

RADIOACTIVITY IN THE OIL EXPLORATION SECTOR

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One of the very first papers describing radioactivity in oil extraction appeared in 1906 just a scant eight years after its discovery by Henri Becquerel in 1896. The world currently consumes close to 100 million barrels of oil daily and is produced in countries throughout the globe through onshore drilling which refers to drilling deep holes under the earth's surface and offshore drilling which relates to drilling underneath the seabed. It was only in the late 1970's and early 1980's where a significant amount of research was done in characterizing the radioactivity in extraction processes which included, scale, produced water, sludge, etc. What is more surprising than the unexpected amounts of radioactivity in the oil extraction sector is the orders of magnitude differences of radiation from different onshore fields. Thus handling of these radioactive by products including transportation, clean-up procedures, and burial requires stringent training and monitoring procedures. For instance, typical dosimeters that are placed on chests while most of the radiation emanates from the ground or lower parts of sludge tanks underestimates the dose to the body. Our MCNP calculations have confirmed this assumption. A detailed overview of radiation protection procedures for the oil exploration sector including analytical measurements of the by-products will be presented.