

# International Conference on Radioactive Waste Management: Solutions for a Sustainable Future (CN-294)



## International Conference on Radioactive Waste Management: Solutions for a Sustainable Future

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## DISMANTLING AND SAFE MANAGEMENT OF IONISATION SMOKE DETECTORS AND LIGHTNING PREVENTORS CONTAINING RADIOACTIVE SOURCES IN THAILAND

Ionization smoke detectors as a kind of fire alarm device mounted on the building ceiling and the lightning prevention containing radioactive substances were collected from building construction companies and radioisotope users in Thailand. The most common ionization smoke detectors contain americium-241 with activities up to 0.666 MBq lightning preventors contain americium-241 or radium-226 with activities up to 695 and 432 MBq, respectively. Several thousand pieces of these devices were labeled, recorded, packed, and stored in the radioactive waste storage building for several decades. Although the activities of these devices are low however due to a large number of these devices and the long half-life of the radioisotopes, special attention was considered. In the year 2020, Radioactive Waste Management Center (RWMC), Thailand Institute of Nuclear Technology (TINT) launched the management plan to improve the safety and security of the category 3-5 disused sealed radiation source in Thailand. The management plan is considered to conduct in compliance with Thai's regulation, the IAEA safety standards, and international practices. Dismantling and conditioning of these devices were planned. The relevant documents for conditioning authorization were submitted to the nuclear regulator, Office of Atoms for Peace (OAP), for approval. Ionization smoke detectors and lightning prevention using radioactive substances were dismantled. Radioactive sources were removed from the devices, encapsulated in the stainless-steel tube containers, and overpacked in the lead shielded concrete drums for future management. Source inventories were registration recorded. Successful implementation of the plan was achieved. 6,000 pieces of sources were conditioned and the volume reduction of the devices was more than a thousand times.

### Do you wish to participate as a Young Professional?

Yes

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### Do you wish to be considered for a Young Professional grant?

Yes

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