

# International Conference on the Management of Naturally Occurring Radioactive Materials (NORM) in Industry

VIRTUAL EVENT

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## Evaluation of the viability of a management system of bulk NORM waste of petroleum in Brazil

In the United States of America, according to the Environmental Protection Agency (EPA), the annual estimation of amount of NORM waste generated by oil production was, approximately, 260000 tons of produced water, sludges, scales, contaminated equipment, etc. to be disposed in a final disposal.

The oil production in Brazil (September 2019) was estimated around 3 million barrels per day, that generated a large amount of NORM waste. These wastes are, currently, packaged and stored in initial and intermediate disposal (in the own facilities) or they are exported to other countries.

Although Brazil has regulations on low and intermediate levels radioactive waste from petroleum extraction and exploration, which contain radionuclides of uranium and thorium decay chain in activity concentration or activities above clearance levels (regulations CNEN NN 8.01, NN 8.02, NN 6.09, NN 6.06, NN 7.01), locations to final disposal of these NORM wastes do not exist yet. Another important aspect is that the regulations are only applicable to the disposal of packaged wastes and the final disposal of bulk NORM waste of petroleum is not allowed.

As in other countries, for example in the United States of America, there are places for final disposal of bulk NORM waste of petroleum and they are authorized and in operation, the objective of this work is to evaluate the viability to implement a management system of bulk NORM waste of petroleum in Brazil.

A viability study is presented, using a roadmap tool, and shows in a graded approach the main technical aspects to implement a management system. These aspects are related to: the locations to final disposal, according to the disposal option method; the measurement of activity concentrations, for the selected disposal option method; the risk assessment to the public and the environmental, using the computational code Residual Radioactivity (RESRAD code) and the management program.

The results will demonstrate the viability to implement a management system of bulk NORM waste of petroleum in Brazil, thus enabling a viable option to reduce the amount of wastes in facilities, with total safety to the public and the environmental.

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