



Contribution ID: 157

Type: **Poster**

Radiological Impact of Stack Releases of an Integrated Steel Plant in China

Steel is one of the primary raw materials in nuclear and coal energy chains. Iron and steel production plants discharge naturally occurring radioactive materials into the atmosphere and lead to the increase of public exposure. This study was a pioneer in evaluating the radiological impact of stack release from steel production in China. An integrated steel plant in Jiangxi Province with annual production of 8.5 Mt crude steel was chosen as representative and its radiological impact of stack release was assessed. The average individual dose for the public (adults) within 80 km of this integrated steel plant was 0.66-52.1 $\mu\text{Sv/a}$, some of which exceeded the exemption level (10 $\mu\text{Sv/a}$). The annual collective effective dose to the public was 4.33 $\text{man}\cdot\text{Sv/a}$, which exceeded the radiological impact of nuclear power plants in China (0.02-0.62 $\text{man}\cdot\text{Sv/a}$). Pb-210 contributed most to the effective dose, followed by Po-210. The dominant exposure pathway was ingestion of farm produce.

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Session Classification: Session IV - Characterization in Industrial Facilities and in the Environment

Track Classification: NORM Characterization, Measurement, Decontamination