevant agencies and government departments, including MOU with military and police, and definition of a nuclear facility guard similar to a special security guard. Advantages include ability to control all aspects of APPRE itself and to be able to replace it flexibly, which ultimately is direction to go. However, there may be confusion in other facilities, such as nuclear power plants, which are currently operating well, and there are many related organizations, and time is needed and initial confusion is expected.

### 6. Conclusion

Domestic ILDF are operated in accordance with the protection requirements according to APPRE. In Korea, national facilities are classified and managed in order to respond to disasters and threats. The basic idea is that the most specific law on physical protection of nuclear facility is APPRE, and many of measures necessary to implement this law should not be restricted by other relevant laws. It is necessary to discuss whether the relevant laws are intended because ILDF based on APPRE are not important facilities in the country, and it is difficult to conclude an MOU with the military and police and operation of special security guards.

### REFERENCES

- [1] "APPRE", NSSC, 2016.6.2.
- [2] "Security business law", Police, 2016.1.26.
- [3] "Integrate defense law", DOD, 2016.11.30.
- [4] "Disaster safety law", NSA, 2017.1.17.