

**European Dredging Association
Workshop; November 2008**

***Regulatory overview; IMO context;
MARPOL VI***

International Chamber of Shipping

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Halons and CFC's

CO₂,
SOx, NOx,
PM

Incinerator

Ship Recycling

Hull Bio-fouling

Grey Water

Anodes

Oils

Noise

Sewage

Cleaning Agents

Bilge Water

Garbage

Sludge

Detergents

Ballast Water

Tank Washing

Cargo Residue

Anti-fouling paints



IMO & REGIONAL SHIP AIR EMISSION DEVELOPMENTS

- **Annex VI entered into force in 2005**
- **Baltic Sea - SECA from May 2006**
- **North Sea/English Channel - SECA from November 2007**
– **EU Directive – from August 2007**
- **Major Revision of MARPOL Annex VI – Commenced 2006 and completed October 2008**
- **European Sulphur Directive governs emissions in port (0.1% S at berth 1 January 2010)**
- **California (CARB) regulations (0.5% S)**
- **Various ports are facing new local regulations on Ship Emissions, which are governing future expansion and development**

MARPOL Annex VI

- Adopted in 1997
..... entered into force in 2005
- Revised Annex VI effective from **1 Jul 2010**
- Ratified by 52 States
representing
>80% world tonnage



The Regulations in Annex VI

- **There are 19 Regulations but the following Regulations directly impact Vessel operation**
 - **Regulation 12 – Ozone Depleting Substances**
 - **Regulation 13 – NO_x emissions**
 - **Regulation 14 – Sulphur Oxide emissions**
 - **Regulation 15 – VOC emissions**
 - **Regulation 16 – Shipboard Incinerators**
 - **Regulation 18 – Fuel Oil Quality control**

MARPOL Annex VI

- Emission Gases from Ships
 - Oxides of Nitrogen (NO_x) – create Ozone
 - Sulphur Oxides (SO_x) – create acidification
 - Hydrocarbons (HC) – gas, soot and some particulates
 - Volatile Organic Compounds (VOC)
 - Refrigerant Gases
- Non Annex VI
 - Carbon Dioxide (CO₂) – is a GHG
 - Carbon Monoxide (CO)
- The concentration of exhaust gases is variable according to the **engine type, engine settings and fuel type.**

Annex VI –Key Amendments

- Reg. 13 Reduced NO_x-emission limits
- Introduced Emission Control Areas (ECAs) ilo SECAs
- Reg. 14 Reduced SO_x-emission limits w/review provision
- Clarified criteria for verifying compliant fuel (MEPC Circ.)
- Reg. 15 Better control on VOC-emissions
- Reg. 18 Added provision for Fuel Oil unavailability
- Reg. 4 Expanded scope for equivalent measures
- Annex Revised NO_x-Code
- Revised guidance for Exhaust Gas Cleaning Systems including new interim Wash water Discharge Criteria

Regulation 14

Air Emission Controls - SO_x

- Today - 4.5% & 1.5%
- 2010 – ECA at 1%
- 2012 – Global 3.5%
- 2015 – ECA at 0.1%
- 2020 – Global 0.5%?
- 2025 – Global 0.5%



Regulation 13

Air Emission Controls - NO_x

- 1 Jan 2000 to 1 Jan 2011

Tier 1

- <130 RPM = 17.0 g/kWh
- >130 RPM <2000 = 45 x RPM^(-0.2) g/kWh
- >2000 RPM = 9.8 g/kWh
- NB Tier 1 also applies to pre 2000 ships

- From 1 Jan 2011

Tier 2

- <130 RPM = 14.4 g/kWh
- >130 RPM <2000 = 44 x RPM^(-0.23) g/kWh
- >2000 RPM = 7.7 g/kWh

- From 1 Jan 2016

Tier 3

- <130 RPM = 3.4 g/kWh
- >130 RPM <2000 = 9 x RPM^(-0.2) g/kWh
- >2000 RPM = 2.0 g/kWh



Air Emission Controls - NOx

1 Jan 2000 to 1 Jan 2011 – Tier 1

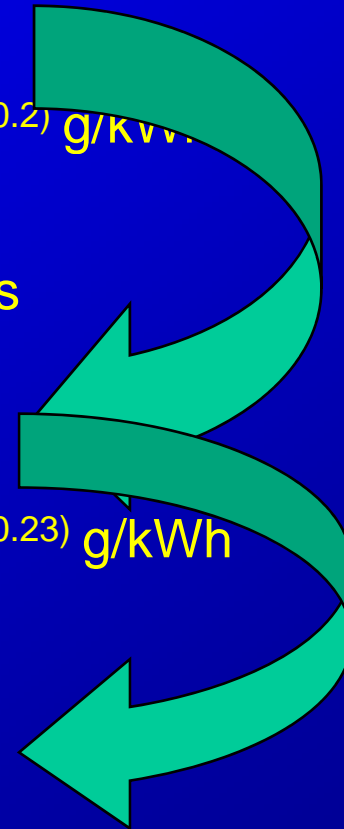
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Air Emission Controls – SO_x & NO_x

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- 2020 – Global 0.5%?
- 2025 – Global 0.5%
- NO_x Tier 1
- 2011 NO_x Tier 2
- **2016 NO_x Tier 3**



Air Emission Controls – SOx & NOx

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- 2010 – ECA at 1%
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- 2012 – Global 3.5%
- 2015 – ECA at 0.1%
- 2016 NOx Tier 3
- 2020 – Global 0.5%?
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Carbon
Emissions?



Shipping industry guidance on the use of
Oily Water Separators
Ensuring compliance with MARPOL



Shipping industry guidance on
Environmental Compliance

A framework for ensuring compliance with
MARPOL



International Chamber of Shipping and
International Shipping Federation



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