

## MARPOL Annex VI

# New regulations – prev

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**Annex VI of MARPOL 73/78 "Regulations for the prevention of Air Pollution from ships" will enter into force on 19 May 2005, and apply to all ships, fixed and floating drilling rigs and other platforms of 400 gross tons and above. Such vessels are required to hold an International Air Pollution Prevention Certificate (IAPP Certificate).**

This certificate must be on board upon delivery of newbuildings with keels laid after 19 May 2005. For other vessels, the IAPP certificate must be on board at the first scheduled drydocking after 19 May 2005, but not later than 19 May 2008.

Annex VI requires that every vessel for which the regulation applies is subject to an initial survey as well as annual, intermediate and renewal surveys.

### **Regulation 12 – Emissions from Ozone Depleting Substances (ODS) from refrigeration plants and fire fighting equipment**

Annex VI prohibits any deliberate emissions of ODS (CFC's, Halons, HCFC's) as defined in the 1987 Montreal Protocol. Minimal releases in connection with recapture or recycling are, however, permitted.

New installations containing ODS are prohibited on all ships after 19 May 2005, with the exception of those containing Hydrochlorflouro-carbons (HCFCs), such as R22. These are permitted until 1 January 2020.

*The EIAPP certificate is issued for marine diesel engines after demonstrating compliance with NOx emission limits*

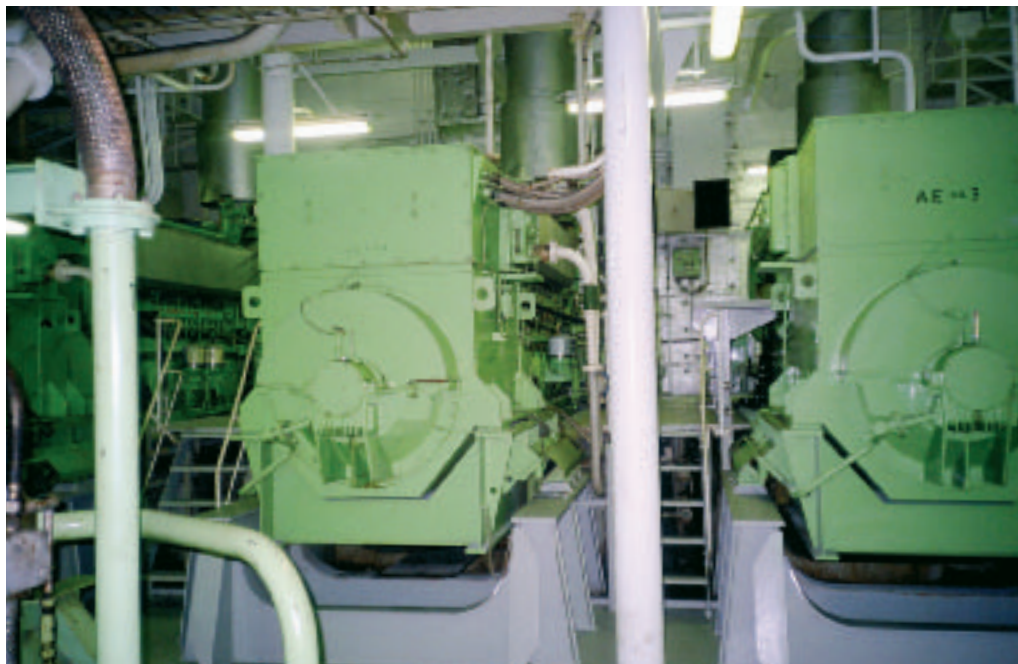
### **Regulation 13 – Nitrogen Oxide (NOx) emissions from diesel engines**

Regulation 13 of Annex VI concerns NOx-emissions from diesel engines and applies to:

- Diesel engines with a power output of more than 130 kW installed on a ship keel laid on or after 1 January 2000.
- Diesel engines with a power output of more than 130 kW that undergo a major conversion on or after 1 January 2000.

This regulation does not apply to emergency diesel engines, engines installed in life boats or any equipment intended to be used solely in case of emergency.

An EIAPP (Engine International Air Pollution Prevention) certificate is required for all diesel engines as described above, and is a pre-requisite for issuing of the IAPP certificate.



# vention of air pollution

The EIAPP certificate is issued for marine diesel engines after demonstrating compliance with NO<sub>x</sub> emission limits, as per the NO<sub>x</sub> Technical Code issued by IMO.

All certified engines are to be provided with an individual Technical File that contains the engine's specifications for compliance with the NO<sub>x</sub> regulation and onboard verification procedures. Further, each engine is to be provided with a Record Book of engine parameters, where any changes to the engine are to be recorded.

The phrase "major conversion", means a modification of an engine where:

- The engine is replaced by a new engine built on or after 1 January 2000, or
- Any substantial modification is made to the engine, or
- The maximum continuous rating of the engine is increased by more than 10%

Note that for engines installed on keels laid on or after 1 January 2000, a substantial modification would be classed as any modification outside the ranges specified in the Technical File (see later description).

For engines installed on vessel keels laid before 1 January 2000, a substantial modification means any modification made

to an engine that increases its existing NO<sub>x</sub> emission. These changes include, but are not limited to, changes in its operation or its technical parameters (e.g. to reduce fuel consumption).

## Regulation 14 – Sulphur Oxide (SO<sub>x</sub>) emissions from ships



Designated SO<sub>x</sub> Emission Control Areas

Upon entry into force of Annex VI to MARPOL on the 19 May 2005, the maximum sulphur content of marine fuel oils used on board ships, regardless of application, is 4.5%. Further, a limit of 1.5% on the sulphur content of marine fuel oil, applies in the following designated SO<sub>x</sub> Emission Control Areas (SECAs):

- The Baltic Sea Area which enters into force on 19 May 2006
- The North Sea Area and the English Channel which will not enter into force until 19 November 2007

An alternative to using marine fuel oil with a 1.5% sulphur content in SECAs, is an exhaust gas cleaning system or other equivalent abatement technology. The emission criteria for such systems are 6 g SO<sub>x</sub>/kWh.

### Operational impact of low sulphur fuel Fuel quality issues



Excessive sludging in fuel oil separator

There have been indications that low sulphur fuel oil production may lead to increased quality problems, such as instability, incompatibility, ignition and combustion difficulties, increase in levels

of catalytic fines and the potential introduction of chemical waste.

#### Fuel tank/system configuration

When approaching a SECA a change to 1.5% sulphur content fuel must be made and recorded before entry into the area. Given fuel compatibility problems, and in consideration of the differences in cost, some owners are considering installing an additional set of service and settling tanks for low sulphur fuel oils. Such measures would also simplify change-over procedures and bunker management.

Inadequate availability of low sulphur heavy fuel oils may force owners to increase consumption of low sulphur diesel oils within SECAs. Accordingly, allocation of additional marine diesel oil tank capacity may have to be considered.

#### Lube oil considerations

Experience has indicated that for 2-stroke engines, long term operation on blended low sulphur fuel oils and the use of high base number (BN 70) cylinder lube oils may lead to deposit build-up on piston crowns, piston ring grooves and, subsequently, liner scuffing.

The maximum operation time on fuel oils with low sulphur content and high BN lube oils appears to vary substantially depending on fuel quality, engine make, type, age, load profile, liner temperature, efficiency of water mist catchers, installation of scraper rings, as well as cylinder lube oil quality, feed rate

and lubrication system. Accordingly, the relevant engine manufacturer and lube oil supplier should be consulted prior to operation on low sulphur fuel oil.

#### **Regulation 15 – Volatile Organic Compounds (VOC) emissions from cargo oil tanks in oil tankers**

The requirements apply to tankers operating in terminals that have been designated by the Port state as an area where VOC is regulated. The relevant Port state is required to give advance notification to IMO of such designations.

Any tanker that has a USCG compliant vapour emission control system will automatically comply with the IMO requirements.

#### **Regulation 16 – Emissions from shipboard incinerators**

Each incinerator installed on board on or after 1 January 2000 is to be type approved under the IMO Resolution MEPC 76(40). The operation manual and the type approval certificate for such incinerators must be provided on board and the crew trained and capable of operating the incinerator in accordance with the manual.

Further, shipboard incineration of certain specified substances (e.g. PCB's) is prohibited. Incineration of sewage sludge and sludge oil is not permitted in boilers or diesel engines inside ports, harbours and estuaries.

#### **Regulation 18 – Fuel oil quality**

##### General points

Regulation 18 specifically requires that fuel oil supplied to ships must be free from inorganic acids or chemical wastes that could jeopardise the safety of the ship, be harmful to ships' personnel, or pollute the air.

Guidelines relating to Regulation 18 are found in Resolution MEPC. 96(47) "Guidelines for the sampling of fuel for determination of compliance with Annex VI of MARPOL 73/78".

##### Bunker delivery notes

Regulation 18 requires that any fuel oil delivered on board must be recorded on a Bunker Delivery Note (BDN).

There is a requirement that BDNs must contain specific information, including quantity, sulphur content and a declaration by the fuel oil supplier's representative that the fuel oil supplied conforms with regulations 14 and 18.

The BDNs must be kept on board for a three-year minimum and be ready for inspection at all times.

##### MARPOL Annex VI fuel oil samples

Regulation 18 requires that every BDN is to be accompanied by a representative sample of the fuel oil delivered, taking into account the guidelines in Resolution MEPC.96(47).