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Gearing Up for a Nuclear Future: Thailand's New Safety Regulations

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Thailand has yet to adopt nuclear power as part of its energy generation portfolio, primarily due to public scepticism and safety concerns. These concerns have been increased by past incidents, notably the 2000 Samut Prakan radiation accident, where an unsecured Cobalt-60 source caused severe radiation exposure, resulting in casualties and multiple injuries, and the 2023 Prachinburi Caesium-137 incident, where a missing radioactive cylinder was melted at a smelting factory. Both events underscore the critical risks associated with radioactive material mismanagement.

Despite this, nuclear energy continues to be considered a potential long-term option in Thailand's Power Development Plan (PDP). In recent years, the government has shown a renewed interest in small modular reactors (SMRs), seen as a more flexible and cost-effective path towards energy diversification and sustainability. As part of this evolving policy direction, Thailand has introduced a more robust regulatory framework aimed at enhancing nuclear and radiation safety standards across both academic and commercial sectors.

On 19 November 2024, the Ministry of Higher Education, Science, Research and Innovation (the "**MHESI**"), by virtue of the Nuclear Energy for Peace Act B.E. 2559 (2016) (as amended), issued four key ministerial regulations which aim to enhance control over the use of radioactive and nuclear materials, and to prepare Thailand for future nuclear power deployment.

1. Licensing of Radioactive and Nuclear Materials

   The Ministerial Regulation on the Approval Relating to Radioactive Materials B.E. 2567 (2024) and the Ministerial Regulation on the Approval Relating to Nuclear Materials and Used Nuclear Fuel B.E. 2567 (2024) require that any person or entity seeking to possess, use, import, export, or transit radioactive or nuclear materials, including used nuclear fuel, must obtain a licence from the designated regulatory authority. These approvals apply broadly across academic, research, medical, and industrial applications, except for certain radioactive materials that fall below the quantity and weight thresholds prescribed by the MHESI.

2. Construction Standards for Nuclear Operations and Waste Management Facilities

   The Ministerial Regulation on the Construction of Nuclear Operations and Services for the Management of Radioactive Waste B.E. 2567 (2024) establishes technical standards for the construction of facilities that handle radioactive waste or support nuclear operations. It sets out stringent design requirements, including fail-safe mechanisms, fire protection systems, and structural safeguards against natural disasters and deterioration. The

regulation also mandates contingency plans and contamination protocols to ensure resilience in the event of an incident.

3. Emergency Preparedness for Licence Holders

The Ministerial Regulation on Safety Measures for Licence Holders in Case of Nuclear or Radioactive Emergencies B.E. 2567 (2024) outlines emergency response obligations for licence holders. It defines four categories of emergencies, ranging from internal notice-level incidents to public-level emergencies, and requires licence holders to maintain emergency response manuals, pre-established safety zones, and evacuation protocols. The goal is to ensure a high level of preparedness to protect public health, life, property, and the environment in any emergency situation.

Furthermore, on 9 July, the Agreement for Cooperation Concerning Peaceful Uses of Nuclear Energy (or the "**123 Agreement**") between the United States and Thailand, entered into force. This agreement establishes a comprehensive framework for nuclear non-proliferation and enables the transfer of nuclear material, equipment, components and related information between the parties for the purpose of nuclear research and civil nuclear energy production.

These regulations and recent developments represent a step forward in strengthening Thailand's nuclear governance framework and demonstrate the government's intent to build public and institutional confidence in future nuclear projects. With these measures in place, Thailand may soon witness the introduction of its first small-scale nuclear reactors, a development that could reshape its energy landscape. Further secondary legislation, licensing guidelines, or implementation rules may follow as policy interest in nuclear power continues to evolve.