

Translation

MINISTERIAL REGULATION

ON RADIATION SAFETY,

B.E. 2561 (2018)\*

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By virtue of section 5 paragraph one, section 8 (18) and section 91 of the Nuclear Energy for Peace Act, B.E. 2559 (2016), the Minister of Science and Technology, with the advice of the Nuclear Energy for Peace Commission, hereby issues the Ministerial Regulation as follows:

Clause 1. In this Ministerial Regulation:

“Radiation safety” means protecting the public and environment from radiation risks, and safety of any facilities or activities causing radiation risks from normal operations and from accidents or any anticipated occurrences;

“Radiation safety measure” means a protection measure and a safety requirement with an aim to achieve radiation safety;

“Controlled area” means an area in which a radiation safety measure is required for controlling radiation exposure or preventing the spread of radioactive contamination on surfaces in normal operations, and preventing or limiting the likelihood and the extent of radiation exposure from accidents or any anticipated occurrences;

“Supervised area” means an area in which a special radiation safety measure is not required but for which occupational exposure is necessarily kept under review;

“Equivalent dose” means a summation of the adsorbed doses in any human tissues or organs after adjusted for the harm caused by all radiation types received by such organs when compared to the harm caused by gamma radiation, with the unit in sievert;

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“Effective dose” means a summation of the equivalent doses after adjusted for sensitivities of each tissue or organ over a whole human body, with the unit in sievert;

“Radiation worker” means a worker who works for a license holder or a notifier, either full-time, part-time, or temporarily, in radiation-related works;

“License holder” means a person who holds a license as follows:

(1) a license to produce, possess, use, import, or export a radioactive material under section 19,

(2) a license to possess or use a radiation generator under section 26,

(3) a license to possess, use, import, or export a nuclear material under section 36;

“Notifier” means a person who notifies the possession or use of a radioactive material under section 20, or a person who notifies the quantity of a nuclear material in possession under section 38.

## CHAPTER I GENERAL PROVISIONS

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Clause 2. Any activity involving the use of radiation by a license holder or a notifier shall be carried out only when yielding a benefit to an individual or a society other than harm, and shall be conducted with, importantly, consideration of safety to the individual, public, and environment.

Radiation exposure of an individual from the activity under paragraph one shall be under a control measure to ensure radiation exposure as low as reasonably achievable by considering relevant factors, including the number of workers exposed to radiation, the likelihood of radiation exposure and radiation dose received, radiation risks from anticipated occurrences, and the characteristics of radiation hazards. In addition, the consideration shall be given to factors on economics, society, and technology.

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CHAPTER II  
CONDUCT ON RADIATION SAFETY

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Clause 3. A license holder or a notifier shall provide a radiation safety measure with the standard not below the rules and procedures on radiation safety as prescribed by this Ministerial Regulation.

The radiation safety measure in paragraph one shall conform to a radiation security measure.

The license holder shall review and verify the radiation safety measure at least once a year.

Clause 4. For a radiation safety measure approved by the Secretary General, if a license holder wishes to adjust or amend the radiation safety measure, the license holder shall also submit it to the Secretary General for approval.

CHAPTER III  
CONTROLLED AREA AND SUPERVISED AREA

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Clause 5. A license holder shall delineate a controlled area and a supervised area by considering expected radiation doses from exposure during normal operations and during accidents or any anticipated occurrences, including the formats and extents of a measure to provide radiation safety.

Clause 6. A license holder shall provide an appropriate radiation safety measure in a controlled area at least as follows:

(1) shall delineate a controlled area by physical equipment or other appropriate means;

(2) shall, in an area where a radioactive material is used intermittently or is moved from place to place, delineate a controlled area by appropriate means under the prevailing circumstances, and shall also specify exposure times in such controlled area;

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(3) shall display the radiation symbol and a warning statement under clause 9, including instructions at entrances and at appropriate locations;

(4) shall establish an appropriate radiation safety measure including a measure to control the spread of radioactive contamination on surfaces and local regulations and working procedures for the controlled area;

(5) shall provide an access control measure strictly for the controlled area;

(6) shall provide appropriate space, equipment, devices, and tools at entrances to the controlled area such as protective equipment, monitoring equipment, or storage;

(7) shall provide appropriate space, equipment, devices, and tools at exits from the controlled area such as equipment for monitoring for radioactive contamination on surfaces, washing facilities, or storage for contaminated materials.

Clause 7. A license holder shall provide an appropriate radiation safety measure in a supervised area at least as follows:

(1) shall delineate the supervised area by appropriate means;

(2) shall display the radiation symbol and a warning statement under clause 9, at entrances to the supervised area.

Clause 8. A license holder shall establish appropriate records and monitoring on radiation safety in a controlled area and a supervised area.

#### CHAPTER IV RADIATION SYMBOL

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Clause 9. A license holder or a notifier shall mount the radiation symbols with appropriate warning statements visibly and clearly at entrances to a controlled area and a supervised area, at a device containing a radioactive source, at a radioactive material, at a radiation generator, at a nuclear material, and at other appropriate locations both inside and outside the controlled area and supervised area.

The radiation symbol under paragraph one shall be in the form as attached to this Ministerial Regulation.

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Clause 10. A license holder or a notifier shall not use the radiation symbol other than what is prescribed under clause 9.

## CHAPTER V RADIATION WORKERS

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Clause 11. A license holder or a notifier shall not allow a person under the age of 16 years, who is not a medical service recipient, to enter a controlled area and a supervised area or to engage in any radiation works.

Clause 12. A license holder or a notifier shall not allow a person with the age from 16 years but under 18 years to work in a controlled area or engage in any radiation works, except for studying, training, or apprenticing under the close supervision of a radiation worker.

Clause 13. A license holder or a notifier shall supervise radiation workers, students, trainees, or apprentices according to the rules and procedures about safety as prescribed by the law, and shall abstain from any actions, which are likely to cause harm to oneself, other workers, the public, and the environment.

Clause 14. A license holder shall provide appropriate radiation exposure assessment, individual radiation exposure record keeping, and health surveillance for a radiation worker.

A license holder shall provide radiation workers with access to their own information under paragraph one.

Clause 15. A license holder shall provide appropriate information, recommendations, and trainings on radiation safety to radiation workers, students, trainees, or apprentices.

The recommendations under paragraph one shall at least advise radiation workers, students, trainees, or apprentices, when encountering hazardous circumstances or circumstances likely to cause harm or adversely affect radiation safety, to inform a radiation safety officer, the license holder, or the notifier as soon as possible.

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Clause 16. In the case where a radiation worker, who is pregnant or breast-feeding, notifies a license holder or a notifier of her pregnancy or breast-feeding, the license holder or the notifier shall adapt the working conditions of the radiation worker, who is pregnant or breast-feeding, so that a radiation dose from exposure not exceeding what prescribed under clause 18.

## CHAPTER VI DOSE LIMITS

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Clause 17. A license holder or a notifier shall supervise radiation workers to expose to radiation as low as reasonably achievable under the standard of that work practice and not to exceed the prescribed radiation dose limits as follows:

(1) An effective dose of 20 millisieverts per year averaged over five consecutive years. In any single year, a radiation exposure shall not exceed 50 millisieverts, and over five consecutive years, a radiation exposure shall not exceed 100 millisieverts;

(2) An equivalent dose to the lens of the eye of 20 millisieverts per year averaged over five consecutive years. In any single year, a radiation exposure shall not exceed 50 millisieverts, and over five consecutive years, a radiation exposure shall not exceed 100 millisieverts;

(3) An equivalent dose to skin, hands, and feet of 500 millisieverts per year. The equivalent dose limits for the skin shall apply to the average dose over 1 square centimeter of the most highly irradiated area of the skin.

Clause 18. A radiation worker, who is pregnant or breast-feeding, shall have the same dose limits as the public under clause 20.

Clause 19. A license holder or a notifier shall supervise a person under clause 12 not to expose to radiation exceeding the prescribed radiation dose limits as follows:

(1) An effective dose of 6 millisieverts per year;

(2) An equivalent dose to the lens of the eye of 20 millisieverts per year;

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(3) An equivalent dose to skin, hands, and feet of 150 millisieverts per year. The equivalent dose limits for the skin shall apply to the average dose over 1 square centimeter of the most highly irradiated area of the skin.

Clause 20. A license holder or a notifier shall supervise a general member of the public, who is not a medical service recipient, not to expose to radiation exceeding the prescribed radiation dose limits as follows:

(1) An effective dose of 1 millisievert per year. In special circumstances, an effective dose in a single year may exceed the prescribed limit, but the average effective dose over five consecutive years shall not exceed 1 millisievert per year;

(2) An equivalent dose to the lens of the eye of 15 millisieverts in a year;

(3) An equivalent dose to skin, hands, and feet of 50 millisieverts per year.

Clause 21. For each category of persons under clause 17, clause 18, clause 19, or clause 20 with a possibility of radiation exposure from various sources, the summation of the radiation doses from all the sources shall not exceed the prescribed radiation dose limits under clause 17, clause 18, clause 19, or clause 20, as the case may be.

Clause 22. Any area in a facility that is not in use or does not store radioactive materials or nuclear materials, any longer, a license holder or a notifier shall manage such area so as not to result in radiation exposure to radiation workers or the public exceeding 300 microsieverts per year.

Clause 23. In the case where each category of persons under clause 17, clause 18, clause 19, or clause 20 having a possibility of radiation exposure exceeding the prescribed radiation dose limits, a license holder or a notifier shall inform the Office as soon as possible.

Clause 24. The provisions under clause 20, clause 21, and clause 23 shall not apply to officers responsible for mitigating nuclear and radiation emergencies.

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## CHAPTER VII

### RADIATION CONTAMINATION LIMITS

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Clause 25. A license holder or a notifier shall manage radioactive contamination on surfaces in a controlled area not to exceed 4 becquerel per square centimeter for radioactive materials emitting beta, gamma, and low toxicity alpha, and not to exceed 0.4 becquerel per square centimeter for radioactive materials emitting all other alpha.

Clause 26. A license holder or a notifier shall manage radioactive contamination on surfaces in a supervised area not to exceed 0.4 becquerel per square centimeter for radioactive materials emitting beta, gamma, and low toxicity alpha, and not to exceed 0.04 becquerel per square centimeter for radioactive materials emitting all other alpha.

Clause 27. A material, with radioactive contamination on surfaces exceeding 0.4 becquerel per square centimeter for radioactive materials emitting beta, gamma, and low toxicity alpha, and exceeding 0.04 becquerel per square centimeter for radioactive materials emitting all other alpha, shall be decontaminated before use by a license holder or a notifier.

If the material, with radioactive contamination on surfaces, could not be decontaminated, the material shall be managed as radioactive waste in accordance with the Ministerial Regulation on radioactive waste management issued under section 8 (14).

The decontamination procedures of radioactive contamination on surfaces under paragraph one shall be in accordance with international standards such as chemical decontamination, mechanical decontamination, and melting.

Given on the 19<sup>th</sup> Day of September B.E. 2561

Suvit Maesincee

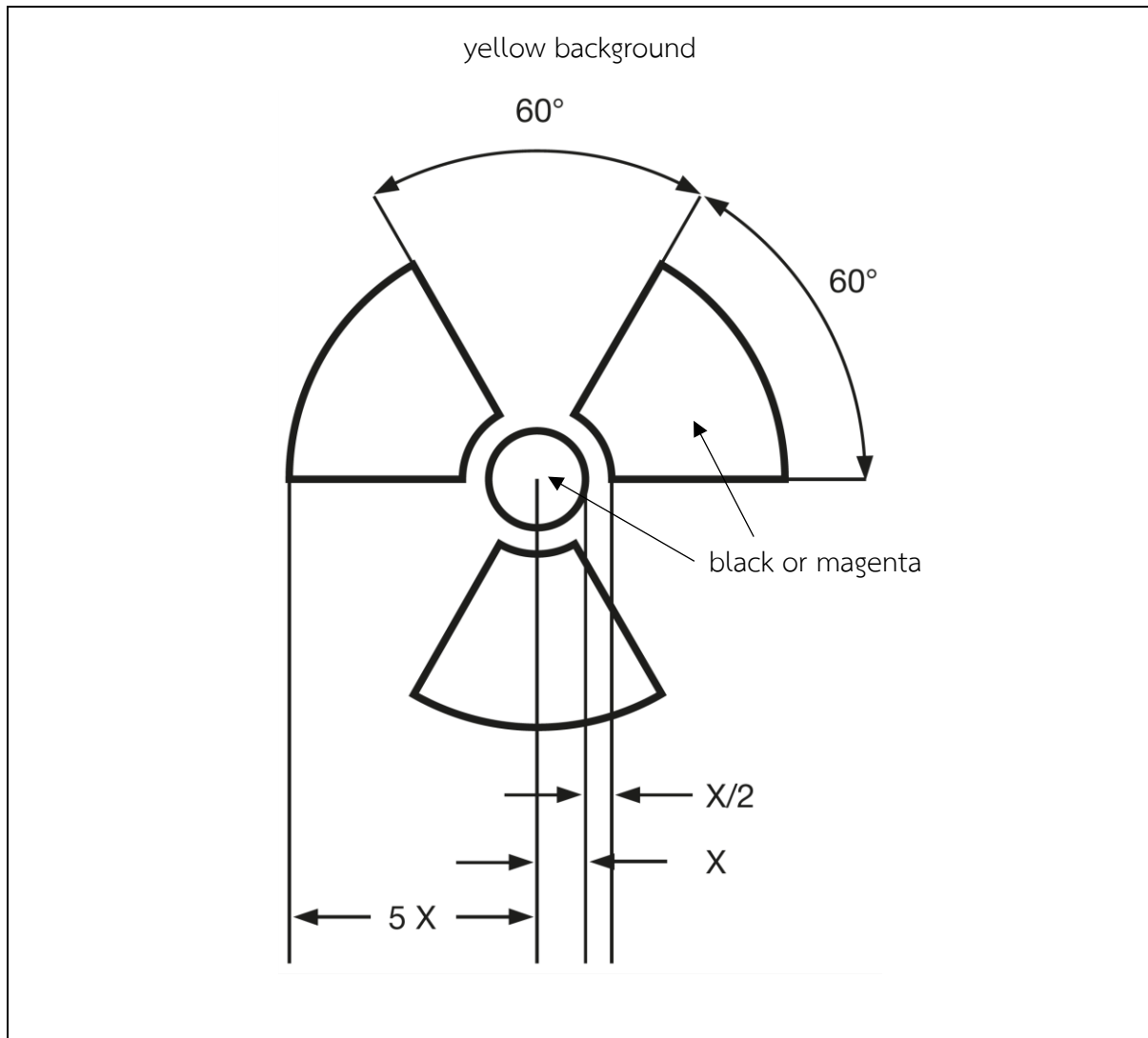
Minister of Science and Technology

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THE FORMAT OF THE RADIATION SYMBOL  
ATTACHED TO THE MINISTERIAL REGULATION ON RADIATION SAFETY,  
B.E. 2561 (2018)

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- Remarks 1. The radiation symbol shall have the proportion of a center circle with radius  $X$  and shall have the details as shown in the figure.
2. The radiation symbol shall have the background in yellow and the circle and blades in black or magenta.

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