

Your details and background

(Please leave blank if you wish to remain anonymous)

1. Name or organisation

Maritime Union of Australia

2. Email used to log into Engage

[Click or tap here to enter text.](#)

Questionnaire

If you are commenting on particular aspects of the expert report, please identify the particular sections or pages concerned. Your response should, where possible, provide evidence to support your statement.

1. Do you support the proposed workplace exposure standard (WES) for diesel particulate matter (DPM) to protect workers from the adverse health effects of exposure to diesel engine emissions (DEE)?

☐ Yes

☒ No

2. What are your reasons for your response to Question 1? Please provide evidence or information to support your response.

See attachment

3. Is there an alternative WES to DPM as respirable elemental carbon, or additional WES that should be considered to protect workers from DEE? Please provide evidence or information to support your response.

[Click or tap here to enter text.](#)

4. What changes would you need to make in your workplace (over and above any controls currently in place) to ensure workers and others at the workplace are not exposed to levels of DPM above the proposed WES?

a. Please include in your response:

- i. a description of the control measures currently in place at your workplace(s) to minimise exposure of workers and others to DEE.
- ii. details of any costs to implement the WES for DPM (e.g., upgrade of ventilation systems in area X, costing approximately \$XXX).

[Click or tap here to enter text.](#)

5. Is there additional evidence or information that you think should be considered?

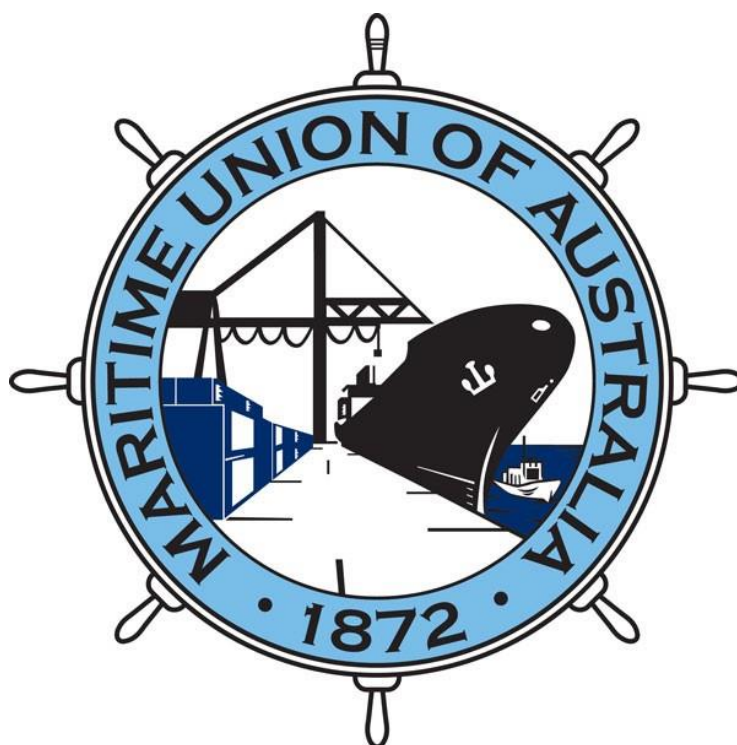
[Click or tap here to enter text.](#)

6. Are there any additional comments you would like to make? (free text box with option to upload an attachment)

Click or tap here to enter text.

Proposed workplace exposure standard for diesel particulate matter

Submission from the Maritime Union of Australia



13 June 2023

Safe Work Australia

**Paddy Crumlin, National Secretary,
Maritime Union of Australia
A Division of the Construction, Forestry, Maritime, Mining and Energy Union**

[REDACTED]

[REDACTED]

For inquiries contact: [REDACTED]

Introduction

This submission has been prepared by Maritime Union of Australia (MUA).

The MUA is a Division of the 120,000-member Construction, Forestry, Maritime, Mining and Energy Union and an affiliate of the 20-million-member International Transport Workers' Federation (ITF). The MUA plays a leadership role in the ITF's Offshore Task Force, and its Offshore Wind Committee, where unions representing workers in offshore wind globally are able to share their experiences.

The MUA represents approximately 14,000 workers in the stevedoring, shipping, offshore oil and gas, port services and commercial diving sectors of the Australian maritime industry.

Summary

The MUA supports the Recommendations in the ACTU submission to this consultation, as follows:

Recommendation 1: Immediate adoption of Workplace Exposure Standard for Diesel Exhaust Emissions, based on elemental carbon of

- a. Mining industry: 0.05mg/m³.
- b. All other industries: 0.01mg/m³.

Recommendation 2: Acknowledging that the SLR report is not a health-based WES and may be as much as 10 times higher than a health-based standard, accordingly, the ACTU proposes that the WES is progressively reduced over three years to a health-based standard, of 0.001mg/m³, as submitted by the Cancer Council of Australia in 2020.²

Recommendation 3: The ACTU supports the adoption of the following recommendations from the SLR report:

- A 'Carcinogenicity Category 1A' notation is recommended for DPM based on the weight of evidence from both human and animal studies indicating DEE is a lung carcinogen.
- In addition, it is recommended the candidate WES for DPM be applied in conjunction with appropriate management measures to control and/or minimise exposures to other indicators of potential concern within DEE including NO₂, PAHs, and aldehydes to ensure the risk of health effects from the mixture as a whole is adequately controlled.

The impacts of and controls for these measures in the maritime industry need to be carefully considered, and we look forward to full consultation on this going forwards.

Ultimately, the negative health impacts of diesel emissions need to be addressed by improving standards for the quality and emissions of diesel fuels, and reducing the use of diesel across the economy. Similarly, the safety of emissions from other marine petroleum-based fuels must also be improved. We are encouraged that the government appears to be taking steps in this direction.

Diesel emissions in the maritime industry

Diesel emissions and particulate matter are a major issue in many parts of the maritime industry.

Many car ferries carry trucks or other diesel vehicles that run their engines in these enclosed spaces, mainly when loading and discharging. However, the number of vehicles, even for these short periods, can have a significant effect. This is a particular issue on the 6 car ferries that cross the Bass Strait between Victoria and Tasmania, and affects both seafarers working on the vessels and wharfies loading and discharging the vessels. Car and truck ferries also operate to Kangaroo Island in South Australia.

Diesel vehicle emissions are also an issue when diesel vehicles are discharged from the enclosed cargo space on international car import vessels, in Australian ports such as Brisbane, Port Kembla, Melbourne, Adelaide and Fremantle. This mainly affects wharfies, but is also likely to affect the international seafarers working as vessel crew.

A great deal of stevedoring container-handling equipment runs on diesel, which means that container terminals (like other logistics terminals) have layers of dust from diesel emissions built up on all surfaces and vehicles. This would be a particular issue in the container terminals in Brisbane, Sydney, Melbourne, Adelaide and Fremantle, which this container-handling equipment is in constant motion.

In addition, Australian wharfies and seafarers are regularly exposed to emissions from ships using diesel, as diesel is a common marine fuel used on small and medium size vessels. However in maritime workplaces, workers experience diesel emissions alongside emissions from other marine petroleum fuels, which are even more polluting than diesel. Many large ships run their engines while in port to provide power for ships operations while ships are being loaded and discharged. Crane drivers in particular may be working at the same height as a ship's exhaust and quite close to it. At times crane drivers can be exposed to an unbearable level of ship's emissions.

Application to Marine Fuels?

If diesel emissions and particulates are as hazardous for human health as has been documented, we believe that marine fuels are even more hazardous. We believe the new Diesel particulate workplace exposure standards should also apply to emissions from these marine fuels, with the appropriate health-related reviews going forwards. We note that a number of references in the SLR report, for example, include heavy fuel oil in their analysis of the effects of diesel.¹

¹ Oeder S., Kanashova T., Sippula O., Sapcariu S. C., Streibel T., Arteaga-Salas J. M., Passig J., Dilger M., Paur H.-R., Schlager C. (2015). Particulate matter from both heavy fuel oil and diesel fuel shipping emissions show strong biological effects on human lung cells at realistic and comparable in vitro exposure conditions. *PLoS One* 10(6): e0126536. Kanashova T., Popp O., Orasche J., Karg E., Harndorf H., Stengel B., Sklorz M., Streibel T., Zimmermann R., Dittmar G. (2015). Differential proteomic analysis of mouse macrophages exposed to adsorbate-loaded heavy fuel oil derived combustion particles using an automated sample-preparation workflow. *Analytical and Bioanalytical Chemistry* 407(20): 5965-5976.

In any case, when assessing particulate exposure in workplaces with diesel emissions as well as emissions from other marine fuels, the marine fuel emissions must not be excluded from the assessment of safety and exposure.

Heavy Fuel Oil (HFO) is the main fuel used by large ships since the 1950s. It is the sludge or residue left over from distilling other petroleum fuels. This means that it is more polluting than other petroleum fuels, and contains the contaminants that have been removed from these fuels.² HFO may be combined with distillate fuels to make Intermediate Fuel Oil, which is still 88% or 98% petroleum residue.

The International Maritime Organisation and the Australian Maritime Safety Organisation brought in improved maritime fuel emissions standards in 2020. However our understanding is that diesel is relatively clean compared to many of the marine fuels currently in use, even after these improvements. HFO is still used, with scrubbers to remove sulphur emissions. The new Very Low Sulphur Fuel Oil (VLSFO) is likely to contain up to 40% petroleum residue.³

² McKee, Richard; Reitman, Fred; Schreiner, Ceinwen; White, Russell; Charlap, Jeffrey; O'Neill, Thomas; Olavsky Goyak, Katy (2013). "[The toxicological effects of heavy fuel oil category substances](#)". International Journal of Toxicology. 33 (1 Suppl): 95–109. doi:10.1177/1091581813504230.

³ Alfa Laval, [Marine fuels in the low-sulphur era](#), accessed June 2023.