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## **NORM management: Decommissioning of offshore oil and gas pipeline infrastructures**

Naturally occurring radioactive materials (NORM) are a class of contaminants found in offshore oil and gas reservoirs around the world and may form contamination products including scales and sludges in topside and subsea infrastructure (e.g. pipelines). These facilities are coming to the end of their life in many jurisdictions around the world, which will require decommissioning. The risk that NORM from these sources present in the marine ecosystems is not yet understood meaning that decisions made about decommissioning may not deliver the best outcomes for such environments. It is known that during the decommissioning process, marine ecosystems are at risk from both physical damage and the release of scale contaminants.

Both operators and regulators will need to make a final decision using a graded approach regarding the decommissioning needs for such facilities, addressing the level of impact and risk associated with the proposed decommissioning solution. Factors to consider may include ecological and environmental impacts, financial costs, human safety, the political and regulatory environments and social licence. This paper considers NORM-contamination products in oil and gas systems, results of emerging Australian research in marine radioecology related to decommissioning practices and identifies key research priorities for the future.

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