

Environment Alert

# Push for national emission standards for non-road diesel engines gains momentum

NSW EPA report on reducing emissions from non-road diesel engines

## WHAT YOU NEED TO KNOW

- The NSW EPA is pushing for the introduction of national diesel emission standards for non-road diesel engines, which are in line with US and EU standards.
- Currently there are no national emission standards for non-road diesel engines, but awareness of Diesel Particulate Matter (**DPM**) is increasing and the NSW EPA has a number of programs and studies directed at DPM.
- The developing body of knowledge in Australia and internationally regarding the impacts of DPM may enable workers and communities affected by DPM to bring claims in negligence against businesses that do not manage their diesel emissions in accordance with best practice.

## WHAT YOU NEED TO DO

- Watch out for further developments regarding the introduction of national diesel emission standards and State and Territory based programs.
- Consider voluntarily reviewing diesel equipment emissions and controls, and purchasing new diesel equipment which complies with the international standards.

## Why is diesel particulate matter a problem?

The combustion of diesel gives rise to oxides of nitrogen, volatile organic compounds, a range of air toxics (including benzene and toluene) and diesel particulate matter of fine particles having an aerodynamic diameter of less than 2.5 micrometres PM<sub>2.5</sub>.

DPM poses human health risks and environmental risks. Although urban air quality in Australia is generally good, particulate levels remain an issue. DPM can pose risks for workers exposed regularly and closely to sources of diesel emissions. DPM also has the potential to impact on the health of local communities, and contribute to secondary pollutants in the broader atmosphere.

In June 2012, the International Agency for Research on Cancer (which is part of the World Health Organisation) classified diesel engine exhaust as carcinogenic to humans, based on sufficient evidence that exposure is associated with an increased risk of lung cancer.

## What is the current regulatory framework for diesel engine emissions?

There are no national regulations for the non-road diesel engines sector, but there are increasing stringent national emission standards for new on-road vehicles through the Australian Design Rules under the *Motor Vehicles Standards Act 1989* (Cth).

Indirect regulation of non-road diesel emissions includes fuel quality standard regulations and ambient air quality regulations.

In the past five years, NSW has undertaken a number of targeted initiatives relating to non-road diesel engines. These initiatives have included the NSW Clean Machine Program which focuses on cleaning up in-service equipment through retrofitting diesel particulate filters and ensuring new equipment conforms with international emissions standards.

## **The Reducing Emissions from Non-road Diesel Engines Report (NSW EPA)**

The NSW EPA published a report *Reducing Emissions from Non-road Diesel Engines (Report)* in August 2014. This Report highlights the need for action to manage non-road diesel engine emissions, and argues for the introduction of minimum national emission standards for non-road diesel engines.

The Report examines three possible scenarios for harmonisation of Australian emission standards with those in the USA and the EU:

- Scenario 1 – US Tier 3/EU Stage IIIA emission standards implemented in 2015 for new engines/equipment greater than 19kW;
- Scenario 2 – US Tier 4 final/EU Stage IIIA/Stage IV emission standards implemented in 2018 for new engines/equipment greater than 19kW;
- Scenario 3 – US Tier 3/EU Stage IIIA emission standards implemented in 2015 and US Tier 4 final/EU Stage IIIB/Stage IV emission standards implemented in 2018 for new engines/equipment greater than 19kW.

The Report found that the greatest health benefits and overall net benefits are predicted for harmonisation in scenario 3, with its stepped introduction of Tier 3 and then Tier 4 standards.

In broad terms:

- US Tier 3 and 4 emission standards are based on advanced engine design, and integration of engine and fuel control measures. Compliance with Tier 4 final standards require that emissions of PM and NOx be further reduced to about 90% compared to non-compliant engines; and
- EU Stage IIIB standards introduced a PM limit of 0.025g/kWh, and to meet this value engines have to be equipped with particulate filters. EU Stage IV also introduces a very stringent NOx limit of 0.4g/kWh, which is likely to require NOx after treatment.

The impact analysis in the Report made the following key findings regarding the benefits of introducing internationally harmonised standards into Australia:

- on-road diesel engine emissions could be reduced by up to 67% for PM<sub>2.5</sub> emissions and up to 53% for oxides of nitrogen by 2035;
- non-road diesel engine emission intervention could result in health cost reductions peaking in the range of \$540-1440 million per annum in 2035;
- the present value of net benefits (ie health cost reductions less compliance costs) calculated over the 2015-2055 period could be in the range of approximately \$1257 million to \$2244 million.

## **What are non-road diesel engines?**

The Report defines non-road diesel engines to include:

- construction and surface mining equipment and non-road vehicles;
- general industrial equipment and non-road vehicles, including aviation service equipment;
- light commercial equipment, including pumps and compressors;
- power generation units;
- agricultural equipment and vehicles;
- forestry and logging equipment; and
- marine engines.

The Report does not deal with larger marine engines (over 37kW) or diesel engines in underground mining.

Larger marine engines are not included in the overseas standards, but have been separately targeted by the NSW EPA in recent meetings with shipping representatives and the Port Authority of NSW.

## **What does the Report mean for underground mining?**

The Report does not address underground mining, on the basis that it is not included in the international standards for non-road diesel engines. Regardless of whether underground mining is included, any national non-road diesel emission standard is likely to drive higher standards for diesel emissions in underground mining.

There are no national emission standards for diesel engines used within underground mining. However, given the significant risks posed by poor ventilation and diesel emissions in closed environments, this gap is currently filled by a mix of standards, occupational health and safety regulations and expert technical recommendations. For example, regulatory agencies

have generally adopted the Australian Institute of Occupational Hygienists exposure limit recommendation of 0.1mg/m3 (as elemental carbon measured as a time-weighted average over eight hours).

New South Wales has a *Guideline for the Management of Diesel Engine Pollutants in Underground Environments* (April 2008), and both Queensland and Western Australia have draft guidelines for managing diesel emissions in underground environments.

Given these moves in NSW, QLD and WA, it is likely that the states with significant underground mining will also work towards a national standard for diesel emissions in underground mining.

### **How do moves towards national standards affect risk profiles for operators of non-road diesel engines?**

The main areas of potential liability for human health impacts caused by non-road diesel engines are in relation to:

- statutory liability for breach of duties and obligations under work health and safety laws; and
- common law negligence claims.

It may still be several years until the introduction of national standards eventuates, but in the meantime the body of knowledge about the health effects of DPM is growing in Australia and internationally. In light of this scientific evidence and the long standing international standards, companies which do not address risks posed by DPM to workers and the community will face increased risks of liability.

### **What does this mean for you?**

Parties that use non-road diesel engines are encouraged to read the Report, and to voluntarily consider the procurement, maintenance, location and patterns of use of non-road diesel engines in anticipation of national standards.

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