

Chapter-4

LEGISLATION AND POLICY CONCERNING MERCURY IN THE EUROPEAN UNION

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INTRODUCTION

This paper presents an introductory overview of legislation and policy concerning mercury in the European Union (EU). It only summarises actions taken at the EU level, and does not attempt to cover the many actions taken individually by Member States or at other levels. Moreover, there is a very broad range of EU-level action, and the paper therefore only covers the main elements. Finally, where the paper attempts to summarise the requirements of EU legislation, some loss of precision is inevitable. Therefore, readers wishing to know the exact legal requirements should refer to the specific legal texts referenced².

INTEGRATED POLLUTION PREVENTION AND CONTROL (IPPC)

The purpose of the IPPC Directive³ is to achieve integrated prevention and control of pollution arising from activities listed in Annex I of the Directive (energy industries, production and processing of metals, mineral industry, chemical industry, waste management and other activities like

intense livestock farming, pulp and paper industry and tanneries). These include some of the major sources of mercury emissions.

The Directive lays down the requirement to prevent or, where that is not practicable, to reduce pollution of the air, water and land, including from mercury and its compounds, from the above-mentioned activities, including measures concerning waste, in order to achieve a high level of protection of the environment taken as a whole. Control is to be achieved by way of a permitting regime whereby the operator of an installation applies for a permit and a competent authority determines whether or not a permit is to be issued. Among other requirements, permits are to include emission limit values (or equivalent parameters or technical measures) which are to be based on the “Best Available Techniques” (BAT) for the sector.

The Directive entered into force on 30 October 1999. New installations, and substantial changes to existing installations, require a permit issued in accordance with the Directive before they are brought into operation. Existing installations must be brought into compliance with the requirements of the Directive no later than 30 October 2007.

In order to support the implementation of the Directive the Commission is producing a series of BAT Reference documents (BREFs) for the main industry sectors under the Directive. An important document concerning mercury is the BREF on chlor-alkali manufacturing⁴. This concludes that mercury cells are not BAT.

As the basis for a “European Pollutant Emission Register” (EPER)⁵, Member States are also required to submit reports to the Commission on emissions from all individual facilities with one or more activities mentioned in Annex I to the IPPC Directive. The reports must include details of emissions to air and water for all pollutants for which the thresholds specified in an Annex are exceeded. The reporting thresholds for mercury and its compounds are 10 kg/year for emissions to air and 1 kg/year for emissions to water. The data from the first reporting cycle, for 2001, were published in February 2004⁶. The next reporting year is 2004, for publication in 2006.

WATER QUALITY

The water framework Directive⁷ establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. Article 16 provides for the adoption of EU measures for substances included in a list of priority substances, i.e. those which present a significant risk to or via the aquatic environment. Mercury is identified as

one of the “priority hazardous substances”⁸ that are subject to cessation or phasing-out of emissions, discharges and losses within 20 years after adoption of measures. The Commission is currently developing proposals for emission controls for point sources and environmental quality standards for mercury and other substances.

The water framework Directive also provides for the review, revision and possible repeal of a number of pre-existing Directives, including Directives dealing with discharges of dangerous substances to water, and with protection of groundwater. The dangerous substances Directive⁹ requires Member States to take appropriate steps to eliminate pollution in inland surface, territorial and internal coastal waters by various substances including mercury and its compounds. Articles 5 and 6 lay down the provisions for authorisation of discharges and provide that Member States can choose whether to base their authorisations on emission limit values or quality objectives. Two specific “daughter” Directives deal with mercury in more detail. One¹⁰ provides for specific emission limit values and quality objectives applicable to discharges of mercury from the chlor-alkali electrolysis industry. The second¹¹ does the same for other industry sectors, and also stipulates the requirement to draw up programmes to avoid or eliminate pollution caused by discharges of mercury from diffuse sources.

The groundwater Directive¹² aims to prevent the pollution of groundwater by substances set out in two lists in an Annex, and as far as possible to check or eliminate the consequences of pollution which has already occurred. Mercury and its compounds are included in the “List I of Families and Groups of Substances”, to which the most stringent requirements apply. Direct discharges (introduction without percolation through the ground or subsoil) of substances in List I into groundwater are prohibited. Any disposal or tipping of List I substances which might lead to indirect discharge (introduction after percolation through the ground or subsoil) must be subject to prior investigation. Member States must then prohibit such activity, or authorise it provided that all the technical precautions necessary to prevent such discharge are observed. In addition, all appropriate measures deemed necessary must be taken to prevent any indirect discharge of List I substances due to activities on or in the ground other than disposal or tipping.

Article 11 of the water framework Directive repeats the prohibition of direct discharges of pollutants into groundwater. However, the former is concerned with protecting groundwater not just against pollution from discharges and disposals, but also from other activities. Article 17 calls for the adoption of specific measures to prevent and control groundwater pollution, with the aim of achieving “good groundwater chemical status”.

The Commission has therefore proposed a further Directive¹³ which includes criteria for the assessment of good groundwater chemical status, and for the identification and reversal of significant and sustained upward trends and the definition of starting points for trend reversals. For mercury, the proposed Directive would not itself set any threshold values, but rather it would require Member States to do so.

AIR QUALITY

The air quality framework Directive¹⁴ defines the basic principles for a common approach for the assessment and management of ambient air quality in the EU. Details of the specific requirements for particular pollutants are set out in daughter directives.

An agreement has been achieved with the European Parliament and Council on a proposal from the Commission¹⁵ for the fourth daughter Directive, relating to arsenic, cadmium, nickel, mercury and polycyclic aromatic hydrocarbons (PAH). Formal adoption is foreseen to take place in the course of autumn 2004. Concentrations of mercury in ambient air in the EU generally are below a level believed to have adverse effects on human health. Therefore, mercury in ambient air is not regulated via a target value in the fourth daughter Directive. However, regardless of the concentration level, all substances covered by the measure, including mercury, are to be measured at background sampling points with a spatial resolution of 100,000 km² in order to provide information on geographical variation and long-term trends. The same requirements are laid down for deposition measurements of heavy metals and PAH. Monitoring of particulate and gaseous divalent mercury is also recommended.

USE OF MERCURY

Electrical and Electronic Equipment

The Directive on the restriction of hazardous substances (RoHS) in electrical and electronic equipment¹⁶ requires the substitution of mercury, among other substances, in new electrical and electronic equipment by 1 July 2006. Applications of mercury in fluorescent lamps up to certain levels are exempted. Each exemption must be reviewed at least every four years with the aim of considering deletion.

Closely related to the RoHS Directive is the Directive on waste electrical and electronic equipment (WEEE)¹⁷. This aims to prevent the generation of WEEE and to support the reuse, recycling and other forms of recovery of such waste. It also seeks to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment. In particular, it provides that producers, or third parties acting on their behalf, must set up systems by 13 August 2004 to provide for the treatment of WEEE using best available treatment, recovery and recycling techniques. Member States must achieve a high level of separate collection for WEEE, and any mercury-containing components must be removed from any separately-collected WEEE.

Vehicles

The end-of-life vehicles (ELV) Directive¹⁸ aims, as a first priority, at the prevention of waste from vehicles. It also lays down measures relating to the reuse, recycling and other forms of recovery of ELVs and their components so as to reduce the disposal of waste. According to Article 4 of this Directive mercury, among other substances, is restricted in materials and components of vehicles. In particular, Member States must ensure that materials and components of vehicles put on the market after 1 July 2003 do not contain mercury other than in bulbs and instrument display panels. In addition, under Article 6 Member States must ensure that ELVs are stored and treated in accordance with minimum specified technical requirements, including the removal, as far as possible, of all components identified as containing mercury.

Batteries

The batteries Directive¹⁹ prohibits the marketing of batteries and accumulators containing more than 0.0005% of mercury by weight. Button cells with a mercury content of no more than 2% by weight are exempted. The Directive also requires Member States to take appropriate steps to ensure that spent batteries and accumulators are collected separately with a view to their recovery or disposal, and that batteries and accumulators are marked with information on separate collection, recycling and heavy metal content.

In November 2003 the Commission adopted a proposal for a Directive that would replace and repeal the current batteries Directive. The limit on mercury content by weight of 0.0005%, and the exemption for button cells,

would be retained. The explanatory memorandum that accompanies the new proposal notes that mercury consumption in batteries has declined significantly in the EU, but that many mercury batteries produced before the restrictions of the current Directive entered into force are still in use. The new proposal aims to establish a closed loop system for all batteries to avoid their disposal by incineration or landfill. It would also require Member States to set up national collection systems so that consumers can return spent portable batteries free of charge.

Pesticides and Biocides

According to Article 3 of Council Directive 79/117/EEC²¹, which took effect in 1981, plant protection products containing one or more of the following active substances may be neither placed on the market nor used: mercury oxide, mercurous chloride (calomel), other inorganic mercury compounds, alkyl mercury compounds, alkoxyalkyl and aryl mercury compounds. An amendment²² in 1991 deleted some limited exemptions from these restrictions which had previously been allowed.

Biocidal product cannot be placed on the market and used in the territory of the Member States unless authorised in accordance with Directive 98/8/EC²³. No biocidal products containing mercury have been authorised and accordingly they are banned in the EU.

Cosmetics

Under Directive 76/768/EEC²⁴, mercury and its compounds may not be present as ingredients in cosmetics, including soaps, lotions, shampoos, skin bleaching products, etc. (except for phenyl mercuric salts for conservation of eye makeup and products for removal of eye make-up in concentrations not exceeding 0.007 percent weight-to-weight) marketed within the EU.

Other Uses

Directive 76/769/EEC²⁵ creates a framework legislative procedure under which the EU may ban or restrict the use of hazardous chemicals by adding the substances and controls to an Annex. Additions of chemicals have been done in several amendments. The following uses of mercury compounds were prohibited by Directive 89/677/EEC²⁶: marine anti-fouling agents,

wood preservatives, impregnation of heavy-duty industrial textiles and yarn, and treatment of industrial waters.

More broadly, the Commission has recently proposed a major new EU chemicals regime²⁷. This will eventually repeal the framework Directive 76/769, encompass the various controls adopted under it, and provide a more streamlined procedure for the adoption of any further restrictions.

EXPORT AND IMPORT

Regulation 304/2003²⁸ implements the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. The Convention provides for an exchange of information between its parties on restrictions on hazardous chemicals and pesticides and their import and export. The trigger for action is when a party takes regulatory action to ban or severely restrict a hazardous chemical or pesticide in its own territory in order to protect human health and/or the environment. The party must then notify the Secretariat of the Convention of that ban or restriction. It should also make export of the substance subject to a notification procedure, whereby the first export annually to any party would have to be notified in advance to the designated authority in that country of destination. This obligation ends when the substance becomes subject to the PIC procedure and the importing party has given an import decision (see below).

When two notifications of bans or severe restrictions for the same substance are received under the Convention from two geographic regions, a chemical review committee will consider whether these meet the criteria of Annex II to the Convention. The committee may recommend that the substance be added to the PIC procedure and prepare a decision guidance document (DGD), containing relevant information to help parties take informed decisions on whether or not to accept imports. If the Conference of the Parties decides that the chemical should be included in the PIC procedure, the DGD is circulated and all parties should communicate an import decision to the Secretariat on whether and under what circumstances they wish to receive imports of the substance. Exporting parties are then obliged to ensure that their exporters comply with these wishes.

Mercury compounds are listed in Annex I, Part 1 to the Regulation as banned or severely restricted within the EU and are thus subject to the export notification requirements, which are laid down in Article 7 of the Regulation. These requirements apply to exports to all countries. Mercury compounds used as pesticides, including inorganic mercury compounds,

alkyl mercury compounds and alkyloxyalkyl and aryl mercury compounds, are also included in Part 3 of Annex I to the Regulation as chemicals subject to the PIC procedure. Thus, in accordance with Article 13 of the Regulation, *inter alia*, EU exporters must comply with the import decisions taken by third countries. The Regulation in fact goes further than the Convention in this respect, in that it requires exports of PIC substances to have the explicit consent of the importing country (whereas under the Convention exports would, after a certain period of time, be permitted to a country that has failed to communicate an import decision). Like export notification, this requirement extends to exports to all countries, irrespective of whether or not they are parties to the Convention.

The Regulation also bans the export from the EU of certain chemicals and articles, listed in Annex V. Cosmetic soaps containing mercury are subject to this ban.

WASTE MANAGEMENT

In addition to the waste management provisions linked to certain product groups described above (e.g. ELVs, batteries, WEEE), there are also various broader requirements in EU legislation.

The Waste Framework Directive and Hazardous Waste

The main basis for waste management in the EU is the waste framework Directive²⁹. This requires that Member States take the necessary measures to ensure waste is recovered or disposed of without endangering human health and without using processes or methods that could harm the environment. It includes various provisions – for example relating to the control of waste management facilities – to support this requirement.

Directive 91/689/EEC³⁰ introduces an additional, more stringent, layer of controls applicable to hazardous waste on top of those that apply under the waste framework Directive. Wastes are identified as hazardous based on properties listed in Annex III of the Directive. By Decision 2000/532/EC³¹ a list of waste was adopted, which includes “Sludges containing mercury” (as a waste from natural gas purification), “Waste containing mercury”, “Mercury containing batteries”, “Amalgam waste from dental care” and “Fluorescent tubes and other mercury containing waste”. The determination that waste is hazardous has implications in respect of the application of other

EU measures. For example, Regulation 259/93³² prevents hazardous waste being exported to non-OECD countries.

Waste Incineration

The waste incineration Directive³³ aims to prevent or to limit as far as practicable negative effects on the environment, in particular pollution by emissions into air, soil, surface water and groundwater, and the resulting risks to human health, from the incineration and co-incineration of waste. Emission limit values for discharges of waste water from exhaust gas cleaning at incineration plants are established in Annex IV of the Directive. The limit value for mercury is 0.03 mg/l. Air emission limit values for incineration plants are set out in Annex V. The limit value for mercury is 0.05 mg/m³, as an average value over a minimum period of 30 minutes and a maximum of 8 hours (a limit of 0.1 mg/m³ applies until 1 January 2007 for existing plants for which the permit to operate was granted before 31 December 1996). Mercury in emissions to air has to be measured at least twice per year; mercury in emissions to water at least once per month.

Most waste incineration facilities will also fall under the scope of the IPPC Directive (see above). Where the application of the IPPC Directive would entail stricter requirements than those of the waste incineration Directive, then these stricter requirements take precedence. Work on a BREF document on waste incineration is underway.

Landfills

The landfill Directive³⁴ aims to prevent or reduce negative effects on the environment and risk to human health from the landfilling of waste. Article 4 requires that Member States classify landfills into those for hazardous waste, those for non-hazardous waste and those for inert waste. Member States must also ensure that certain wastes are not accepted in a landfill. These include liquid waste, and any other waste that does not fulfil the “acceptance criteria” determined in accordance with an Annex. These acceptance criteria were set out in Decision 2003/33/EC³⁵. They include specific mercury leaching values for wastes acceptable at the different classes of landfill.

Articles 7 and 8 of the landfill Directive require that operators of landfills apply for permits and that competent authorities ensure that certain conditions will be met in those cases where landfilling is authorised. One such condition is that landfills comply with certain technical standards set in an Annex, for example concerning protection of soil and water. Another is

that operators maintain adequate financial security to meet their obligations, including after-care.

Sewage Sludge

Directive 86/278/EEC³⁶ aims to regulate the use of sewage sludge in agriculture in such a way as to prevent harmful effects on soil, vegetation, animals and humans, while encouraging its correct use. Member States must prohibit the application of sewage sludge to soil where the concentration of one or more metals in the soil exceeds the limit values laid down in a first Annex. For mercury, the soil limit value is 1 to 1.5 mg/kg of dry matter for soils with a pH higher than 6 and lower than 7. Member States must also regulate the use of sludge such that the accumulation of heavy metals in soil does not exceed the limit values. A possible revision of Directive 86/218/EEC is being considered as part of the development of the EU's broader thematic strategy on soil³⁷.

LIMITING HUMAN EXPOSURE

Drinking Water

Directive 98/83/EEC³⁸ sets standards for the quality of drinking water. According to Article 5 and Annex I, a maximum level of 1.0 µg/l is specified for mercury in drinking water.

Worker Health and Safety

Directive 98/24/EC³⁹ lays down minimum requirements for the protection of workers from risks to their safety and health arising, or likely to arise, from the effects of all chemical agents that are present at the workplace or as a result of any work activity involving chemical agents. Consequently this framework Directive regulates all substances including mercury and its compounds.

The EU Scientific Committee on Occupational Exposure Limits (SCOEL) has held extensive discussions on mercury and mercury compounds in order to come up with a Recommendation to the Commission for an occupational exposure limit value. The Committee has proposed

levels of 0.02 mg/m³ as an 8-hour time-weighted average, and 0.01 mg/l in blood and 0.03 mg/g creatinine in urine as biological limit values.

Mercury Contamination in Food

Under Commission Regulation 466/2001⁴⁰, a maximum level of 0.5 mg/kg wet weight is set for mercury in fishery products, with the exception of certain fish species for which a separate maximum level of 1 mg/kg wet weight applies.

On 24 February 2004, responding to a request from the Commission, the Scientific Panel on Contaminants in the Food Chain of the European Food Safety Authority (EFSA) adopted an opinion on mercury and methylmercury in food⁴¹. This took into account the decision in June 2003 of the FAO/WHO Joint Expert Committee on Food Additives to revise its Provisional Tolerable Weekly Intake for methylmercury from 3.3 to 1.6 µg/kg body weight⁴². EFSA also took account of a lower Reference Dose of 0.7 µg/kg body weight per week established by the US National Research Council⁴³. It compared these levels against data gathered by the EU Member States and Norway on levels of mercury in foods and estimates of dietary exposure as part of a scientific co-operation (SCOOP) task⁴⁴. The EFSA opinion and the SCOOP report should be referred to directly to see their full analyses and conclusions in context. Some selected findings are given below.

The EFSA opinion concluded that the reduction of the PTWI for methylmercury by JECFA, from 3.3 to 1.6 µg/kg body weight, was justified because rather than focusing on risks to the general population it was based on the most susceptible lifestage, i.e. the developing foetus and intake during pregnancy. Comparison with the lower US NRC recommendation may offer additional guidance.

The estimated intakes of mercury in Europe varied by country, depending on the amount and type of fish consumed. Based on the SCOOP document, national average exposures to methylmercury⁴⁵ from fish and seafood products were between 1.3 and 97.3 µg/week, corresponding to <0.1 to 1.6 µg/kg body weight per week (assuming a 60 kg adult body weight). Hence the highest average intake estimates were just at the PTWI, thereby exceeding the US NRC recommendation.

In general, EU consumers who eat average amounts of varied fishery products are not likely to be exposed to unsafe levels of methyl mercury. However, people who eat more than average amounts of fish are more likely to exceed these recommended safety thresholds. In particular, population groups who frequently consume top predatory fish, such as swordfish and tuna, may have a considerably higher intake of methylmercury and exceed

the PTWI. The range of high exposure⁴⁶ was estimated to be between 0.4 and 2.2 µg/kg body weight per week of methylmercury.

The SCOOP data showed that, although the population in Norway had the highest total consumption of fish and seafood products, the estimated high intake of methylmercury from these foods was lower in Norway than in southern European countries. The reason for this is probably that the type of fish consumed in Norway consists of species, such as cod and saithe, containing relatively low levels of methylmercury. The consumption of top predatory fish, such as swordfish and tuna, which can contain higher levels of methylmercury, may be significantly greater in countries in southern Europe.

A probabilistic analysis carried out by EFSA using the French data from the SCOOP report suggested that, based on the distribution of consumption and fish contamination, in France 11.3% of 293 children aged 3 - 6 years would exceed the JECFA PTWI for methylmercury and 44% would exceed the US NRC recommendation. The figures for 248 adults were 1.2% and 17% respectively. However, the figures for children exceeding the PTWI are likely to represent an overestimate, because young children often tend to eat fish from species that are more likely to contain only low levels of methyl mercury, such as the white fish in fish fingers/ fish sticks. It is also important to note that some of the calculated high intakes may be overestimates in view of limitations on the available data, as indicated in the SCOOP report.

Specific intake data for pregnant women were not available for the EU risk assessment, although the EFSA has highlighted the need to generate reliable intake data from studies focused on women of childbearing age.

In view of the revised safety thresholds and risk assessment advice on dietary intake of methyl mercury, the EU maximum levels for mercury in fishery products are being reviewed and other risk management options are being considered. Initial assessment indicates that it might be difficult to further lower the maximum levels without either making them unachievable for many fish species or overcomplicating the legislation.

As an alternative approach, the European Commission has issued an information note on methyl mercury in fish and fishery products.⁴⁷ This has been distributed via consumer and public health networks, to help ensure that the information reaches the targeted vulnerable groups. The note contains advice on fish consumption for women who might become pregnant, who are pregnant or breastfeeding and for young children. It advises that these consumers should not eat more than one small portion (<100 g) per week of large predatory fish, such as swordfish, shark, marlin and pike, and that if they eat this portion, they should not eat any other fish during this period. It also advises that they should not eat tuna more than twice per week. (It is easy to calculate that the PTWI of 1.6 µg/kg body weight equals 96 µg/week

for an average 60 kg adult and this amount would be present in 96 g of fish if it contains 1 mg/kg methyl mercury. Swordfish, shark, marlin and pike can often contain such a level.) EU consumers are also advised to pay attention to any more specific advice given by national authorities in light of local or regional consumption characteristics. This advice is roughly in line with advice issued in the USA⁴⁸ and Australia and New Zealand.⁴⁹ Further discussions on the world-wide approaches to risk management of methyl mercury are planned. The European Community is leading a working group to prepare a discussion paper for the 37th session of the Codex Committee on Food Contaminants in 2005.

DEVELOPMENT OF AN EU MERCURY STRATEGY

The largest present user of mercury in the EU is the chlor-alkali industry. However, the use of mercury in this industry sector is being phased out as “mercury cell” technology is replaced with mercury-free processes. At the EU Environment Council meeting of 7 June 2001, the Council called upon the Commission to clarify the legal situation regarding the conversion of the chlor-alkali industry, identify the possible consequences for the use of mercury and report to the Council on the potential need for co-ordinated action in the EU and the accession countries.

In response to the Council’s request, in December 2002 the Commission presented a report to the Council concerning mercury from the chlor-alkali industry⁵⁰. This reviewed mercury production and use generally, use of mercury in the chlor-alkali industry, legal issues concerning the conversion to mercury-free technology and consequences of the mercury-cell phase-out. In relation to the consequences of the mercury cell phase-out, the report analysed different scenarios concerning the fate of the surplus mercury expected to arise in the EU⁵¹.

The Council reacted to the report by inviting the Commission to present “a coherent strategy with measures to protect human health and the environment from the release of mercury based on a life-cycle approach, taking into account production, use, waste treatment and emissions”. The EU mercury strategy will therefore look at all aspects of the mercury problem – production and supply, trade, use in products and processes, emissions, recovery and disposal, and exposure – rather than just those aspects relating to the chlor-alkali industry⁵². The strategy is due to be published in 2004.

NOTES

1. The authors are officials in the Commission services who work on aspects of legislation and policy concerning mercury. However, the paper does not necessarily represent the views of the Commission.
2. Legislative texts can be accessed online at: <http://europa.eu.int/eur-lex/en/index.html>.
3. Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control (OJ L 257, 10.10.1996).
4. See <http://eippcb.jrc.es/pages/FActivities.htm>
5. Commission Decision 2000/479/EC of 17 July 2000 on the implementation of a European pollutant emission register (EPER) according to article 15 of Council Directive 96/61 concerning integrated pollution prevention and control (OJ L192, 28.7.2000).
See www.eper.cec.eu.int.
7. Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000).
8. Decision 2001/2455/EC of the European Parliament and of the Council of 20 November 2001 establishing the list of priority substances in the field of water policy (OJ L 331, 15.12.2001).
9. Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (OJ L 129, 18.5.1976).
10. Council Directive 82/176/EEC of 22 March 1982 on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry (OJ L 81, 27.3.1982).
11. Council Directive 84/156/EEC of 8 March 1984 on limit values and quality objectives for mercury discharges by sectors other than the chlor-alkali electrolysis industry (OJ L 74, 17.3.1984).
12. Directive 80/68/EEC on the protection of groundwater against pollution caused by certain dangerous substances (OJ L 20, 26.1.1980).
13. Proposal for a Directive of the European Parliament and of the Council on the protection of groundwater against pollution, COM (2003) 50 final, 19.9.2003.
14. Council Directive 96/62/EC of 27 September 1996 on ambient air quality assessment and management (OJ L 296, 21.11.1996).
15. Proposed Directive of the European Parliament and of the Council relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic hydrocarbons in ambient air, COM (2003) 423 final, 16.7.2003.
16. Directive 2002/95/EC of the European parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) (OJ L 37, 13.2.2003).
17. Directive 2002/96/EC of the European parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE) (OJ L 37, 13.2.2003).
18. Directive 2000/53/EC of the European Parliament and of the Council of 18 September 2000 on end-of-life vehicles (OJ L 269, 21.10.2000).
19. Council Directive 91/157/EEC of 18 March 1991 on batteries and accumulators containing certain dangerous substances (OJ L 078, 26.3.1991) adapted to technical progress by Commission Directives 93/86/EEC of 4 October 1993 (OJ L 264, 23.10.1993) and 98/101/EC of 22 December 1998 (OJ L 1, 5.1.1999).

20. Proposal for a Directive of the European Parliament and of the Council on batteries and accumulators and spent batteries and accumulators, COM (2003) 723 final, 21.11.2003.
21. Council Directive 79/117/EEC of 21 December 1978 prohibiting the placing on the market and use of plant protection products containing certain active substances (OJ L 33, 8.2.1979).
22. Commission Directive 91/188/EEC of 19 March 1991 amending for the fifth time the Annex to Council Directive 79/117/EEC prohibiting the placing on the market and use of plant protection products containing certain active substances (OJ L 92, 13.4.1991).
23. Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market (OJ L 123, 24.4.1998).
24. Council Directive of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products (OJ L 262 , 27.9.1976).
25. Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (OJ L 262 , 27.9.1976).
26. Council Directive 89/677/EEC of 21 December 1989 amending for the 8th time Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (OJ L 398, 30.12.1989).
27. Proposal for a Regulation of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency and amending Directive 1999/45/EC and Regulation (EC) {on Persistent Organic Pollutants}, COM(2003) 644 final, 29.10.2003.
28. Regulation (EC) No. 304/2003 of the European Parliament and of the Council of 28 January 2003 concerning the export and import of dangerous chemicals (OJ L 63, 6.3.2003).
29. Council Directive 91/156/EEC of 18 March 1991 (OJ L 78, 26.3.1991), amending Directive 75/442/EEC on waste (OJ L 194, 25.7.1975).
30. Council Directive 91/689/EEC on hazardous waste (OJ L 47, 16.2.2001).
31. Commission Decision 2000/532/EC (OJ L 226, 6.9.2000) as amended by Council Decision 2001/532/EC (OJ L 203, 28.7.2001) as regards the list of wastes pursuant to Article 1(4) of Council Directive 91/689/EEC on hazardous waste.
32. Council Regulation (EEC) No 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community (OJ L 30, 6.2.1993).
33. Directive 2000/76/EC of the European Parliament and of the Council of 4 December 2000 on the incineration of waste (OJ L 332, 28.12.2000).
34. Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste (OJ L182, 16.7.1999).
35. Council Decision 2003/33/EC of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC (OJ L11, 16.1.2003).
36. Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture (OJ L181, 4.7.1986).

37. See the Commission's Communication towards a Thematic Strategy for Soil Protection, COM (2002) 179 final, 16.4.2002.
38. Council Directive 98/83/EEC of 3 November 1998 on the quality of water intended for human consumption (OJ L 330 of 5.12.1998).
39. Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work (OJ L 131, 5.5.1998).
40. Commission Regulation (EC) No 466/2001 of 8 March 2001 setting maximum levels for certain contaminants in foodstuffs (OJ L 77, 16.3.2001) as amended by Commission Regulation (EC) No 221/2002 of 6 February 2002 (OJ L 37, 7.2.2002).
41. See http://www.efsa.eu.int/science/contam_panel/contam_opinions/259_en.html.
42. See <http://who.int/pcs/jecfa/Summary61.pdf>
43. See *Toxicological effects of methylmercury*. Committee on the Toxicological Effects of Methylmercury, National Research Council, National Academy Press, Washington, D.C., 2000.
44. See http://europa.eu.int/comm/food/food/chemicalsafety/contaminants/scoop_3-2-11_heavy_metals_report_en.pdf.
45. The SCOOP data recorded total mercury rather than methylmercury. Methyl mercury is the chemical form of concern and can make up to more than 90% of the total mercury in fish and seafood. The EFSA opinion based its calculations on the conservative assumption that all the mercury in fish and seafood products is methylmercury.
46. High exposure is measured at the 95th or 97.5th percentile of the distribution for fish- and seafood product consumption depending on the country considered.
47. See http://europa.eu.int/comm/food/food/chemicalsafety/contaminants/information_no_te_mercury-fish_12-05-04.pdf
48. See <http://www.cfsan.fda.gov/~dms/admehg3.html>
49. See http://www.foodstandards.gov.au/_srcfiles/brochure_mercury_in_fish_0304v2.pdf
50. COM (2002) 489 final, 6.9.2002.
51. The amount of remaining mercury expected to be decommissioned as a result of the phase-out of mercury cells is estimated by Euro-Chlor at 11,600 tonnes.
52. Details of the development of the strategy can be found on the Commission's website: <http://europa.eu.int/comm/environment/chemicals/mercury/index.htm>.