

# Safety and health alert

# 10/94 Explosion during boat repairs

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## Incident

Several recent incidents of explosion and injury have resulted from hot work, such as grinding, cutting and welding, being conducted on aluminium and steel hulled boats.

The explosions have been caused by the ignition of fuel vapours trapped below decks in confined spaces such as bilges and fuel tanks presumed to be safe.

Flushing with detergent solutions has proved insufficient in eliminating fuel vapours in many instances resulting in potentially explosive atmospheres readily ignited by hot work processes.

## Factors

Bilges on some vessels are divided into small compartments but small vents for drainage allow seepage from one compartment to the next. Washing out with detergents does not necessarily remove all leaked fuel, and vapours may persist.

Fuel can accumulate in cracks and seams resulting in release of vapours even after purging.

Failure to comprehensively purge confined spaces and test potentially hazardous atmospheres has resulted in explosions when hot work has been undertaken.

## Recommendations

1. Cleaning of any vessel or equipment that has contained flammable substances should be done in accordance with Australian Standard 1674.1-1990. In this case, completely filling the space with a water and detergent mixture, followed by purging, or steam cleaning for at least 30 minutes is required.
2. After cleaning and before any hot work, on a bilge or fuel tank it should be tested with a gas detector to ensure that the air/vapour mixture is less than 5% of its lower explosion limit.

## Further Information

Further information can be obtained from the WorkSafe internet site [www.worksafe.wa.gov.au](http://www.worksafe.wa.gov.au), or by contacting customer service on 1300 307 877 or email: [safety@docep.wa.gov.au](mailto:safety@docep.wa.gov.au).

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Department of Consumer  
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