

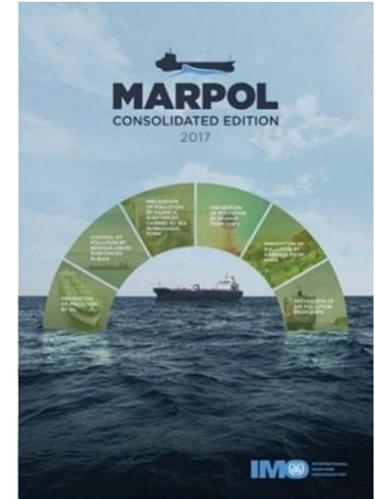
MARPOL Annex VI  
Roundtable Series

**NITROGEN OXIDES**  
**(NO<sub>x</sub>)**

November 2020

## Purpose of today

- Recap basic information about Annex VI
- Detail on NO<sub>x</sub> provisions (Regulation 13)
- Provide information on proposed changes
- Facilitate discussion on policy options and implementation
- Gather information and identify knowledge gaps
- Discuss how we can continue to work with you



# Annex VI relates to emissions to air from ships

- impact of air pollution from shipping activities on human health and environments
- impact of emissions from shipping activities on climate change and ozone layer depletion.
- 94 States are party to Annex VI
- Aligning domestic regulations to accede at end of 2021



Photo 3: International vessel in Wellington harbour

## What are nitrogen oxides?

- Nitrogen oxides are harmful pollutants that have negative health and environmental impacts.
- Created by the combustion of fuel from diesel engines.



## NO<sub>x</sub> - application

Applies to

- **marine diesel engines 130+ kW**, regardless of ship type
- commercial and recreational ships

May apply if you are:

- Purchasing a ship constructed from 1/1/2000 onwards
- Replacing an engine on any ship
- Carrying out a major engine conversion

Diesel engines on 5000+ kW ships constructed 1/1/1990 - 31/12/1999 may need to comply with an “approved method”

## “Marine diesel engines”

- reciprocating internal combustion engine
- operates on liquid or dual fuel
- has a power output of 130 kW or more
- on a ship to which regulation 13 applies

This would include automotive engines on a ship, if they meet all the above criteria



## Testing and certification

- New or converted engines must be designed and approved to meet emissions standards.
- Annex VI sets out requirements for testing, survey and certification of marine diesel engines in compliance with the Technical Code on Control of Emission of Nitrogen Oxides from Marine Diesel Engines (NO<sub>x</sub> Technical Code or NTC).
- Individual engines don't need to be tested if they belong to an "engine family" or "engine group" approved by the maritime administration.

# Emission limits – 3 tiers

Tier	Ship construction date	Total weighted cycle emission limit (g/kWh) n = engine's rated speed (rpm)		
		n < 130	n = 130 - 1999	n >= 2000
I	On or after 1/1/2000	17.0	$45.n^{(-0.2)}$	9.8
	OR 1/1/1990 to 31/12/1999 if Approved Method available		e.g. 720 rpm – 12.1	
II	On or after 1/1/2011	14.4	$44.n^{(-0.23)}$ e.g. 720 rpm – 9.7	7.7
III	On or after 1/1/2016 AND voyaging in ECA	3.4	$9.n^{(-0.2)}$ e.g. 720 rpm – 2.4	2.0

## Emission control areas

- Tier III controls apply only to specified ships while operating in Emission Control Areas (ECA).
- for ships constructed on or after 1 January 2016, the North American and the United States Caribbean ECA.
- for ships constructed on or after 1 January 2021, the Baltic Sea ECA and the North Sea ECA.
- Outside the ECA the Tier II controls apply to those ships.
- There are some exceptions to Tier III requirements, including smaller recreational vessels.

## Approved method engines – older ships

- Diesel engines on ships constructed from 1/1/1990 to 31/12/1999 with:
  - Power output 5000+kW and
  - per cylinder displacement at or above 90 litresmust comply with an “Approved Method” that reduces NO<sub>x</sub> emissions to Tier I levels, if one is available.
- Approved Methods are approved by maritime administrations and notified to IMO.

## How it applies to domestic ships

- **NZ must** ensure NZ flagged ships travelling domestically comply with the Annex VI requirements unless there are alternative NO<sub>x</sub> controls in domestic law
  - Replicate Annex VI requirements exactly, or with variations?
  - Are there any requirements that cannot be met?
- **NZ can** exclude engines installed/converted before 19/5/2005 on ships that only travel within NZ jurisdiction.
  - What are the pros and cons of doing this?

## What we've heard so far

- May apply to a large number of vessels in NZ
- Potential issue with automotive diesel engines – can they meet NO<sub>x</sub> Technical Code standards?
- Recreational and small boat users need simple messages
- Requirements for domestic survey/certification need to be considered
- Possible need for NO<sub>x</sub> scrubber waste reception facilities
- Some preference from industry and ports for 2005 cut-off

## Issues for consideration

- Implications of applying the requirements to domestic ships
  - What would not work?
  - What support will industry need?
- What would be the impact of including or excluding ships on domestic voyages constructed before 2005 (or where the engine has undergone a major conversion before 2005)?



**Any other questions or comments?**

## Next steps

We are currently engaging with stakeholders through a series of focussed roundtables like this one.

We will be consulting on draft Rules to implement Annex VI around the middle of next year.

New webpage and one-pagers at

<https://www.maritimenz.govt.nz/rules/marpol-annex-vi>

Send your questions and comments to:

[MARPOLAnnexVIProject@maritimenz.govt.nz](mailto:MARPOLAnnexVIProject@maritimenz.govt.nz)