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The Future of Radioactive Waste Management; Reuse, Recycle, or Permanent Waste? A Proposed Study on Safety Assessment in Indonesia Regulatory Perspectives

Abstract: Radioactive waste management always attracts attention as it progresses significantly in terms of regulations and technological development. Options of reusing, recycling, or simply just consider them as permanent waste require serious consideration.

Number of total radioactive and/or nuclear facilities for industrial purposes in Indonesia tends to be increasing as the implementation is getting wider. The nuclear authorities in Indonesia is the Nuclear Regulatory Agency (BAPETEN) which on behalf of the government grants the licenses to the respective facilities and monitors the regulation implementation and compliances on the facilities to ensure the safety, security and safeguard for the purpose providing protection to the people, property and environment.

Considering the wide use of nuclear energy application and implementation in industrial purposes facilities, qualified human resources for controlling the law enforcement to ensure the proper standards of safeguard, security and physical protection are in high demand. Training and education for the personnel in charge can significantly develop not only technical skills but also policy-related mass communication skills for further expansion of nuclear energy implementation. National preparedness for future nuclear energy program in peaceful purposes can be distinguished from the number of highly well trained and educated personnel apart from the basic of regulatory framework for the intended agenda.

Consequences of radioactive waste generated from those various facilities and installation will be taken into account for the permanent protection for the current generation as well as future generation both for human beings; radiation workers and public member, and environment. Regulation enforced to keep the safe operation of radioactive waste management facilities is subject to sustain the national and international ecosystem balance without neglecting the security and safeguards guidance.

Practices on options for reusing the radioactive waste may be restricted to several regulations. The fact that based on their half-life periods, radioactive sources tend to decrease their radio activities. However, in the case of contaminated materials considered as radioactive waste, reuse and recycle can appear to be an option under one condition that the clearance level of the material can be obtained. Issues on permanent waste concerns the availability of radioactive waste disposal facility. Many countries including Indonesia are facing the problem of limited both temporary and permanent disposal storage area. This study focuses on the safety assessment for each proposed option whether to reuse, recycle, or consider permanent waste in radioactive waste management in regulatory perspectives. It will cover the existing regulation in Indonesia as well as related regulations issued by the IAEA and other international organizations concerning the nuclear energy utilization.

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