

# Australian shipping emissions identified

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Loading a container vessel at the Port of Fremantle, WA.

Ship engine exhaust emissions make up more than a quarter of nitrogen

oxide emissions generated in the Australian region according to a recently-published study by CSIRO and the Australian Maritime College in Launceston. Nitrogen oxide is a non-greenhouse gas, unlike similarly named nitrous oxide.

The remainder comes from road and air transport, energy generation, and industrial processes. Global studies indicate that shipping emissions of nitrogen oxide and sulphur contribute to the formation of photochemical smog and particles near land and in ports.

The authors, Dr Ian Galbally from CSIRO Marine and Atmospheric Research, and the Australian Maritime College's Dr Laurie Goldsworthy estimate that approximately 30 per cent of anthropogenic [nitrogen oxide emissions](#) and 20 per cent of oxides of sulphur emissions generated in the Australian region may come from shipping.

These are non [greenhouse gases](#) which have the potential to affect the air quality near [coastal regions](#), and have consequences for human health and amenity.

Dr Galbally said around 10 per cent of global shipping freight passes through Australian ports annually. "Shipping is a major driver in the Australian economy, with 753 Mt of international exports worth \$202 billion passing through Australian ports in 2008-2009."

"There is limited knowledge about the emissions from [ships](#) in coastal regions and ports in Australia, the effects of these emissions on air quality in the surrounding coastal and portside urban regions, or potential effects on human health" he said.

The ports of Perth, Melbourne, Sydney and Brisbane are located where seasonally-prevailing onshore winds dominate and the pollutants from shipping frequently will be carried into the air-sheds of these major

urban population centres.

"We're seeing increasing regulation of land-based emissions but limited regulation of shipping emissions and expect that in the near-future there will be a need to monitor more closely emissions from shipping," Dr Galbally said.

The authors commenced this study with measurements of ship exhaust emissions on the coastal cement carrier MV Goliath.

Dr Goldsworthy said it is possible to quantify emissions generated based on knowledge of fuel type, fuel origin, engine size, cargo, and speed.

## **Watch a CSIRO vodcast on ship emissions and air quality:**

"We know from previous studies and the Australian Pollutant Inventory that ship emissions off the coast of Australia are substantially larger than in-port ship emissions."

"Nitrogen oxide and sulphur oxide [emissions](#) at sea are comparable in magnitude with other national sources such as energy generation and industry. They are potentially significant contributors to the air-sheds of major coastal cities," he said.

The study appeared recently in the journal *Air Quality and Climate Change*.

Provided by CSIRO

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