Proposal for a Directive of the European Parliament and of the Council amending Directive 1999/32/EC as regards the sulphur content of marine fuels

(2003/C 45 E/32)

(Text with EEA relevance)

COM(2002) 595 final — 2002/0259(COD)

(Submitted by the Commission on 20 November 2002)

EXPLANATORY MEMORANDUM

1. INTRODUCTION

1.1. Environmental impacts of burning marine fuels containing sulphur

Sulphur is naturally present in liquid and solid fuels such as oil and coal. Most marine fuels contain sulphur. The combustion of fuels containing sulphur gives rise to emissions of sulphur dioxide (SO_2 or SO_x), and particulate matter (PM): including primary soot particles, and secondary inorganic sulphate particles formed as a result of atmospheric oxidation of sulphur dioxide. Nitrogen oxides (NO_x) are also emitted when fuels are burned, as a result of incomplete combustion, and to a lesser extent the nitrogen content of the fuel.

SO_2 emissions can damage human health and the built environment, and contribute to acidification, damaging sensitive ecosystems. PM emissions can damage human health. NO_x emissions contribute to acidification, and to the formation of ground-level ozone, which can harm human health and vegetation. Acidification and effects on human health are the two principal impacts under consideration in this proposal.

Emissions modelling undertaken by EMEP in 2000 ([1]), and illustrated in Figure 1 below, shows the impact of ships' emissions in the EU on acidification, in terms of their contribution to the exceedance of critical loads of acidity.

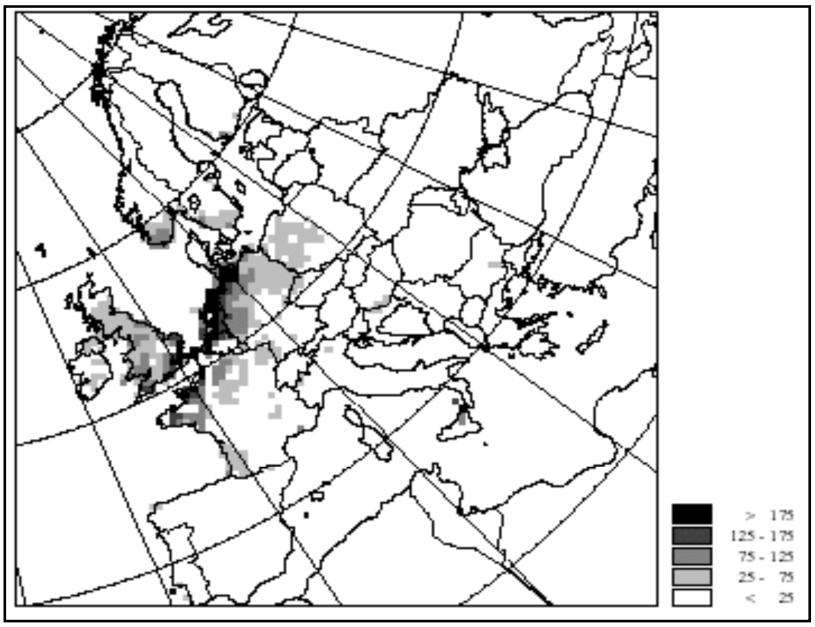

Figure 1: The contribution of ship emissions of SO_2 and NO_x to accumulated exceedances of critical loads of acidity. Units: Acid equivalents per hectare per year. Source: EMEP, 2000.

([1]) For more details see EMEP's 2000 report 'Effects of international shipping on European pollution levels' at http://www.emep.int/reports/dnmi_note_5_2000.pdf. EMEP have reviewed the new ship emissions data from Entec against the data used for that report. They believe that the differences are not significant, and therefore that the report's findings remain valid.

The critical load of acidity is the maximum deposition of sulphur and nitrogen not causing harmful leaching of acidity. Critical loads vary depending on geological and ecological factors, which mean that ecosystems in northern Europe are generally more acid-sensitive than those in the south.

The modelling behind the map in Figure 1 shows that ship traffic contributes to exceedances of critical loads of acidity by more than 50 % in most of the coastal areas along the English channel and North Sea, in the Baltic sea along the coast of Germany and Poland, and also in large parts of southern Sweden and Finland.

We also know that throughout the EU, ship emissions contribute between 20 % and 30 % to the air concentrations of secondary inorganic particles (PM) in most coastal areas [1]. Secondary PM, as well as primary PM, SO_2 and NO_x, has impacts on human health throughout the EU.

Both short-term and long-term exposure to air pollutants gives rise to health impacts — in terms of effects on mortality and on morbidity (illness, including exacerbation of asthma, incidence of bronchitis and heart failure). The table below provides illustrative data on the incidence of death and ill-health for a 1 000 tonne change in emissions of different air pollutants in different EU sea areas [2].

Table 1.1.

Some health impacts of ship emissions in different EU sea areas

	SO_2	NO_x	PM
Respiratory hospital admissions (per kilotonne emitted)			
Eastern Atlantic	0,69	0,57	0,72
Baltic Sea	0,25	0,42	0,20
English Channel	0,90	0,55	0,98
Northern Mediterranean	0,71	0,69	0,79
North Sea	0,66	0,31	0,76
Deaths linked to short-term exposure (per kilotonne emitted)			
Eastern Atlantic	1,66	0,38	—
Baltic Sea	0,60	0,50	—
English Channel	2,18	0,26	—
Northern Meditteranean	1,72	0,40	—
North Sea	1,60	0,13	—
Life years lost through long-term exposure (per kilotonne emitted)			
Eastern Atlantic	4,22	6,75	14,32
Baltic Sea	1,52	2,32	3,96
English Channel	5,55	7,81	19,41
Northern Meditteranean	4,37	8,82	15,63
North Sea	4,06	4,53	15,04

[1] See EMEP's 2001 report 'The influence of ship traffic emissions on the air concentrations of particulate matter', at http://www.europa.eu.int/comm/environment/air/background.htm#transport

[2] Source: BeTa EC database of externalities of air pollutants. AEA Technology, 2002. Based on estimates that were calculated using the ExternE methodology (EC, 1998) and DG Environment guidelines on the valuation of health (see http://europa.eu.int/comm/environment/enveco/studies2.htm).

1.2. **EU regulation on SO_2 emissions and fuel sulphur content**

Directive 1999/30/EC ([1]) sets limit values for the level of SO_2in ambient air, for the protection of human health and vegetation. Directive 2001/81/EC ([2]) on national emissions ceilings sets national SO_2 targets for 2010, to reduce acidification.

Directive 1999/32/EC ([3]) sets sulphur limits for certain fuels used in EU territory, including marine gas oils and diesel oils used by ships in inland waterways and territorial waters (up to 12 nautical miles from shore). The directive also sets sulphur limits for inland heavy fuel oils and gas oils, but no limits are set for the sulphur content of marine heavy fuel oils. Other directives set sulphur contents for liquid fuels used by automotive and non-road vehicles.

Since there are no sulphur limits for marine heavy fuel oils, these now contain a high amount of sulphur relative to other fuels. The average sulphur content of marine heavy fuel oil worldwide is currently 2,7 %, or 27 000 parts per million (ppm), compared to 2 000 ppm maximum for heating oil, and a forthcoming limit of 10 ppm for automotive petrol and diesel. This means that ships are now one of the biggest sources of SO_2 emissions in the European Union. Recent research for the Commission ([4]) shows that by 2010, ship emissions of SO_2 are likely to be equivalent to over 75 % of all land-based emissions, including emissions from all transport modes, combustion plants and heating engines which burn liquid fuels.

For the reasons outlined above, the European Commission believes that reducing SO_2emissions from ships is now an important environmental priority.

1.3. **MARPOL Annex VI**

An international instrument on air pollution from ships — MARPOL Annex VI ([5]) — was adopted by a Diplomatic Conference hosted by the International Maritime Organization in 1997.

MARPOL Annex VI establishes a global sulphur cap of 4,5 % for heavy fuel oil burned by ships, and designates two SO_x Emission Control Areas (SO_xECAs) where fuel used by ships must be below 1,5 % sulphur, or equivalent abatement technologies used. The Baltic Sea was designated a SO_xECA in the original protocol, and the North Sea & English Channel were added in 2000 ([6]), after a negotiating effort by EU Member States.

MARPOL Annex VI enters into force internationally one year after it has been ratified by at least 15 flag states representing at least 50 % of the gross tonnage of the world's merchant shipping. When Directive 1999/32 was being prepared, it was assumed that entry into force would be achieved before long. However to date only six countries worldwide have ratified — Sweden, Norway, Singapore, the Bahamas, the Marshall Islands, and Liberia representing approximately 25 % of world tonnage. The remaining EU 14 represent approximately 10 % world tonnage, candidate countries a further 10 % (notably Malta at 5 % and Cyprus at 4 %), while Panama, the biggest open register, represents 20 %.

([1]) Council Directive 1999/30/EC of 22 April 1999 relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air (OJ L 313, 13.12.2000, p. 12).

([2]) Directive 2001/81/EC of the European Parliament and of the Council of 23 October 2001 on national emission ceilings for certain pollutants (OJ L 309, 27.11.2001, p. 1).

([3]) Council Directive 1999/32 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC (OJ L 121, 11.5.1999, p. 13).

([4]) Quantification of emissions from ships associated with ship movements between ports in the European Community. Entec, 2002. http://www.europa.eu.int/comm/environment/air/background.htm#transport

([5]) Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto.

([6]) Agreed at the IMO's Marine Environment Protection Committee in 2000 (MEPC 44)

1.4. **Aims of the proposal**

This proposal aims to reduce ships' emissions of sulphur dioxide and particulate matter by modifying Council Directive 1999/32 on the sulphur content of marine fuels. In particular, the proposal aims to:

— introduce a 1,5 % sulphur limit for marine fuels used by all seagoing vessels in the North Sea, English Channel and Baltic Sea, in line with MARPOL Annex VI sulphur limits, in order to reduce the effect of ship emissions on acidification in Northern Europe and on air quality

— introduce a 1,5 % sulphur limit for marine fuels used by passenger vessels on regular services to or from any Community port, in order to improve air quality around ports and coasts, and create sufficient demand to ensure an EU-wide supply of low sulphur fuel

— amend existing sulphur provisions for marine gas oils used by seagoing and inland vessels, in order to improve local air quality in ports and on inland waterways

These marine fuels amendments are the main substantive elements of this proposal. Two other elements are also proposed:

— consequential amendments to the inland heavy fuel provisions arising from Directive 2001/80/EC relating to large combustion plants, and

— the creation of a Regulatory Committee to agree future technical amendments which do not require political co-decision

2. **EXPLANATION OF INTENTIONS**

2.1. **Current provisions**

The only marine fuels currently in the scope of directive 1999/32 are marine gas oils. These are defined in the directive to include all marine distillate fuels: DMX and DMA grades, which are known as marine gas oils or MGO, but also DMB and DMC grades, which are known as marine diesel oils or MDO. The directive does not currently apply to the third (and most widely used) type of marine fuel, which is heavy fuel oil (HFO).

The current marine gas oil provisions require Member States to ensure that if ships are using marine distillate fuels in the Community (territorial waters — including seas 12 nautical miles from shore and inland waterways), then the sulphur content of those marine distillate fuels must be 0,2 % or below (0,1 % by 1 January 2008).

2.2. **Marine fuels — introducing new provisions**

Article 7.3 of Directive 1999/32/EC requires the Commission to consider which measures could be taken to reduce the contribution to acidification of the combustion of marine fuels other than gas oils and if appropriate, make a proposal.

The first proposed amendment introduces a new sulphur limit for all marine fuels, including heavy fuel oil, used in the North Sea, English Channel and Baltic Sea. This is the same limit agreed at the IMO for the SO_x Emission Control Area under MARPOL Annex VI. Anticipating that EU Member States and accession candidate countries will soon ratify MARPOL Annex VI, and that other major flag states will follow, this will mean that the internationally-agreed sulphur limit is implemented 12 months after entry into force of this directive, or one year after entry into force of Annex VI, whichever is the earlier.

Secondly, the proposal aims to set the same 1,5 % sulphur limit for all marine fuels used by passenger ships on regular services to or from any EU port. This will reduce emissions in populated southern European urban areas which would otherwise not benefit from the SOx Emission Control Area. The proposal is in line with established Community policy of imposing high operational standards on all passenger ferries operating to or from EU ports.

Thirdly, the proposal aims to ensure that compliant 1,5 % sulphur fuel is made available in sufficient quantities in all EU Member States. A corollary benefit of the passenger ships proposal is that it will help Member States achieve this by creating EU-wide demand for low-sulphur fuel oil.

Finally, the proposal aims to remove the 0,2 % sulphur limit for DMB and DMC marine diesel oil grades, and ban the sale of DMB and DMC grade fuels having over 1,5 % sulphur. This will allow marine diesel oils to be used to comply with the SO_x emission control area – which is particularly important for international vessels as low sulphur heavy fuel oil may not be widely available outside the EU.

2.3. **Marine gas oils — amending current provisions**

The other main amendments relate to the current marine gas oil provisions under Article 4 of Directive 1999/32/EC. From consultations with industry, it is clear that these provisions are effective in relation to inland vessels, whose engines are designed only to run on marine gas oils. However, their effectiveness is less clear with regard to seagoing vessels. Seagoing vessels' main propulsion engines operate predominantly on heavy fuel oils, which are not currently covered by the directive and which under the current international marine fuels standard, ISO 8217, can contain up to 5 % sulphur.

Historically, the high viscosity of heavy fuel oil meant that seagoing vessels had to switch to distillate fuels on approaching ports — for manoeuvring, and subsequently for powering electricity generators from auxiliary engines while at berth. This is no longer the case, as new engine and oil-heating technologies now allow seagoing vessels to operate on heavy fuel oil at all times. There has therefore been a trend towards uni-fuel operation on cheaper, higher sulphur heavy fuel oil at all times, including in ports, leading to higher emissions of SO_2, PM and nitrogen oxide (NO_x) close to populated areas.

In preparing this proposal, the Commission has therefore considered how best to significantly reduce ships' air pollutant emissions close to areas where people live. It was decided that the best approach in terms of environmental effectiveness and enforceability would be to regulate on the sulphur content of fuel used in EU ports. It was then necessary to consider how to define the port area, and in particular whether the regulation should apply to the fuel used by ships during manoeuvring (main engines), and/or the fuel used by ships while at berth (mostly auxiliary engines providing power for electricity generation).

While it is possible for ships to switch the fuel being supplied to their main engines while manoeuvring, engine manufacturers have advised that a switch from high viscosity heavy fuel oil straight to low viscosity marine gas oil would require a 20-60 minute change-over procedure to avoid problems with the fuel pumps and injector systems resulting from rapid changes in temperature. Any shortcuts in the procedure could lead to temporary engine failure, which could be particularly dangerous close to ports.

As well as these practical considerations, a quantification of in-port emissions was used to inform the proposal. This found that air pollutant emissions during ships' manoeuvring in ports were around one quarter of the emissions while at berth.

The first aim of this proposal is therefore to require that all marine fuels used by ships at berth in all Community ports contain 0,2 % sulphur or less. This approach is proportionate, practical and easily enforceable, and will improve local air quality by reducing ships' emissions of SO_2, PM and NO_x in ports.

Secondly, it is proposed to remove the existing derogation for Greece and the overseas territories. It is clear that ship emissions affect local air quality in these areas as much as they do elsewhere, and the emissions quantification suggests that three of the ten ports with the highest ship emissions in the EU are in Greece.

Thirdly, it is proposed to ban the sale of marine gas oils (DMA and DMX grades) having over 0,2 % sulphur (0,1 % by 2008). This will help to ensure that compliant fuel is made available.

The final element relates to Article 1.2(a) of Directive 1999/32, which currently exempts 'marine gas oil used by ships crossing a frontier between a third country and a Member State' from the 02 % sulphur content requirement. This exemption has proved difficult to interpret and enforce in a uniform manner. It was included on the grounds that international ships would not necessarily be able to find a supply of compliant gas oil at their port of departure, for use in Community territorial waters. The lack of worldwide availability of 0,2 % marine gas oil has been born out by a survey of the global fuels market undertaken for the Commission. [1] The proposed amendment requires seagoing ships to use 0,2 % sulphur fuel only while at berth in EU ports, therefore allowing ships to take on compliant fuel on arrival, and removing the need for an exemption.

Finally, therefore, it is proposed to remove the exemption for international ships crossing a frontier between a third country and a Member State.

2.4. **Heavy fuel oil for use by large combustion plants — consequential amendments**

Article 3.4 of Directive 1999/32/EC states that the provisions relating to sulphur content of heavy fuel oil for inland use shall be reviewed and, if appropriate, revised in the light of any future revision of Directive 88/609/EEC on large combustion plants. Directive 2001/80/EC, adopted last year, revises Directive 88/609/EEC and introduces new requirements relating to sulphur dioxide emissions from large combustion plants. As SO_2 emissions are generally a function of the sulphur content of the fuel being used, it is now necessary to bring forward consequential amendments to directive 1999/32.

This proposal therefore aims to introduce consequential amendments to Directive 1999/32/EC to be compatible with the new Directive 2001/80/EC relating to emissions from large combustion plants.

2.5. **Removing the derogation provision for heavy fuel oil**

Paragraphs 2 and 5 of Article 3 set out a procedure whereby Member States may request a derogation from the 1 % maximum sulphur content of heavy fuel oil, which applies from 1 January 2003. After 1 January 2003, the heavy fuel oil derogation will no longer be relevant as the 1 % sulphur limit will have entered into force. The removal of this clause will not affect transition arrangements with candidate countries, which can be negotiated on a case by case basis.

It is therefore proposed to delete the derogation provision for heavy fuel oil.

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[1] Advice on the costs to fuel producers likely to result from a reduction in the level of sulphur in marine fuels. Beicip Franlab, 2002. http://europa.eu.int/comm/environment/air/020505bunkerfuelreport.pdf

2.6. **Establishing a Regulatory Committee to agree technical amendments in future**

It can be preferable for technical and/or consequential amendments such as those discussed under 2.4 above to be agreed by a Regulatory Committee rather than by a lengthy co-decision procedure with the European Parliament and Council.

This 'comitology' procedure is particularly appropriate where amendments are simply consequential to other directives which have already been agreed politically by co-decision. It is also a useful means of agreeing on non-political proposals such as the development of guidelines for policy implementation. However, no Regulatory Committee is currently provided for under directive 1999/32.

This proposal therefore aims to create a Regulatory Committee, which can be used in future to take decisions on technical issues which are not politically controversial. This Committee cannot be used to adopt amendments which result in any direct or indirect changes to fuel sulphur limits.

3. **COSTS & BENEFITS OF THE PROPOSAL**

This section deals only with the marine fuels proposals as they affect seagoing ships, since the proposals do not change the current situation for inland vessels, the amendments on large combustion plants are consequential to Directive 2001/80/EC, and the proposal to establish a Regulatory Committee will not give rise to any costs. To inform the proposal, DG Environment commissioned two separate studies, whose results are central to this cost-benefit analysis ([1]):

— A report by Beicip Franlab on the costs to EU refiners of producing lower sulphur marine fuels (the 'Franlab report') The report concludes that the greater the quantity of low sulphur fuels produced, the greater the unit production costs per tonne. This means that contrary to the usual principles of economics, as demand for low sulphur fuel rises, so does the price. This is illustrated in Figure 2 below.

— A study by Entec UK Ltd to quantify emissions from ships (the 'Entec study'). The study provides an inventory of actual year 2000 emissions and puts forward a number of future fuel consumption and emissions projections based on two scenarios for annual growth in ship movements (1.5 % and 3 %), and various regulatory scenarios. For this analysis, we have used the 1,5 % growth figures.

3.1. **Costs of marine fuels proposals**

For the purposes of this analysis, we have assumed that EU refiners' costs will be passed on to shipowners through increased fuel prices, as has been the case with previous regulations on fuel quality. We indicate below the average fuel price premia (extra cost per tonne) for low sulphur fuel over high sulphur fuel, identified in the Franlab report on the basis of average refinery costs, and using fuel consumption data derived for 2006 — 2008 in the Entec study. Where the year 2006 is mentioned, this is indicative only, as the provisions concerned may well apply before this. In any case the annual cost-benefit ratio remains very similar year on year.

([1]) Both studies are available at. http://www.europa.eu.int/comm/environment/air/background.htm#transport

3.1.1. *Costs and methods of producing low sulphur heavy fuel oil in EU refineries*

Marine fuel prices fluctuate considerably, but as a point of reference, average prices in the Amsterdam-Rotterdam-Antwerp region from 1997-2001 have been EUR 110 per tonne for higher sulphur marine heavy fuel oil, and around EUR 190 per tonne for higher sulphur marine gas oil.

Figure 2 below shows a wide range in the possible premium for low sulphur heavy fuel oil. The high end represents oil companies' target levels to achieve a return on investment, while the low end is more in line with the actual return achieved historically in the European refining industry. The range also reflects uncertainty about the investment costs for producing low sulphur fuel. For the purpose of this cost-benefit analysis we have assumed a price premium in the middle of the range.

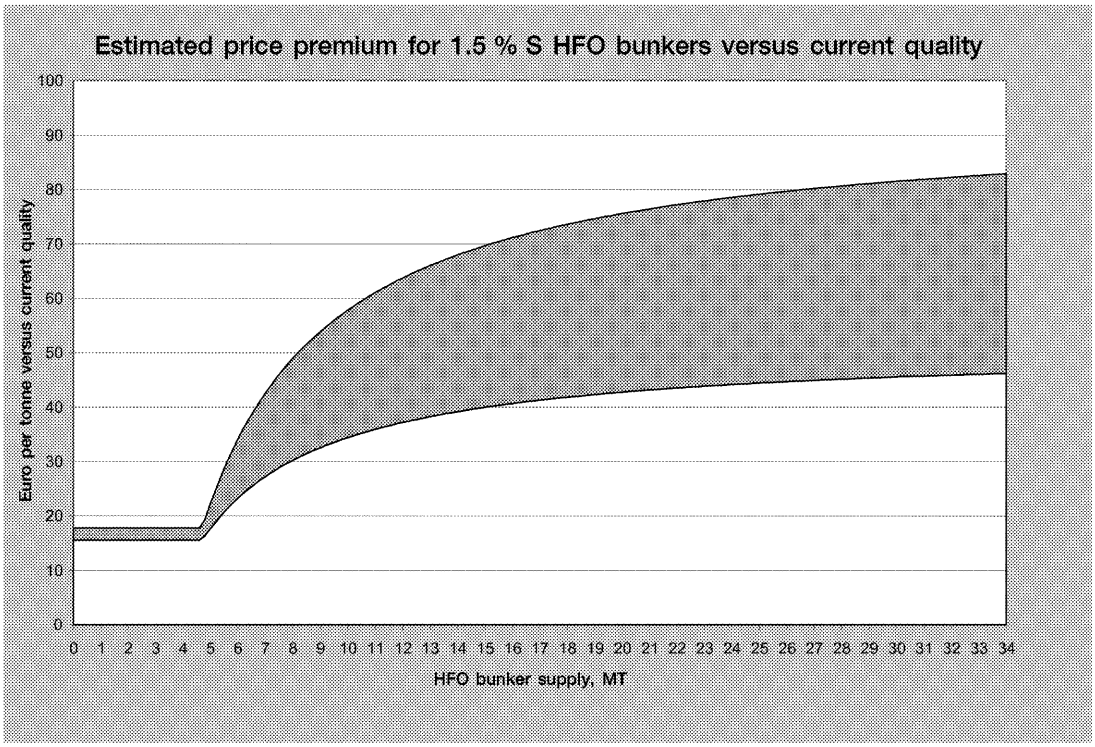

Figure 2. Cost curve showing the price premium for EU refiners to provide 1.5 % sulphur marine fuel, against a current average quality of 2.9 %. Source: Beicip Franlab 2002.

To produce lower sulphur heavy fuel oil, the Franlab report suggests that refiners' initial approach would be to reblend within the refining system, as this is the least expensive method. At least 4.7 million tonnes could be provided in this way. If more were required, a second more expensive approach would be to buy and use greater quantities of expensive lower sulphur crude in the refining process.

It should be noted that neither of these approaches will reduce the overall sulphur balance, instead resulting in slightly higher sulphur contents in fuel used elsewhere.

The third and most expensive option is to desulphurise the fuel. This approach will reduce the overall sulphur balance, but it is the most costly and also the most energy-intensive for refineries, resulting in increased CO_2 emissions. There are currently very few plants in Europe which desulphurise residual fuel because the returns do not justify the investment.

3.1.2. *Supplying 1.5 % sulphur marine fuel for use in the North Sea & Baltic SO_xECAs, and for use by passenger vessels on regular services*

The Entec study projects that by 2006 around 14 million tonnes of marine fuel will be consumed annually in the North Sea and Baltic SO_xECAs. Emissions data suggests that a further 4 million tonnes are consumed by regular passenger vessels in EU sea areas outside the SOxECA. Under this proposal, all 18 million tonnes of this fuel must be 1.5 % sulphur or less. CONCAWE ([1]) have estimated that around half of the marine fuel required for use in the SO_xECAs (7 million tonnes) would be supplied in EU ports, and the other half would be supplied outside the EU to international vessels whose journey will pass through a SO_xECA. Assuming that all 4 million tonnes of marine fuel used by regular passenger ferries outside the SO_xECA is supplied in the EU, the total quantity of lower sulphur marine fuel required in the EU would be 11 million tonnes. The Franlab report suggests that the average price premium per tonne for supplying 11 million tonnes of 1.5 % sulphur marine heavy fuel oil in the EU would be around 50 EUR.

It is more difficult to predict the price premium for 1.5 % sulphur marine fuel supplied outside the EU. In some areas, 1.5 % sulphur marine heavy fuel oil is unlikely to be available because the crude oil used to produce marine fuels has a high sulphur content. In these areas, ships destined for a SO_xECA are likely to take on marine distillate fuel to comply with the 1.5 % sulphur requirement. It is assumed that half of the 7 million tonnes of fuel purchased outside the EU for use in the SOxECAs will be distillate fuel, with a price premium of around EUR 60 (the average price premium for DMB grade marine diesel oil over heavy fuel oil over the past 4 years), and that the other half will be heavy fuel oil, with a price premium similar to that for low sulphur heavy fuel oil in the EU of around EUR 50. The average price premium for the 7 million tonnes of 1.5 % sulphur marine fuel supplied outside the EU is therefore assumed to be EUR 55.

The annual incremental cost of the SO_xECA proposal for 2006 is therefore assumed to be (7 m × EUR 50) + (7 m × EUR 55) = EUR 735 m. The annual incremental cost of the passenger vessel proposal for 2007 is assumed to be (4 m × EUR 50 = EUR 200 m.

3.1.3. *Supplying 0.2 % sulphur marine fuel for use in EU sea ports (0.1 % from 2008)*

The Entec study projects that by 2006 around 2.3 million tonnes of marine fuel will be consumed annually by ships at berth in EU ports. Under the proposal, this fuel would be required to be 0.2 % sulphur or below. It is assumed that all of this fuel would be supplied by EU refineries, in the form of marine gas oil. It is further assumed that half of the vessels entering EU ports would have to switch from heavy fuel oil to marine gas oil to comply with the proposal, representing a price premium of EUR 100 per tonne, and the other half would already be using a marine distillate oil, and switching to a lower sulphur grade. The Franlab report suggests that the price premium for switching from 1.5 % S to 0.2 % sulphur marine gas oil would be EUR 15.5 per tonne. The average price premium for this fuel is therefore assumed to be EUR 57.75. The annual incremental cost of the in-ports proposal for 2006 is therefore assumed to be (2.3 m × EUR 57.75) = EUR 133 m.

From 2008, the sulphur limit decreases from 0.2 % to 0.1 %, consumption increases to 2.4 million tonnes, and the price premium is presumed to be EUR 2 per tonne for switching from 0.2 % S to 0.1 % sulphur marine gas oil. The annual incremental cost of the in-ports proposal for 2008 is therefore assumed to be (2.4 m × EUR 2) = EUR 4.8 m.

([1]) CONCAWE is the Oil Companies' Health, Safety and Environment Organisation.

3.2. **Benefits of marine fuels proposals**

The overall benefits of the proposal are derived from the reduced emissions of conventional air pollutants associated with reducing the sulphur content of marine fuels consumed in the SO_xECA and in EU ports. Reductions in conventional pollutants have a number of direct benefits on human health and environment. Some of these benefits can be converted into monetary form by attaching a benefit to each tonne of pollutant reduced.

With respect to acidification, methodologies are not yet available to monetize the effects on ecosystems in terms of exceedance of critical loads. This is significant because it means that the principal benefit of the SO_xECA part of this proposal — the reduction of ships' contribution to the exceedance of critical loads for acidification in Northern Europe — cannot be monetized.

The monetized benefits which have been produced recently for the Commission and used to assess this proposal ([1]), take into account effects on human health as well as effects on crops and building materials. The health impacts set out in Table 1 (p1) were analyzed, and other impacts on health, buildings and crops added, to produce monetized benefits per tonne of emissions reduction. The resulting values used in this cost-benefit analysis are set out in table 3.2 below.

Table 3.2.

Monetized benefits of emissions reductions

Pollutant	Location of emission reduction	Air quality benefit	
		EUR per tonne reduced (average)	Explanation
SO_2	North Sea, Baltic Sea & English Channel (SO_xECA)	3 933	Reduced impact of SO_2 and sulphate particles on health, and SO_2 and acidity on materials
SO_2	East Atlantic & Northern Mediterranean	4 600	Reduced impact of SO_2 and sulphate particles on health, and SO_2 and acidity on materials
SO_2	EU port areas	8 200	Benefits as above, but higher value because more people are affected
PM	EU port areas	30 500	Reduced impact on human health (high value as PM is particularly harmful)
PM	SO_xECA port areas	27 650	Reduced impact on human health (slightly lower value than above as SO_xECA countries have slightly lower average population density than EU)
NO_x	EU port areas	4 200	Reduced impact of nitrate particles on health and ozone on health and crops

The values for sea areas are based on air quality benefits in rural areas in bordering countries, weighted by straight-line length of coasts. The values for different sea areas were averaged to provide values for the SO_xECA area, and for the East Atlantic & Northern Mediterranean.

([1]) BeTa EC database of externalities of air pollutants. AEA Technology, 2002. Based on estimates that were calculated using the ExternE methodology (EC, 1998) and DG Environment guidelines on the valuation of health (see http://europa.eu.int/comm/environment/enveco/studies2.htm).

The values for EU and SO_xECA port areas are based on the assumption that half of the ports are in rural areas and half are in cities having 100 000 population. This is a conservative estimate because the Entec study found that of the 50 ports with the highest emissions, ten have populations of around 500 000 or more. In order of emissions, these are Hamburg, Barcelona, Genoa, London, Amsterdam, Thessaloniki, Naples, Lisbon, Dublin and Copenhagen. Of these, five are EU capitals and four have populations around 1 million or more.

In these areas the monetized benefit per tonne of $SO_2$and PM reduced will be 5 to 15 times greater than that used for the purpose of this cost-benefit analysis, because more people benefit from the emissions reductions.

Nonetheless, by way of sensitivity analysis, the costs and benefits of the in-ports proposal have also been calculated assuming all ports are in rural areas (and therefore that the benefits per tonne of $SO_2$and PM reduced are almost halved). Under this scenario, benefits still outweigh costs by 4:1.

3.3. **Summary tables of costs, benefits and emissions reductions**

Three tables below summarise the annual costs and benefits of the different marine fuels elements of the proposal.

Table 3.3.1.

Annual benefits & costs of SO_xECA proposal (2006)

BENEFITS	
3 933	EUR Average benefit per tonne SO_2reduced in North Sea, Baltic & Channel
× 337 000	Tonnes SO_2 reduced through SO_xECA proposal
= 1 325 421 000	EUR Annual air quality benefit
27 650	EUR Average benefit per tonne PM reduced in ports in SO_xECAs
× 2 000	Tonnes PM emissions reduced in ports
= 55 300 000	EUR Annual air quality benefit
1 380 721 000	EUR Total annual air quality benefit
COSTS	
50	EUR per tonne premium for 1.5 % sulphur marine fuel bought in the EU
× 7 000 000	Tonnes of 1.5 % S HFO bought and used in SO_xECA
= 350 000 000	EURAnnual incremental fuel cost
55	EUR per tonne premium for 1.5 % sulphur marine fuel bought outside EU
× 7 000 000	Tonnes of 1.5 % marine fuel bought outside EU and used in So_xECA
= 385 000 000	EUR Annual incremental fuel cost
735 000 000	EUR Total annual incremental fuel cost
EUR 645 721 000	= ANNUAL NET BENEFIT

Table 3.3.2.

Annual benefits & costs of passenger vessels proposal (2007)

BENEFITS	
4 600	EUR Average benefit per tonne SO_2reduced in Mediterranean/Atlantic
× 89 000	Tonnes SO_2 reduced through passenger ships proposal
= 409 400 000	EUR Annual air quality benefit
COSTS	
50	EUR per tonne premium for 1.5 % sulphur marine fuel bought in the EU
× 4 000 000	Tonnes of 1.5 % S HFO used by ferries in Mediterranean/Atlantic
= 200 000 000	Annual incremental fuel cost
EUR 209 400 000	= ANNUAL NET BENEFIT

Table 3.3.3.

Annual benefits & costs of in-ports proposal (2006 & 2008)

BENEFITS		
0,2 % S fuel (2006)	0,1 % S fuel (2008)	
8 200	8 200	EUR Average benefit per tonne SO_2 reduced in ports
× 81 000	× 3 000	Tonnes SO_2 reduced in ports
= 664 200 000	= 24 600 000	EUR Benefit
30 500	30 500	EUR Average benefit per tonne PM reduced in ports
× 8 000	× 200	Tonnes PM reduced in ports
= 244 000 000	= 6 100 000	EUR Benefit
4 200	4 200	EUR Average benefit per tonne NO_x reduced in ports
× 3 000	× 70	Tonnes NO_x reduced in ports
= 12 600 000	= 294 000	EUR Benefit
920 800 000	30 994 000	EUR Total annual incremental air quality benefit
COSTS		
0,2 % S fuel (2006)	0,1 % S fuel (2008)	
57,75	2	EUR per tonne premium for fuel
× 2 300 000	× 2 400 000	Tonnes of fuel consumed in EU ports
132 825 000	4 800 000	EUR Total annual incremental fuel cost
EUR 787 975 000	EUR 26 194 000	= ANNUAL NET BENEFIT

It is clear that for all elements of the proposal, benefits significantly outweigh costs. In fact, for the 1.5 % sulphur fuel elements, the fuel price premium would have to rise to EUR 99 per tonne before the costs would exceed the benefits. For the in-ports proposal, the fuel price premium for 0.2 % sulphur marine fuel would have to rise to EUR 400 per tonne before costs would exceed benefits.

3.4. **Carbon dioxide**

The move to lower sulphur marine fuel will also have a slight effect on emissions of carbon dioxide (CO_2), the principal greenhouse gas which contributes to climate change. Desulphurising fuels is energy-intensive and leads to increased CO_2 emissions from refineries. On the other hand, lower sulphur fuels have a higher specific energy, leading to lower CO_2 emissions from vessels.

While a small amount of additional desulphurisation will be required to provide the 2.3 million tonnes of low sulphur gas oil required under this proposal, the Franlab report predicts that most of the low sulphur heavy fuel oil required will be provided by reblending and/or using lower sulphur crude. It is therefore likely that any CO_2 increases at refineries will be small, and more than offset by the annual reduction in CO_2 emissions from ships — projected in the Entec study to be 190 000 tonnes in 2006. Consequently, we have not included CO_2 emissions in this cost-benefit analysis.

3.5. **Possible impacts on sulphur content of heavy fuel oil used outside the SO_xECAs**

For the SO_xECA part of this proposal it is assumed that the 7 million tonnes of EU-supplied heavy fuel oil required for use in the SO_xECAs would be produced at relatively low cost in EU refineries by reblending within the existing refining system, or by using a lower sulphur crude.

As mentioned in section 3.3.1, this will mean that the sulphur content of fuels produced in the EU for use outside the SO_xECAs is likely to increase slightly. Assuming that the current average sulphur content of heavy fuel oil in the EU is 2,9 % (CONCAWE figure used in the Franlab report) and knowing that 7 million tonnes of EU-produced HFO would need to be blended down by 1,4 % to arrive at an average 1,5 % sulphur content, a simple sulphur mass calculation (7 m × 0,014) implies that 98 000 tonnes of sulphur would be moved out of the SO_xECAs. Assuming that all 98,000 tonnes of deblended sulphur ends up in the 35 million tonnes of fuel which is consumed in EU sea areas outside the SO_xECA, there would be an increased sulphur content of around 0,3 % in this fuel. This is a pessimistic assumption, as it is likely that much of the deblended sulphur would in fact end up in fuel being consumed outside EU sea areas in the high seas.

Moving sulphur emissions from one area to another can be justified to an extent, because the rationale behind the SO_xECAs, as agreed by Member States at the IMO, is to reduce the impact of ships' SO_2 emissions on acid-sensitive ecosystems. Other EU sea areas do not border acid-sensitive ecosystems to the same extent as the North Sea and Baltic SOxECAs, so it is rational to move ships' SO_2 emissions to these areas where they do less harm.

Nonetheless, it is important to ensure that SO_2 emissions from ships in other EU sea areas do not reach a level which could adversely affect local air quality and harm human health.

This is one reason why the Commission is proposing a 1,5 % sulphur fuel standard for regular passenger vessels throughout the EU, and a 0,2 % sulphur fuel standard for all EU ports, to reduce the local air quality impact of SO_2, PM and NOx emissions. We also propose to monitor the sulphur content of marine heavy fuel oil being used throughout the EU by means of the reports on fuel sulphur content required under this proposal. If necessary, the Commission will then propose measures to reduce ships' SO_2 emissions in other sea areas.

4. CONTENT OF THE PROPOSAL

4.1. Article 1

This Article details each of the proposed amendments to Directive 1999/32/EC.

1. Article 1 of Directive 1999/32/EC is amended: to include an explanatory statement about the extended scope of the marine fuels provisions; to delete the clause exempting marine heavy fuel oils and marine gas oils used by ships crossing a frontier between a third country and a Member State; and to introduce a new clause exempting fuels intended for the purposes of research and testing.

2. Article 2 is amended to update existing definitions and introduce new definitions relating to the marine fuels provisions.

3. Article 3 is amended to delete existing provisions on combustion plants, including the derogation clause which expires in 2003, and introduce new provisions which are consistent with Directive 2001/80 on Large Combustion Plants.

4. Article 4 is amended to remove the existing marine gas oil provisions.

5. A new Article 4a is added to limit the sulphur content of marine fuels used in SO_x Emission Control Areas, and by passenger ships on regular services to or from any EU port, to 1,5 %, and to prohibit the sale of marine diesel oils having over 1,5 % sulphur.

6. A new Article 4b is added to limit the sulphur content of marine fuels used by ships on inland waterways and at berth in Community ports to 0,2 % sulphur (0,1 % by 2008), and to prohibit the sale of marine gas oils having over 0,2 % sulphur (0,1 % by 2008).

7. Article 6 is amended to include the new marine fuels articles in the sampling regime, and specify marine fuels sampling, analysis and inspection procedures.

8. Article 7 is amended to introduce new reporting requirements for marine fuels, and a requirement for the Commission to consider alternative abatement technologies when IMO guidelines have been developed.

9. A new Article 9a is added to introduce a Regulatory Committee.

4.2. Article 2

This Article concerns the obligations on the Member States to transpose this proposed Directive.

4.3. Article 3

This Article concerns the date of entry into force of the proposed Directive.

4.4. Article 4

This Article addresses the proposed Directive to the Member States.

5. VIEWS OF MEMBER STATES AND STAKEHOLDERS

Earlier this year, two meetings were held with stakeholders, including Member States, candidate and EEA countries, industry representatives and environmental NGOs. In addition, a written consultation exercise was held, to which around 40 responses were received. Records of both meetings, lists of participants, a report on the written consultation, and copies of all non-confidential responses are publicly available at

http://www.europa.eu.int/comm/environment/air/future_transport.htm

5.1. **Summary of views on proposed marine fuels provisions**

Member States: Most Member States support a geographically limited ban on the use of high-sulphur marine fuels, in line with the internationally-agreed SO_x Emission Control Area in the North Sea and the Baltic. Most do not support a EU ban on the sale of high-sulphur marine heavy fuels. Most agree that the marine gas oil provisions of the directive need to be clarified to be more operational.

Belgium proposes that the sale of non-compliant marine gas oils should be banned, and Italy confirms that they have already banned the marketing of marine gas oils over 0,2 % sulphur. Finland confirms that its regular ferries already tend to use 0,5 % sulphur fuel or less. Italy believes a 3 % limit would be more appropriate for ferries. Greece believes it should exempted from all marine fuels provisions.

EU candidate and EEA countries: Latvia and Poland support a geographically limited ban on the use of high-sulphur marine fuels, consistent with the SO_x Emission Control Area. Romania believe the designation of the Black Sea as a SO_x Emission Control Area should be considered. Norway support a geographically-limited ban on the use of high-sulphur heavy fuel oils, provided this does not go beyond the requirements of the SO_x Emission Control Area. They support a parallel, or an even more restrictive, ban on the sale of high sulphur heavy fuel oils.

Shipping industry representatives: (European Community Shipowners Association, International Chamber of Shipping, Baltic & International Marine Council and Independent Tanker Owners Organisation). Shipowners' representatives prefer international regulation on marine heavy fuels to EU action. If EU action is proposed, they believe regulation on fuel sulphur content at the point of sale would be the most effective way to ensure compliance and availability. They believe the marine gas oil provisions of the directive need to be amended to exempt fuel contained in the tanks of ships arriving from outside the EU.

Oil industry representatives: (EUROPIA (European Petroleum Industries Association), CONCAWE (Oil Companies' Health, Safety and Environment Organisation) and BP Marine). EUROPIA and CONCAWE support a geographically limited ban on the use of high-sulphur marine fuels, consistent with the SO_x Emission Control Area, where this would contribute to cost-effective attainment of air quality standards and reduced exceedances of critical loads. They would not support a ban on the sale of high sulphur heavy fuel oil. They support the raising of the sulphur limit for marine diesel oils under 1999/32. BP Marine proposes an emissions trading regime, where the use of SO_2 abatement technology is permitted, instead of a limit on the sulphur content of marine fuels.

Non-Governmental Organisations: (Acid Rain Secretariat, North Sea Foundation, Seas at Risk and the European Federation for Transport & Environment). The environmental NGOs support the inclusion of marine heavy fuel oils in the scope of the directive, and believe a 0,5 % sulphur limit should be applied in all EU seas, including exclusive economic zones. They would support a parallel ban on the sale of marine fuels having over 0,5 % sulphur. They agree that the marine gas oil provisions of the directive need to be clarified and support the exemption for Greece being removed. They believe that market-based instruments should be developed in parallel with regulation.

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the Economic and Social Committee,

Having regard to the opinion of the Committee of the Regions,

Acting in accordance with the procedure laid down in Article 251 of the Treaty,

Whereas:

(1) The Community's environmental policy, as set out in the action programmes on the environment and in particular in the Sixth Environmental Action Programme on the basis of principles enshrined in Article 174 of the Treaty, aims to achieve levels of air quality that do not give rise to unacceptable impacts on, and risks to, human health and the environment.

(2) Council Directive 1999/32/EC of 26 April 1999 relating to a reduction in the sulphur content of certain liquid fuels and amending Directive 93/12/EEC [1], lays down the maximum permitted sulphur content of heavy fuel oil, gas oil and marine gas oil used in the Community.

(3) Article 7(3) of Directive 1999/32/EC calls upon the Commission to consider which measures could be taken to reduce the contribution to acidification of the combustion of marine fuels other than marine gas oils and, if appropriate, make a proposal.

(4) Emissions from shipping due to the combustion of marine fuels with a high sulphur content contribute to air pollution in the form of sulphur dioxide and particulate matter harming human health and contributing to acidification.

(5) Annex VI of the 1997 Protocol to amend the International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 relating thereto (hereinafter 'MARPOL Annex VI') drawn up by the International Maritime Organization (IMO) regulates the prevention of air pollution from ships and makes provision for certain areas to be designated as Sulphur Oxide Emission Control Areas (hereinafter 'SO_x Emission Control Areas'). To date, the Baltic Sea, the North Sea and the English Channel have been so designated.

(6) MARPOL Annex VI will not enter into force until ratified by at least 15 States representing at least 50 % of world merchant shipping tonnage, and the IMO in its Assembly resolution A.929(22) urged governments to ratify Annex VI and in its Assembly resolution A.926(22) called upon Governments, particularly of States in whose territory SO_x Emission Control Areas have been designated, to ensure the availability of low sulphur bunker fuel oil in areas within their jurisdiction.

(7) The Marine Environment Protection Committee of the IMO has adopted guidelines for the sampling of fuel oil for determination of compliance with MARPOL Annex VI.

(8) Under MARPOL Annex VI, the IMO is to develop guidelines on exhaust gas cleaning systems and other technological methods to limit SO_x emissions in SO_x Emission Control Areas;

(9) Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants [2] recasts Directive 88/609/EEC, and Directive 1999/32/EC shall be revised accordingly, as provided for under Article 3(4) of Directive 1999/32.

(10) A regulatory procedure is necessary for the adoption of future amendments adapting this Directive to scientific and technical progress.

(11) Directive 1999/32/EC should therefore be amended accordingly.

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Directive 1999/32/EC is amended as follows:

1. Article 1(2) is replaced by the following:

'Reductions in the emissions of sulphur dioxide resulting from the combustion of certain petroleum-derived liquid fuels shall be achieved by imposing limits on the sulphur content of such fuels as a condition for their use within the territory of the Member States.

Limits on the sulphur content of marine fuels shall be imposed as a condition of their use by ships in certain parts of the Community. The marketing in Community territory of marine gas oils and diesel oils having a sulphur content higher than the levels specified in this directive shall also be prohibited.

[1] OJ L 121, 11.5.1999, p. 13.

[2] OJ L 309, 27.11.2001, p. 1.

The limitations on the sulphur content of certain petroleum-derived liquid fuels as laid down in this Directive shall not, however, apply to:

(a) fuels intended for the purposes of research and testing;

(b) fuels intended for processing prior to final combustion;

(c) fuels to be processed in the refining industry.'

2. Article 2 is amended as follows:

(a) In paragraph 1, the first indent is replaced by the following:

'*heavy fuel oil means*

— any petroleum-derived liquid fuel falling within CN code 2710 19 51 to 2710 19 69 (*)'

(b) In paragraph 2, the first and second indents are replaced by the following:

'*gas oil means:*

— any petroleum-derived liquid fuel falling within CN code 2710 19 45, 2710 19 49 or 2710 19 25 or 2710 19 29 (*);

or

— any petroleum-derived liquid fuel, of which less than 65 % by volume (including losses) distils at 250 °C and of which at least 85 % by volume (including losses) distils at 350 °C by the ASTM D86 method.

(*) These CN codes are specified in the Common Customs Tariff as amended by Commission Regulation (EC) No 2031/2001 (OJ L 279, 23.10.2001, p. 1).'

(c) Paragraph 3 is deleted and the following paragraphs 3.a. to 3.h. are inserted:

'3.a. *marine fuel* means any fuel intended for marine use as defined in ISO 8217;

3.b. *marine diesel oil* means any fuel intended for marine use which has a viscosity or density falling within the ranges of viscosity or density defined for DMB and DMC grades as defined in Table I of ISO 8217;

3.c. *marine gas oil* means any fuel intended for marine use which has a viscosity or density falling within the ranges of viscosity or density defined for DMX and DMA grades as defined in Table I of ISO 8217;

3.d. *MARPOL Annex VI* means the Protocol of 1997 to amend the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto;

3.e. *SO_x Emission Control Areas* means the Baltic Sea, North Sea and English Channel as designated by the International Maritime Organization under Regulation 14 of MARPOL Annex VI.

3.f. *passenger ships* means ships which carry more than 12 passengers, where a passenger is every person other than:

(i) the master and the members of the crew or other person employed or engaged in any capacity on board a ship on the business of that ship; and

(ii) a child under one year of age.

3.g. *regular services* means a series of passenger ship crossings operated so as to serve traffic between the same two or more ports, or a series of voyages from and to the same port without intermediate calls, either:

(i) according to a published timetable; or

(ii) with crossings so regular or frequent that they constitute a recognisable schedule.

3.h. *ships at berth* means ships which are stationary in ports, including while they are loading, unloading and hotelling.'

3. Article 3 is replaced by the following:

'*Article 3*

Maximum sulphur content of heavy fuel oil

1. Member States shall take all necessary steps to ensure that as from 1 January 2003 within their territory heavy fuel oils are not used if their sulphur content exceeds 1,00 % by mass.

2. (i) Subject to appropriate monitoring of emissions by competent authorities this requirement shall not apply to heavy fuel oils used:

(a) in combustion plants which fall within the scope of Directive 2001/80/EC, which are considered new in accordance with the definition given in Article 2(9) thereof and which comply with the sulphur dioxide emission limits for such plants set out in Article 4 of that directive and Annex VI thereto;

(b) in combustion plants which fall within the scope of Directive 2001/80/EC, which are considered existing in accordance with the definition given in Article 2(10) thereof, where the sulphur dioxide emissions from these combustion plants are equal to or less than 1 700 mg/Nm^3 at an oxygen content in the flue gas of 3 % by volume on a dry basis, and where, from 1 January 2008, the emissions of sulphur dioxide from combustion plants subject to Article 4(3)(a) of Directive 2001/80/EC are equal to or less than those resulting from compliance with the emission limit values for new plants contained in Part A of Annex IV to that Directive and where appropriate applying Articles 5, 7 and 8 thereof;

(c) in other combustion plants which do not fall under (a) or (b), where the sulphur dioxide emissions from those combustion plants are equal to or less than 1 700 mg/Nm^3 at an oxygen content in the flue gas of 3 % by volume on a dry basis;

(d) for combustion in refineries, where the monthly average of emissions of sulphur dioxide averaged over all plants in the refinery, irrespective of the type of fuel or fuel combination used, are within a limit to be set by each Member State, which shall not exceed 1 700 mg/Nm^3. This shall not apply to combustion plants which fall under (a) or, from 1 January 2008, to those which fall under (b).

(ii) Member States shall take the necessary measures to ensure that any combustion plant using heavy fuel oil with a sulphur concentration greater than that referred to in paragraph 1 shall not be operated without a permit issued by a competent authority, which specifies the emission limits.

3. The provisions of paragraph 2 shall be reviewed and if appropriate, revised in the light of any future revision of Directive 2001/80/EC.'

4. Article 4 is amended as follows:

(a) In paragraph 1, the words 'including marine gas oils' are deleted.

(b) Paragraph 2 is deleted.

5. The following Article 4a is inserted:

'*Article 4a*

Maximum sulphur content of marine fuels used in SO_x Emission Control Areas and by passenger vessels operating on regular services to or from ports in the European Community

1. Member States bordering SO_x Emission Control Areas shall take all necessary steps to ensure that marine fuels are not used in the areas of their territorial seas, exclusive economic zones and pollution control zones falling within SO_x Emission Control Areas if the sulphur content of those fuels exceeds 1,5 % by mass. This shall apply to all vessels of all flags, including vessels whose journey began outside the Community, from twelve months after the date of entry into force of MARPOL Annex VI, or from [. . .] (*), whichever is the earlier.

2. Member States shall take all necessary steps to ensure that from 1 July 2007, marine fuels are not used by passenger ships operating on regular services to or from any Community port if the sulphur content of those fuels exceeds 1.5 % by mass. This shall apply to vessels of all flags.

3. Member States shall take all necessary steps to ensure that from twelve months after the date of entry into force of MARPOL Annex VI, or from [. . .] (*), whichever is the earlier, marine fuels containing no more than 1,5 % sulphur by mass are made available in sufficient quantities to meet demand in all Community ports.

4. From twelve months after the date of entry into force of MARPOL Annex VI, Member States shall require the correct completion of ships' logbooks, including fuel-changeover operations, as a condition of ships' entry into Community ports.

5. Member States shall ensure that from twelve months after the date of entry into force of MARPOL Annex VI, or from [. . .] (*), whichever is the earlier, the sulphur content of all marine fuels sold in their territory is documented by the supplier on a bunker delivery note, accompanied by a sealed sample.

6. Member States shall ensure that marine diesel oils are not sold in their territory as from [. . .] (*) if the sulphur content of those marine diesel oils exceeds 1.5 % by mass.

(*) 12 months after entry into force'.

6. The following Article 4b is inserted:

'*Article 4b*

Maximum sulphur content of marine fuels used by ships on inland waterways and at berth in Community ports

1. Member States shall take all necessary steps to ensure that marine fuels are not used by any ships on inland waterways or by any ships at berth in Community ports as from:

— [. . .] (*) if their sulphur content exceeds 0,20 % by mass

— 1 January 2008 if their sulphur content exceeds 0,10 % by mass

2. Member States shall ensure that marine gas oils are not sold in their territory if the sulphur content of those marine gas oils exceeds the limits set out in paragraph 1.

_____

(*) 12 months after entry into force.'

7. Article 6 is amended as follows:

(a) The following paragraph 1.a. is inserted:

'1.a. For marine fuels, Member States shall take all necessary measures to check that the sulphur content of marine fuels marketed in the Community and used

— by all ships in SO_x Emission Control Areas, Community ports, and inland waterways

— by passenger ships on regular services to or from any Community ports

complies with the relevant provisions of Articles 4a and 4b. Marine fuels being used in other Community sea areas should also be sampled and the sulphur content checked. Each of the following means of sampling, analysis and inspection shall be used:

— sampling and analysis of the sulphur content of fuel oil for combustion purposes being delivered for use on board ships, following IMO guidelines;

— sampling and analysis of the sulphur content of fuel oil contained in tanks and in sealed bunker samples on board ships;

— inspection of ships' log books and bunker delivery notes.

The sampling shall commence within six months of the date on which the relevant limit for maximum sulphur content in the fuel comes into force. It shall be carried out with sufficient frequency, in sufficient quantities, and in such a way that the samples are representative of the fuel examined, and of the fuel being used by ships while in Community sea areas, ports and inland waterways.'

(b) In paragraph 2, point (a) is replaced by the following:

'(a) ISO method 8754 (1992) and PrEN ISO 14596 for heavy fuel oil and marine fuels;'

8. Article 7 is replaced by the following:

'*Article 7*

Reporting and review

1. On the basis of the results of the sampling, analysis and inspections carried out in accordance with Article 6, Member States shall by 30 June of each year provide the Commission with a short report on the sulphur content of the liquid fuels falling within the scope of this Directive and used within their territory during the preceding calendar year. That report shall include a record of the total number of samples tested by fuel type (heavy fuel, gas oil, marine heavy fuel oil, marine diesel oil, marine gas oil), and shall indicate the corresponding quantity of fuel used, and the calculated average sulphur content. Member States shall also report on the number of inspections made on board ships, and record the average sulphur content of marine fuels used in their territory which do not currently fall within the scope of the Directive.

2. On the basis *inter alia* of the annual reports submitted in accordance with paragraph 1 and the observed trends in air quality and acidification, the Commission shall, by 31 December 2010, submit a report to the European Parliament and to the Council. The Commission may submit with its report proposals for revising this Directive, in particular as regards the limit values laid down for each fuel category, and the Community sea areas where low-sulphur marine fuels are to be used.

3. Taking into account any IMO guidelines on exhaust gas cleaning systems and other technological methods to limit SO_x emissions, and the effects of such technologies on the environment, including the marine environment, the Commission shall consider which, if any, alternative abatement methods might be permissible as alternatives to the use of low sulphur marine fuels required under Articles 4a and 4b and if appropriate, make a proposal.

4. Any amendments necessary to adapt the provisions of this Directive to scientific and technical progress shall be adopted in accordance with the procedure laid down in Article 9a but may not result in any direct or indirect changes to fuel sulphur limits.'

9. The following Article 9a is inserted:

'*Article 9a*

Regulatory Committee

1. The Commission shall be assisted by a committee composed of representatives of the Member States and chaired by the representative of the Commission.

2. Where reference is made to this paragraph, the regulatory procedure laid down in Article 5 of Decision 1999/468/EC (*) shall apply, in compliance with Article 7(3) and Article 8 thereof.

3. The period provided for in Article 5(6) of Decision 1999/468/EC shall be three months.

(*) Council Decision 1999/468/EC of 28 June 1999 (OJ L 184, 17.7.1999, p. 23).'

Article 2

Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by [. . .] [1] at the latest. They shall forthwith inform the Commission thereof.

When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

Article 3

This Directive shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Communities.

Article 4

Addressees

This Directive is addressed to the Member States.

[1] 12 months after entry into force.