

# The Fundamental Study on Design of Regulatory Infrastructure for Industrial Use of Radiation Sources in Lao PDR

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## 1. Introduction

### 1.1 Background

- Lao PDR joined International Atomic Energy Agency (IAEA) in November, 2011.
- Department of Science in Ministry of Science and Technology is a national license officer and was appointed to coordinate and cooperate with IAEA.
- In 2016, It made Nuclear Science Division to initiate nuclear and radiation safety work.
- There is some radiation sources have been using in medical and industrial sectors without regulatory infrastructure.
- The government has been considering establishment of regulatory infrastructure to regulate radiation sources in the country.

### 1.2 Objective

To draw a basic concept for regulatory infrastructure to regulate sealed sources to be used in the field of industry in Lao PDR based on the result of review and analysis of regulatory system recommended by IAEA and being implemented in advanced countries.

## 2. Methodology and results

### 2.1 Current status of governmental structure in Lao PDR

- The current governmental structure for radiation safety consists of four parts as shown in figure 1.
- The current governmental structure does not meet all the requirements of establishing a stable regulatory infrastructure.
- There is necessary to setting up the requirements of radiation sources that appropriated in a territory of Lao PDR.
- This study drew basic concept of requirement of radiation sources based on review and analysis of regulatory system recommended by IAEA and good regulatory system under implementation in Republic of Korea.

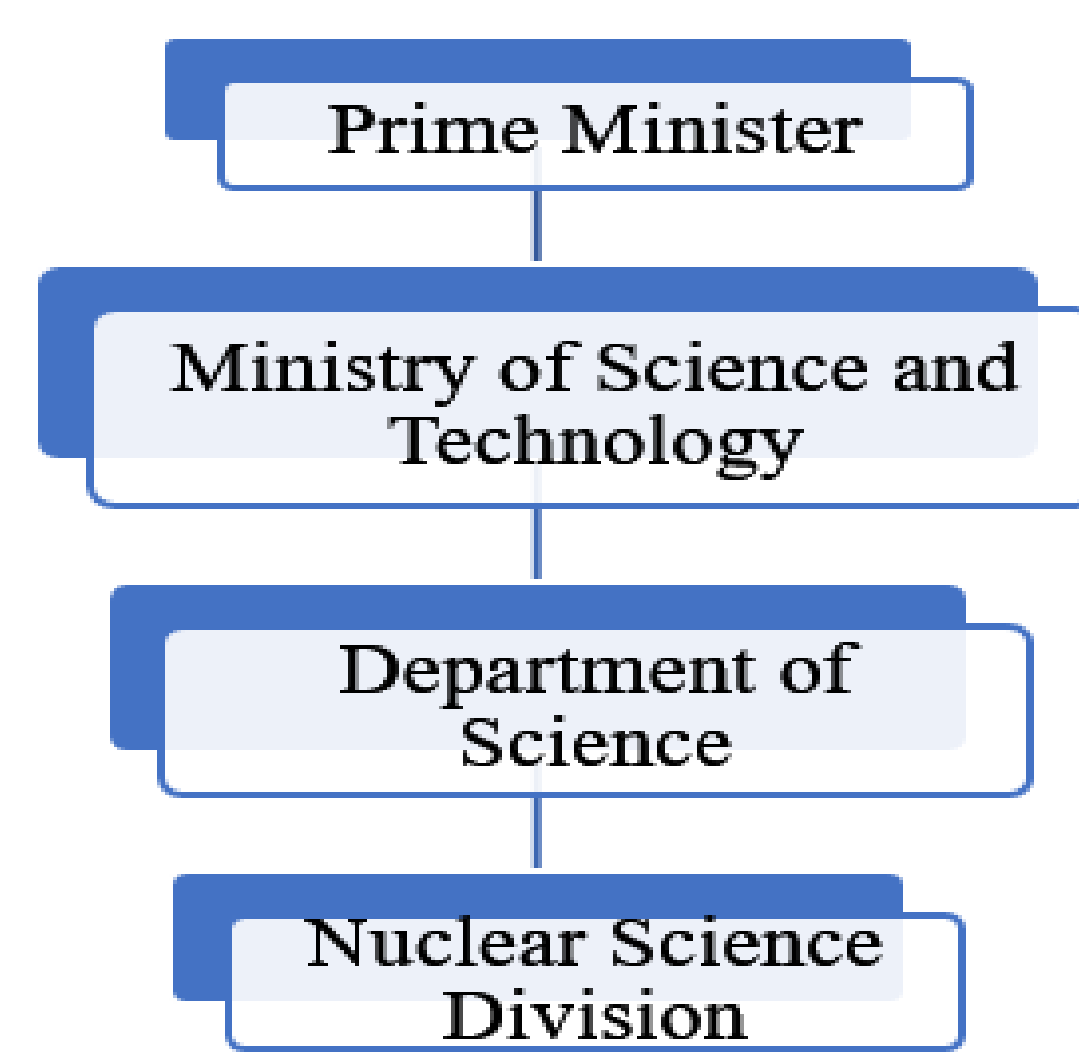


Figure 1: Governmental structure in Lao PDR

### 2.2 Review and analysis of regulatory infrastructure recommendations from the IAEA

IAEA safety standards hierarchy (figure 2) have define the key roles that should be fulfil in establishment of regulatory infrastructure for industrial use of radiation sources.

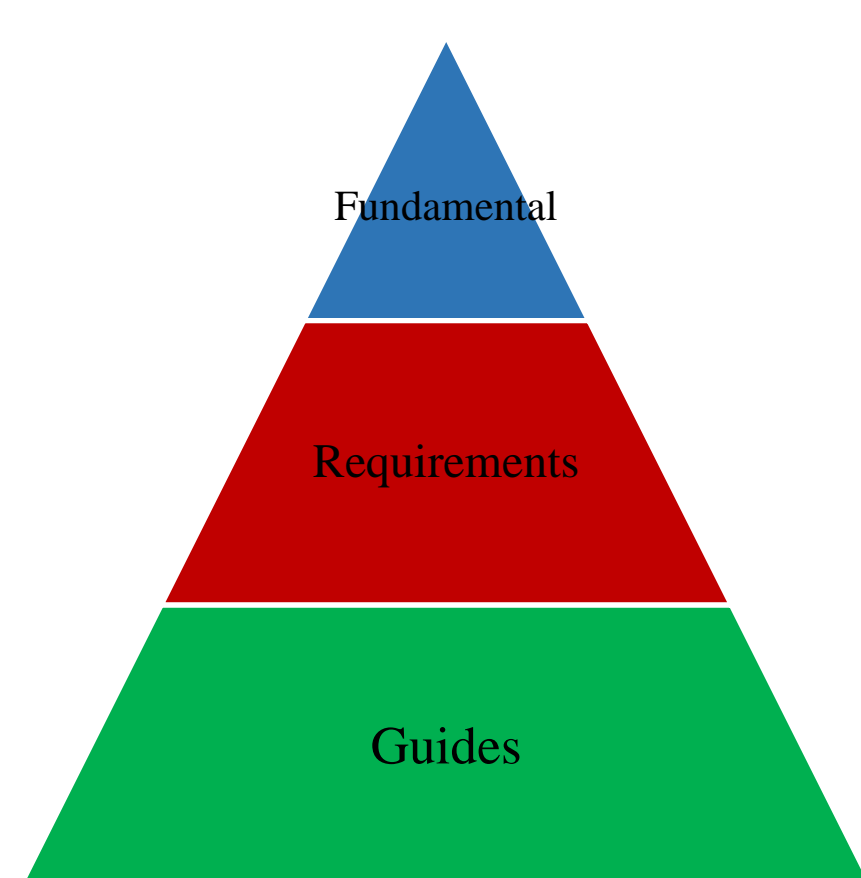


Figure 2: IAEA safety standards

- Safety Fundamentals: Present objectives, concepts, principles of protection and safety. Basic for safety requirements.
- Safety Requirements: Establish the requirements that must be met to ensure the protection of people and the environment. Governed by safety fundamentals.
- Safety Guides: Provide recommendations and guidance on how to comply with the safety requirements.

#### 2.2.1 Major role of the government

The government plays a key role in securing the nuclear safety within the country. Therefore, for adopting regulatory infrastructure, government should make many arrangements for safety to the person or organization responsible for a facility and activity.

#### 2.2.2 Role of the regulatory body

The regulatory body means an authority or a system of authorities designated by the government of a State as having legal authority for conducting the regulatory process, including issuing authorizations related to nuclear, radiation sources and activities, radioactive waste and transport safety.

### 2.3 Review and analysis of Regulatory infrastructure in Republic of Korea

For instance, the nuclear safety regulatory framework of Korea establishes the Nuclear Safety and Security Commission (NSSC) to be a competent authority and Korea Institute of Nuclear Safety (KINS) as a technical institute:

- NSSC is in charge of all aspects of nuclear safety regulation. The authority to regulate nuclear safety and establish nuclear safety policies is clearly entrusted to the NSSC through relevant legislation including the Nuclear Safety Act.
- KINS is the regulatory expert organization to strengthen technical capabilities. KINS is also entrusted by the NSSC to be in charge of technical aspects of nuclear safety regulation, including safety reviews, inspections, education, and safety research.



Figure 3: Regulatory system of Korea

### 2.4 Conceptual design of regulatory infrastructure for industrial use of radiation sources in Lao PDR

Based on review and analysis of IAEA and South Korea regulatory infrastructure, it is clear that the previous governmental structure of Lao PDR has no effective mechanism of regulatory infrastructure. Therefore, this research is extracting some key factors to be a conceptual design regulatory infrastructure as shown in figure 4.

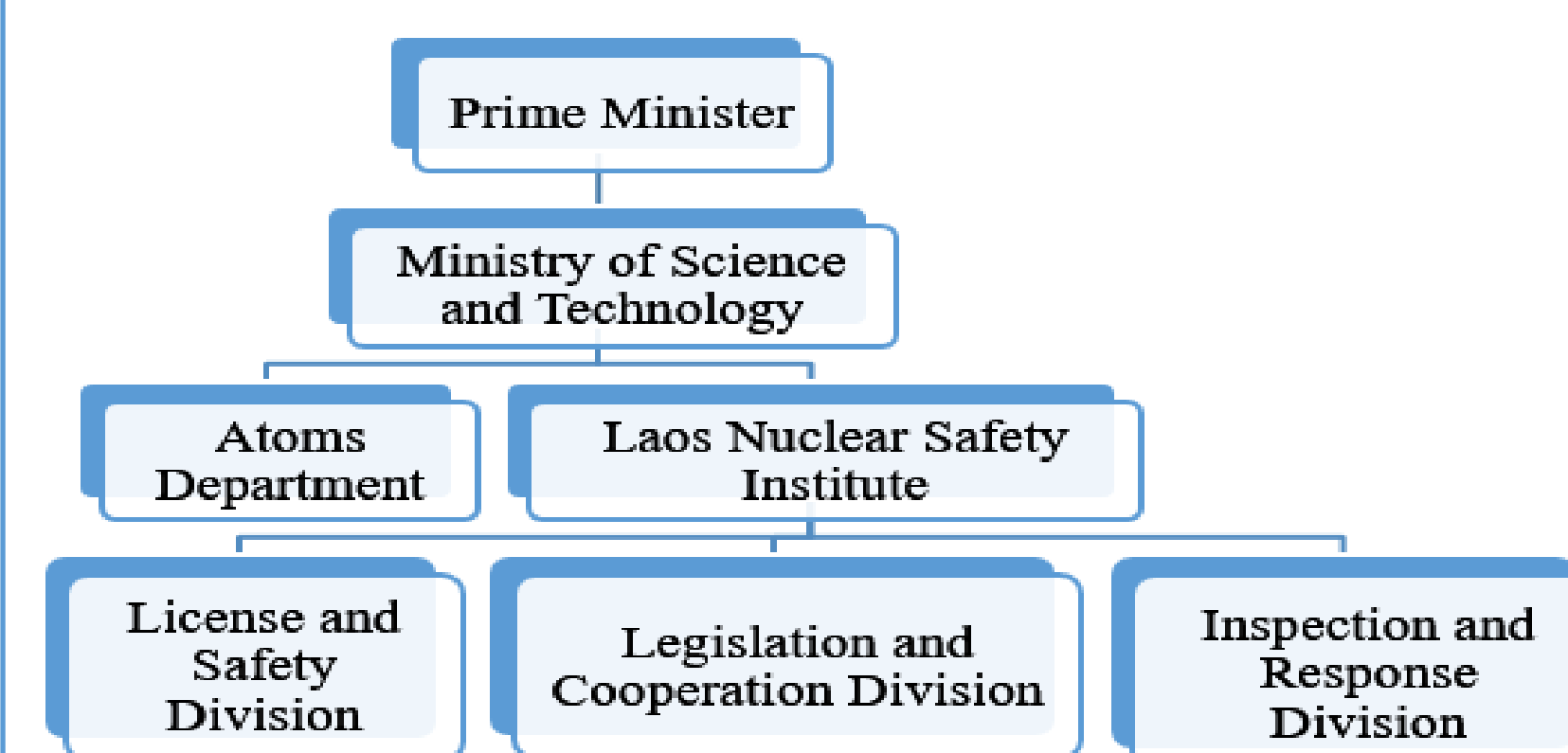


Figure 4: Conceptual design of Regulatory infrastructure

- The regulatory infrastructure establishes the Atoms Department to be acting as a competent authority.
- The regulatory infrastructure establishes the Laos Nuclear Safety Institute to be acting as Technical Support Organization that included three division: License and Safety Division, Legislation and Cooperation division and Inspection and Response Division.

#### 2.4.1 Roles of the Competent authority according to regulatory infrastructure in Lao PDR

The Atom Department will be acting as a competent authority with a role and responsibilities for:

- Establish legislation and nuclear law.
- Establish of a national inventory of radiation sources, national policy on radiation safety and radiation sources management at the government level.
- Establish advisory committee related to nuclear work.
- Regulatory decision-making processes or regulatory decision aiding processes. In addition, effectively independent, in making decisions relating to protection and safety, of persons and organization use of radiation sources.
- Receiving and responding to permit of licensing of manufacture, import, transport, and use of radiation sources and activities to the technical institute to be issue the license.

#### 2.4.2 Roles of the Technical Support Organization(TSO) according to regulatory infrastructure in Lao PDR

Laos Nuclear Safety Institute will be acting as a Technical Support Organization with a role and responsibilities for:

- The technical aspects of nuclear safety regulation, including service of licensing, keeping a record of any manufacture, import, and transportation by RAIS 3.3 system.
- Responsibilities of provision and consultation with other organizations doing related nuclear work.
- Cooperate with nuclear work with other countries and with international organizations as to promote and exchange of regulatory information.
- Education, Research and Presentation on safety and security, prevention and solve of national nuclear and radiation issues.
- Responsible for conducting legal action against radiation security violators.
- Being the center of coordination, combining to solve the nuclear and radiation accident.
- Inspect the use and release of radiation and radiation waste to ensure the safety, livelihood, and safety of the nation, and report to the government regularly.

## 3. Conclusion

- This study is to draw the concept of regulatory infrastructure for industrial use of radiation sources in Lao PDR. It is very important to review and analyze regulatory systems recommended by IAEA and being implemented in advanced countries.
- There are two good systems have been selected for review and analysis (IAEA, Korea) and based on defining roles of constituents to consist of regulatory infrastructure in Lao PDR.
- The conceptual design of regulatory infrastructure can be drawn as a result of review and analysis of regulatory system recommended by IAEA and Korean regulatory system.
- This study can be utilized as a basis for a manuscript of regulatory infrastructure to secure radiation safety against use of radiation sources in Lao PDR.

## REFERENCE

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