

**REGULATORY CONTROL ON THE DISPOSAL OF NATURALLY OCCURRING  
RADIOACTIVE MATERIAL (NORM) WASTE PRODUCED FROM PETROLEUM INDUSTRY  
IN MALAYSIA FOR SAFETY AND ENVIRONMENTAL SUSTAINABILITY**

JALIL Suhana and NGU Thieng Kui

*Department of Atomic Energy, Ministry of Science, Technology and Innovation, Batu 24,  
Jalan Dengkil, 43800 Dengkil, Selangor, Malaysia*

Crude oil and its products and waste from petroleum industry containing naturally occurring radioactive materials (NORM). Human activities in the petroleum industry namely extraction, processing crude oil and natural gas activities generated significant number of wastes containing NORM. In addition, the specific radioactivity of these NORM waste may be enhanced due to technological and human activities, which eventually may pose potential environmental and health risk. This will require continuous attention by monitoring and surveillance during the disposal process in the petroleum industry. Typically, there are two types of NORM wastes generated in this petroleum industry such as oil sludge and scale. From the year 2019 till year to 2020, Malaysia had disposed 157 ton of NORM wastes from the petroleum industry. Depend on specific radioactivity in the uranium and thorium contents, NORM wastes with specific radioactivity above 1 Bq/g need to obtain approval from regulatory authority before disposal. Then, those NORM wastes will be transported and incinerated in an incinerator by the licensed facilities. This study presents the regulatory control of the disposal of NORM waste produced from typical petroleum industry for safety and environmental sustainability. In conclusion, the regulatory control of the disposal of NORM waste produced from petroleum industry is warranted for radiation protection towards legislative compliance in ensuring safety of the public and workers and the protection of the environment.

**Keywords: disposal, NORM, NORM waste, radioactivity**