ID: Type: **Poster**

Development of Compact Xenon Adsorption System for Medical Radioisotope Production Facilities to Mitigate Global Radioxenon Background

KAERI launched new research reactor project in 2012. The project covers reactor and fission-based medical radioisotope production facilities. Research activities related with fission Mo-99 target and process development have been also initiated in 2012 in Korea. In this report, management scheme for the xenon and iodine emission from the fission Mo-99 process was presented. Additionally, KAERI's contribution to the development of compact xenon reduction system was presented. Concept and experimental data of the prototype xenon reduction systems with chilled activated carbon column was exhibited. Based on the result, new system has been designed and fabricated with integrated gas mixer and cryogenic cooler in the carbon column. Finally, conceptual design of the practical in-cell xenon reduction system was presented to be installed as an installation in the KAERI's new research reactor was proposed. Developed xenon mitigation system will contribute to minimize global and local radioxenon background originated from the medical radioisotope facilities, such as fission Mo-99 production facilities.

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Track Classification: Theme 2. Events and Nuclear Test Sites