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STUDY ON NORM INVENTORY AND NORM WASTE MANAGEMENT FROM TIN INDUSTRY IN BANGKA ISLAND, INDONESIA

Study on NORM inventory and NORM waste management from tin industry in Bangka Island has been done. There are 4 activities in tin industry associated with NORM i.e. tin mining, washing processes, smelting, and tin tailing processing. In tin mining, tin sand is separated from the soil. Tin sand has high natural radionuclide concentration but the mine tailing is in normal level. In washing processes, tin sand is washed in order to increase the tin concentration in the sand until more than 70%of tin. Tailing from this process will become the raw material for by product industry of tin. Tin sand and tin tailing have high radionuclide concentration. Tin sand is then processed in smelter to produce tin and slag. Tin is not radioactive material, but slag has high natural radionuclide concentration. Slag from smelter is in still problem in Indonesia because there has no decision about the disposal. Tin tailing from washing process is then processed to produce zircon, ilmenite, and monazite as by product of tin, and also tailing. By products have high natural radionuclide concentrations. By products industries provide many benefits, besides the products could be sold, waste discharge to the environment is also reduced. The problems in this industry are the radiation protection for the worker and how to place the raw material and products in the factory. This paper would explain how to manage the radioactive problem of the slag and by products industry. NORM inventory from tin industry in Bangka Island has been calculated to know the estimation of amount and radioactive level of NORM. For slag we propose to dispose in landfill. Potential site and design of the landfill has been studied. Some recommendations on the radiation protection at by product industry would be explained, such as how to put the raw material and by products in the factory. The result of this study would be very useful for the stakeholders and would be disseminated.

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