

**Naturally Occurring Radioactive Material
in the Offshore Oil and Gas Industry -
Recommendations for Management in
Western Australia**

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ABSTRACT

Naturally occurring radioactive material, commonly called NORM, refers to the material generated when radionuclides are disturbed by human activities, resulting in a relative increase in radiation exposure and risk to the public above background levels. NORM occurs in the oil and gas industry when formation water is brought to the surface during the extraction of oil and gas, and naturally occurring radioactive elements contained in this water precipitate to form sulphate and carbonate scales. This NORM scale adheres to production equipment and may also collect with other production wastes in treatment on storage tanks.

The generation of NORM in the oil and gas industry occurs worldwide. The activity of NORM generated in Western Australia (WA) is similar to that measured for equivalent waste types in other producing fields both within Australia and in other countries. However, to date, volumes generated are considerably less than those experienced in other oil and gas producing regions.

The International Atomic Energy Agency and the International Commission on Radiological Protection have both developed standards for the management of radioactive material, and these form the basis of legislation regulating radioactive materials in most countries. In Australia, regulation of NORM varies between States. In the WA adjacent area, current legislation prevents NORM being brought to shore for storage, treatment or disposal. This legislation, combined with difficulties obtaining approval for NORM disposal, has prevented operators in the WA adjacent area disposing of NORM waste.

As NORM generated in WA is similar to that encountered elsewhere in the world, it is appropriate to examine the applicability of worldwide management practices for the management of NORM in WA. Whilst many countries are currently storing NORM wastes pending a decision regarding long-term disposal solutions, NORM is also being disposed to sea, to land and down abandoned wells.

In order for such disposals to occur in WA, amendment of legislation and changes to the administration of existing legislation are required. It is recommended that the definition of 'nuclear waste' and the interpretation of 'Australia' should be amended in the *Nuclear Waste Storage (Prohibition) Act 1999* so that NORM is not encompassed by this legislation, and so that the WA adjacent area is acknowledged as being within Australia. In addition to legislative amendments, it is also recommended that the WA Government provide clarification regarding the administration of existing legislation in order to progress the management of NORM in the WA adjacent area.