

**Diver Safety – Nitrox Generator Use****What happened?**

It has come to NOPSA's attention that Nitrox generators are being used, or are being considered for use, in diving activities in connection with offshore petroleum operations. This type of equipment is able to produce high pressure gas mixes used in diving containing up to 40% oxygen content.

The system involves a low pressure phase in which air is depleted of nitrogen prior to high pressure pressurisation and storage. Related offshore industry guidance suggests that components and processes used in this type of system may only be fit for gas mixes up to a maximum 25% oxygen content.

The technology involved with this type of equipment has been in use within the recreational diving industry for some time. However, it may not be appropriate for use in the offshore petroleum environment unless the associated risks are properly managed. There has been at least one explosion involving this type of equipment in Australia.

(<http://www.deir.qld.gov.au/workplace/publications/alerts/nitrox/index.htm>)

**What could go wrong?**

The fundamental concern is the high volatility of the produced gas and the potential for an explosion within the system. For this reason, the offshore diving industry internationally has adopted a precautionary approach by treating such gas mixtures as pure oxygen in regard to system component compatibility, associated working practices and cleanliness.

**Key Lessons:**

Prior to using such equipment NOPSA strongly recommends that hazards arising from the production, use and storage of enriched oxygen gas mixes are fully understood and that appropriate measures are put in place to ensure that the associated risks are reduced to as low as reasonably practicable.

Whilst not a complete list, those considering use of such equipment should ensure that:

- All components downstream of the nitrogen generator are fit for oxygen service in accordance with industry best practice;
- Associated processes and procedures are appropriate for oxygen systems; and
- The produced gas is subject to periodic and appropriate analysis to determine its fitness for use as a breathable gas for diving.

**Contact**

For further information email [alerts@nopsa.gov.au](mailto:alerts@nopsa.gov.au) and quote Alert 44.