

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 Bequerel in 1896. The world currently consumes closed 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 previous MCNP calculations have confirmed this assumption. A detailed overview of radiation protection guidelines for the oil exploration sector including analytical measurements of the by products will be presented.

Dr. Landsberger is a Professor in the Nuclear and Radiation Engineering technical area. He has served on the faculty of the Cockrell School of Engineering since 1997. He has published more than 245 peer-reviewed papers and more than 180 conference proceedings mainly in nuclear analytical measurements and their applications in nuclear forensics, natural radioactivity and environmental monitoring of trace and heavy metals. In 2007 he received the [Arthur Holly Compton award from the American Nuclear Society](#) for outstanding achievements in education in nuclear science and engineering for designing and implementing one of the most advanced distance learning programs in the nation for nuclear engineers. In 2005 he received the [Glenn Murphy Award from the Nuclear and Radiological Division of the American Society of Engineering Education](#), recognizing his notable professional contributions to the teaching of undergraduate and graduate nuclear engineering students. He currently holds the **Robert B. Trull Chair in Engineering** in the Cockrell School of Engineering and has been a consultant for the International Atomic Energy Agency since 1988 and has been to over 50 countries in Asia, Africa, South America, Middle East and Europe delivering seminars, lectures and workshops.