

Exemption of lead oxides used in manufacture of piezo ceramic materials under Article 58(2) REACH

Should lead monoxide and lead tetroxide be the subject of an authorisation, that authorisation could in any event be restricted to use of these substances in manufacture of piezo ceramic materials and hence this is the scope of the REACH Article 58(2) exemption hereby requested.

Article 58(2) of REACH allows to exempt from the authorisation requirement uses or categories of uses *'provided that, on the basis of the existing specific Community legislation imposing minimum requirements relating to the protection of human health or the environment for the use of the substance, the risk is properly controlled'*.

The piece of legislation has to define the measures to be implemented by the actors and to be enforced by authorities in a way that ensures the same minimum level of control of risks throughout the EU and that this level can be regarded as proper.

According to guidance issued by the European Chemicals Agency, legislation imposing "minimum requirements" means that Member States may adopt more stringent, but not less stringent requirements when implementing the specific EU legislation in question. By contrast, harmonization measures such as legislation imposing EU-wide occupational exposure limits amount to maximum requirements; the European Chemicals Agency states in its guidance on Article 58(2) of REACH that where occupational exposure limits exist, applications for an exemption under that provision is more likely to succeed.

The following elements shall be considered when deciding whether to include an exemption of a use of a substance in its recommendation.

(i) There is existing Community legislation¹ addressing the use (or categories of use) that is proposed to be exempted. Special attention has to be paid to the definition of use in the legislation in question compared to the REACH definitions. Furthermore, the reasons for and effect of any exemptions from the requirements set out in the legislation have to be assessed.

(a) Existing lead specific Community legislation exists for **this industrial use** of lead monoxide and lead tetroxide in manufacturing of piezo ceramic materials, as follows:

- Council Directive 98/24/EC on the protection of the health & safety of workers from the risks related to chemical agents at work (CAD), as implemented by Directives 2000/39/EC, 2006/15/EC, 91/322/EC and 2009/161/EU establishing lists of indicative occupational exposure limit values in implementation of Directive 98/24/EC as amended

¹ Only existing EU legislation is relevant in the context to be assessed (not national legislation).

- Council Directive 92/85/EEC - Protection of pregnant/breast feeding workers
- Council Directive 94/33/EC on the protection of young people at work
- The Industrial Emissions Directive 2010/75/EC replacing Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC)
- Council Directive 2008/50/EC on ambient air quality and cleaner air for Europe
- Council Directive 2000/60/EC establishing a framework for Community action in the field of water policy
- Council Directive 98/83/EC on the quality of water intended for human consumption
- Council Directive 2006/118/EC on the protection of groundwater against pollution and deterioration
- Council Directive 86/278/EEC on the protection of the environment, and in particular soil, when sewage sludge is used in agriculture

(ii) This Community legislation properly controls the risks to human health and/or the environment from the use of the substance arising from the intrinsic properties of the substance that are specified in Annex XIV.

Lead monoxide and lead tetroxide were identified as a Substance of Very High Concern (SVHC) according to article 57 (c) as they are classified in Annex VI, part 3, Table 3.1 (the list of harmonised classification and labelling of hazardous substances) of Regulation (EC) No 1272/2008 as Toxic for Reproduction, Category 1A, [H360D (“May damage the unborn child”)], and were therefore included in the candidate list for authorisation on 19/12/2012, following ECHA’s decision ED/169/2012. It is this intrinsic property that can result in their proposal for inclusion in Annex XIV.

It is therefore important to assess whether existing community legislation already properly controls risks to human health and the environment arising from this intrinsic property. In doing so, ECHA has to conduct a detailed assessment of the relevant legislation so as to determine not only whether such legislation exists but also whether it sets out measures that already adequately control the relevant risks. Such assessment must be conducted by ECHA *in concreto* on a case-by-case basis. This analysis is described below:

a. Worker health controls

The health hazards of lead monoxide and lead tetroxide are well established and an EU wide harmonised classification exists through an entry in Annex VI, part 3, Table 3.1 (the list of harmonised classification and labelling of hazardous substances) of Regulation (EC) No 1272/2008. This triggers requirements for specific packaging and labelling and through REACH article 31 the provision of Safety Data Sheets to provide downstream users (including workers) with information on hazards and risk management measures.

During the industrial use of lead monoxide and lead tetroxide in manufacturing of piezo ceramic materials, the health risk associated with lead exposure is properly controlled by the specific requirements of three of the aforementioned legislative acts: Council Directive 98/24/EC on the protection of the health & safety of workers from the risks related to chemical agents at work; Council Directive 92/85/EEC – Protection of pregnant/breast feeding workers; and Council Directive 94/33/EC on the protection of young people at work. Moreover, the so called OSH “Framework Directive” (Council Directive 89/391/EC) also contains minimum safety and health requirements throughout Europe that are applicable to workers employed in the manufacture of piezo ceramic materials such as use of personal protective equipment (through Directive 89/656).

- **Council Directive 98/24/EC on the protection of the health & safety of workers from the risks related to chemical agents at work**

The Chemical Agents Directive (CAD) seeks to protect workers from the effects of chemical agents that are present at the workplace or as a result of any work "activity involving chemical agents", which is defined as "any work in which chemical agents are used, or are intended to be used, in any process, including production, handling, storage, transport or disposal and treatment, or which result from such work". This would include the industrial use of lead compounds in manufacturing of piezo ceramic materials. The risks to the health of workers at work that is linked to occupational exposure to lead are controlled (in particular) by the imposition of a *binding* occupational exposure limit of 0.15 mg/m³ as specified in Annex 1 to the Directive and a *binding* biological limit value of 70 µg Pb/dL blood and health surveillance measures. Lead (and its ionic compounds) remains the only substance listed in the CAD for which binding occupational exposure and biological exposure limits are mandated.

Article 10 of Directive 98/24/EC, indicates that where a binding biological limit value has been set for a chemical, health surveillance is compulsory and employees shall be informed of this requirement before being assigned to the task involving risk or exposure to the hazardous chemical agent indicated (currently this is only relevant to Lead and its ionic compounds).

These binding limits are clearly sufficient to adequately control the risks from the four lead compounds used in manufacturing of piezo ceramic materials; in fact, they even go beyond imposing *minimum community wide standards* on Member States by way of establishing harmonized occupational exposure limits.

Looking at those measures *in concreto* reveals that regular exposure reports and studies are collected by several Member States authorities on a yearly basis [see UK HSE statistics at <http://www.hse.gov.uk/Statistics/causdis/lead/lead.pdf>] that show that the industry fully complies with these exposure limits and that, as a result, any risks to workers' health are already adequately controlled].

Moreover CAD also defines additional measures to be implemented by the actors and to be enforced by authorities in a way that ensures the same minimum level of control of risks presented by lead and lead compounds throughout the EU. This is highlighted by the requirements outlined in Articles 4 to 11 and Annex II to the Directive, which impose positive obligations on the employer, to be assessed against measurable indicators. For instance Annex II specifies that biological monitoring of lead exposed

workers *must* include measuring blood lead levels using absorption spectroscopy (or an equivalent method), and detailed medical surveillance *must* be carried out if exposure to lead in air is greater than 0.075 mg/m³ (8hr TWA) or if a blood lead level greater than 40 µg/dL is measured in individual workers. Thus mechanisms exist to identify and, if necessary, remove workers should risks from lead exposure be such that occupational ill-health could result and before any statutory limits are exceeded.

In addition, Company employee blood lead data collected for purposes of conducting a chemical safety assessment as required by REACH Articles 10 & 14 has indicated that for the piezo ceramic materials manufacturing sector of all the measured blood lead is below the DNEL of 40 µg/dL.

- **Council Directive 92/85/EEC – Protection of pregnant/breast feeding workers**

As lead monoxide and orange lead/lead tetroxide are classified as Toxic for Reproduction, Category 1A, [H360D (“May damage the unborn child”) it is important to evaluate whether this intrinsic property is adequately addressed by existing Community legislation.

Moreover, in the recent RAC opinion for harmonised classification of *lead metal* it was concluded that effects on or via lactation (Lact. - H362 (R64)) should be considered in a harmonised classification proposal as a result of evidence in humans that under extreme conditions levels of lead in breast milk could exceed WHO guidelines. This opinion could also be extrapolated to other lead compounds.

Specific risks to the unborn child and to infants that are breastfeeding are addressed by the requirements of Article 6 to Directive 92/85/EC that *specifically lists* lead and lead derivatives (in Annex II A and B) as substances for which pregnant workers and workers breastfeeding are *prohibited* from exposure if a risk assessment has indicated exposure would jeopardise safety or health. In specifically listing lead and its compounds as substances impacted by the requirements set out in Article 6 prohibiting exposure, we believe that this Directive also imposes *binding minimum standards* for protection of pregnant and breastfeeding workers to lead compound exposure that are applicable across the EU.

- **Council Directive 94/33/EC on the protection of young people at work**

It has been proposed that the developing brain of young people is particularly sensitive to the effects of lead.

It is therefore re-assuring that this element of risks to workers is also covered by long standing Community legislation in the form of Council Directive 94/33/EC on the protection of young people at work. Article 7 (2) b ensures that Member States prohibit the employment of young people for work involving harmful exposure to agents which are toxic, carcinogenic, cause heritable genetic damage or harm to the unborn child or which in any other way affects human health. Lead and its compounds are *specifically described* in Annex to this Directive as agents for which Article 7 (2) applies.

b. Environmental controls

Although the proposal for inclusion of lead monoxide and lead tetroxide in Annex XIV relates predominantly to health risks it is also relevant to report that manufacturing facilities using lead and

compounds are also covered by existing Community legislation ensuring that environmental releases are appropriately managed.

- **Ambient Air Quality Directive 2008/50/EC**

The Air Quality Directive requires that ambient air quality *must* be monitored throughout the territory of the Member States, who must ensure that the levels of lead in ambient air do not exceed the limit value of 0.5 µg/m³. In doing so this legislation can be seen to meet the requirement to specifically refer to lead compounds and set a minimum requirement for control of risk in establishing a limit value for lead in Annex XI that Member States shall ensure ambient air does not exceed.

- **The Industrial Emissions Directive (IED) 2010/75/EC**

This Directive is a recast of six previous directives concerning integrated pollution prevention and control (2008/1/EC¹²), waste incineration (2000/76/EC), solvent emissions (1999/13/EC) and three concerning waste from the titanium dioxide industry and sets out to achieve a high level of protection for the environment taken 'as a whole' from harmful effects of industrial activities. As from January 2016 IED will also replace Directive 2001/80/EC on the limitation of emissions of certain pollutants from large combustion plants. The key processes in manufacturing piezo ceramic materials are regulated directly by requirements of the IED.

Permit conditions and pollutant emission limit values (ELVs) therein have to be set on the basis of the application of best available techniques (BAT). Competent Authorities shall set emission limit values that ensure that, under normal operating conditions, emissions do not exceed the emission levels associated with the best available techniques as laid down in the decisions on BAT conclusions. Binding EU-wide Associated Emission Limit Values (A-ELVs) have recently been established for several industries manufacturing or using lead.

- **Water Framework Directive (WFD) 2000/60/EC**

The WFD commits European Union Member States to achieve good qualitative and quantitative status of all water bodies (including marine waters up to one nautical mile from shore) by 2015. The strategy for achieving this involves the identification of priority substances amongst those that pose a significant risk to, or via, the aquatic environment at European Union level. The Water Framework Directive foresees in its articles 16 and 17 two crucial Daughter Directives, on quality of groundwater and on quality of surface waters. The Priority Substances Directive (2008/105/EC) lists lead and its compounds and lays down associated Environmental Quality Standards (EQS) that Member States should take into account for the first time in river basin management plans covering the period 2015 to 2021. Inclusion of a lead EQS in the Priority Substances Directive meets in our opinion the REACH article 58(2) requirement to specifically mention the substance and establish a Europe wide standard.

(iii) This Community legislation imposes minimum requirements² for the control of risks of the use. Attention should be paid as to whether and how the risks related to the life-cycle

² There needs to be binding and enforceable minimum requirements in place for the substance(s) used. Legislation imposing minimum requirements means that:

- The Member States may establish more stringent but not less stringent requirements when implementing the specific EU legislation in question.

stages resulting from the uses in question (i.e. service-life of articles and waste stage(s), as relevant) are covered by the legislation.

From the analysis made above it would appear that the existing workplace legislation for lead imposes specific minimum requirements for the control of health risks of the **industrial use** of the lead monoxide and lead tetroxide used in of piezo ceramic materials manufacturing. Whilst not directly applicable to the intrinsic hazards for which inclusion in Annex XIV is being considered (i.e. reproductive toxicity) it is also evident that existing environmental legislation contains elements intended to properly control the risks to human health and/or the environment resulting from release of lead from of piezo ceramic materials manufacturing facilities.

We therefore conclude that the scope of authorisation would be limited to the Industrial use of the substances as intermediate stages in the piezo ceramic materials manufacturing process itself-not the use phase of the piezo ceramic materials. Notwithstanding this being the case we would like to highlight that irrespective of this situation there is existing EU legislation covering the marketing and end of life phases of lead-based batteries that are highlighted below:

- **Council Directive 2000/53/EC on End-of-Life Vehicles**

The End of Life Vehicle Directive was adopted in September 2000 with the aim of reducing waste from end of life cars as well as at the improvement in environmental performance of all the economic operators involved in the lifecycle of vehicles by ensuring that the constituent parts of a car can be recycled. As a key component in the functioning of a car with exemptions.

The general restriction for lead is > 0,1 % per weight and homogeneous material with the following exemptions:

- 10(a): Electrical and electronic components which contain lead in a glass or ceramic, in a glass or ceramic matrix compound, in a glass-ceramic material, or in a glass-ceramic matrix compound. This exemption does not cover the use of lead in: — glass in bulbs and glaze of spark plugs, — dielectric ceramic materials of components listed under 10(b), 10(c) and 10(d). ² a list of application can be found in following report (p 184ff):
http://circa.europa.eu/Public/irc/env/elv_4/library?l=/reports/final_rohs_2010pdf/_EN_1.0_&a=d
- 10(b): Lead in PZT based dielectric ceramic materials of capacitors being part of integrated circuits or discrete semiconductors
- 10(c):Lead in dielectric ceramic materials of capacitors with a rated voltage of less than 125 V AC or 250 V DC
- 10(d): Lead in the dielectric ceramic materials of capacitors compensating the temperature-related deviations of sensors in ultrasonic sonar systems

- **Other “Lead-Specific” EU Legislation**

- The piece of legislation has to define the measures to be implemented by the actors and to be enforced by authorities in a way that ensures the same minimum level of control of risks throughout the EU and that this level can be regarded as appropriate.

Lead and lead compounds also have an additional plethora of existing EU legislation to mitigate residual risks and drive substitution in products where technically and economically feasible. In the interests of brevity these are not further discussed in this document but add to the weight of evidence that REACH authorisation for use of lead oxides in manufacturing of piezo ceramic materials *would not be an appropriate regulatory action in terms of proportionality*.

There is an existing Directive 2011/65/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) and Directive 2002/96/EC on waste electrical and electronic equipment (WEEE).

Under RoHS there is a general restriction for lead > 0,1 % per weight and homogeneous material with the following exemptions:

o 7(c)-I: “Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezoelectronic devices, or in a glass or ceramic matrix compound”

o 7(c)-II: “Lead in dielectric ceramic in capacitors for a rated voltage of 125 V AC or 250 V DC or higher”

Furthermore, the Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) promotes of the collection and recycling contributed effectively to reducing hazardous substances such as lead contained in new EEE.

A comprehensive list of lead specific product legislation is included in Appendix A

Summary & Conclusion

The use of lead monoxide and lead tetroxide for of piezo ceramic material manufacture should be granted a REACH Article 58 (2) exemption on the following grounds:

- o **Existing Community legislation already addresses the use categories to be exempted.**
- o **The existing legislation provides binding and enforceable minimum requirements for the control of risks from industrial use of lead monoxide and lead tetroxide in of piezo ceramic materials manufacturing. In having a *binding* occupational exposure and biological limit for lead, supported by additional measures such as medical surveillance, Council Directive 98/24/EC ensures that harmonized, EU wide standards operate (although Member States can establish more stringent but not less stringent requirements).**
- o **Existing National statistics and exposure data gathered by Industry to support development of REACH chemical safety reports and voluntary sector wide voluntary blood lead reduction targets shows the effectiveness of the measures already in place under existing Community legislation such that it properly controls risk to human health from the use of the substances arising from their intrinsic properties specified in Annex XIV.**
- o **The existing legislation covers the risks related to the lifecycle stages resulting from the use of the substances in piezo ceramic material manufacture and this is further supported by**

additional legislation.

Appendix 1

Existing and Proposed Lead Specific EU Legislative Acts

Mixtures, articles and consumer products containing lead (and compounds) are regulated through several EU directives with regard to their risk to human health.

EU regulations	Legal requirements
Directive 76/768/EC on cosmetics	<ul style="list-style-type: none">▪List of substances that cosmetic products must not contain (including lead and its compounds)
Directive 98/83/EC on quality of water intended for human consumption	<ul style="list-style-type: none">▪Member States must ensure that all appropriate measures are taken to reduce the concentration of lead in drinking water in compliance with parametric value of 10 µg/L
Directive 98/70/EC on petrol	<ul style="list-style-type: none">▪prohibition of leaded gasoline (except aircraft)▪lead content < 0.005 g/L
Annex XVII of REACH: restriction of the use of certain hazardous substances	<ul style="list-style-type: none">▪Direct restriction of lead carbonates and sulphates in preparations intended to be used as paints▪substances classified as CMR may not be sold to the public (lead compounds are Repr. Cat 1 and lead hydrogen arsenate in Carc. Cat 1)
Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) (including 2006 ATP) and Directive 2002/96/EC on waste electrical and electronic equipment (WEEE)	<ul style="list-style-type: none">▪substances restricted in a waste management perspective▪articles concerned: electric light bulbs, luminaires, households appliances, IT, telecommunications and office equipment, home equipment: tv, audio-visual equipment, lighting equipment, electrical and electronic tools (such as watches), toys, leisure and sports equipment and automatic dispensers▪substances < 0.1% by weight in homogeneous material▪ electronic modules and used in quartz and watches (2006 ATP): maximum of 37% of lead in solder alloys▪ promotion of the collection and recycling of such equipment
Directive 2009/48/EC on toys	<ul style="list-style-type: none">▪total prohibition of certain substances or preparations in toys except those which are essential to their functioning. In this case, they are submitted to a maximum concentration defined for each

	<p>substance individually</p> <ul style="list-style-type: none"> ▪Bioavailability resulting from the use of toys < 0.7 µg/day (EN 71-3) ▪lead migration limit from toys = 90 mg/kg (EN 71-3) ▪lead migration limit = 13.5 mg/kg dry, brittle, powder-like or pliable toy material ▪lead migration limit = 3.4 mg/kg liquid or sticky toy material ▪lead migration limit = 160mg/kg scraped-off toy material
Directive 84/500/EEC on ceramics articles intended to come into contacts with foodstuffs	<ul style="list-style-type: none"> ▪.maximum permitted quantity of lead which can be extracted using standard methods is 0.8 mg/dm² for articles which cannot be filled or which can be filled but not deep (25mm), 1.5 mg/L for cooking ware and storage vessels which can be filled by more than 3 litres and 4.0 mg/L for other articles (+50% of these thresholds tolerated)
Directive 2005/31/EC	<p>Amends Council Directive 84/500/EEC as regards a declaration of compliance and performance criteria of the analytical method for ceramic articles intended to come into contact with foodstuffs</p> <p>Section 4.2 establishes quantification limits for lead, which are set at < 0.2 mg/L.</p>
Regulation (EC) No 1935/2004 on materials and articles intended to come into contact with food and repealing Directives 80/590/EEC and 89/109/EEC	<p>17 typologies of materials and objects destined to become into contact with foodstuffs are described.</p>
Directive 2001/95/EC on General Product Safety	<ul style="list-style-type: none"> ▪only safe products for consumers are placed on the market (conception and/or information) ▪information system (RAPEX)
Directive 94/62/EC on packaging	<ul style="list-style-type: none"> ▪requirements on the design of packaging and packaging waste ▪special article 11 on SVHC (including lead): concentration level in packaging and packaging components < 100 ppm (mg/kg)
Commission Regulation 466/2001 on contaminants in foodstuffs	<ul style="list-style-type: none"> ▪ lead level in milk, meat, fish, shellfish, cereals, vegetables, fruits, berries, oils, fats, fruit juice and wine must be between 0.02 mg/kg by wet weight (cow's milk) and 1.5 mg/kg w.w. (mussels)
Directive 98/83/EC on quality of water intended for human	<p>lead content < 10 µg/L in water for human consumption</p>

consumption	
Directive 88/344/EEC on extraction solvents in foodstuffs	<ul style="list-style-type: none"> ▪residues of solvents used in food industry ▪lead content in extraction solvents < 1 mg/kg
Directive 88/388/EEC on flavourings for use in foodstuffs and to source materials for their production	<ul style="list-style-type: none"> ▪ lead content in flavourings < 10 mg/kg
Directive 69/493/EEG on crystal glass	<ul style="list-style-type: none"> ▪prescription of the use of lead in crystal glass ▪>30% of content of lead in “full crystal glass” cat. 1 ▪[24%, 30%] of content of lead in “full crystal glass” cat. 2
Commission regulation (EU) No 836/2012 of 18 September 2012 amending Annex XVII to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) as regards lead	The prohibition of the placing on the market and use of lead and its compounds in metallic and non-metallic parts of jewellery articles, if the lead concentration is equal to or greater than 0.05% by weight of the individual part, unless it can be demonstrated that the rate of lead released does not exceed the limit of 0.05 µg/cm ² /h (0.05 µg/g/h).
REACH Restriction proposal for lead in consumer articles	In March 2013, ECHA launched a public consultation on the following restriction proposal from Sweden: “Lead and its compounds shall not be (...) used in articles (...), which are supplied to the general public and which can be placed in the mouth by children, if the concentration of lead (...) is equal to or greater than 0.05% by weight”.
Quality of Petrol and Diesel Fuels Directive 2003/17/EC	Limit values of 0.005 g Pb/L gasoline, amends Council Directive 98/70/EC, which itself amended Council Directive 85/210 EEC
Council Directive 1999/45/EC on the classification, packaging and labelling of dangerous preparations	All preparations containing dangerous substance classified under directive 67/548/EEC above a certain threshold have to be classified accordingly. Labels of packages of paints and varnishes containing Pb in quantities exceeding 0.15% (expressed as weight of metal) of the total weight of the preparation must contain warnings
Council Directive 91/689/EEC on hazardous waste	Sets out requirements for management of waste containing Pb above a certain level (other hazardous waste too

Council Directive 76/769/EEC on restrictions on the marketing and use of certain dangerous substances and preparations	Prohibited use of Pb sulphates and Pb carbonates in paints (with minor exceptions). Directive was amended by Council Directive 89/677/EEC which banned the use of all Pb based paint in residential applications
Council Directive 67/548/EEC on the classification, packaging and labelling of dangerous substances	Classifies some Pb compounds in categories depending on their epidemiological and environmental effects

In addition, there is a number of international initiatives and agreements which will have affected emissions to the environment, the results of which are still be realised in terms of changes in environmental concentrations. These include:

- OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic;
- UNECE Convention on Long-Range Transboundary Air Pollution (CLRTAP);
- Basel Convention on the Transboundary Movements of Hazardous Wastes and their Disposal; and
- Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area.

OSPAR

The OSPAR Convention was initiated to protect the marine environment of the North-East Atlantic. As part of the Convention, a number of strategies have been developed to address the main threats to this environment. These include the Hazardous Substances Strategy which is intended to prevent pollution of maritime areas by on-going reductions in the release of hazardous substances; its ultimate aim is to achieve near background levels for those substances which occur naturally (e.g. Pb, mercury) or close to zero for anthropogenically-generated substances. As part of this strategy, BAT requirements for various industrial processes that result in Pb emissions were published (e.g. OSPAR Recommendation 98/1 concerning Best Available Techniques and Best Environmental Practice for the primary non-ferrous metal industry). It should be noted that much of the reporting requirements under OSPAR have now ceased as they have been surpassed by the IPPC directive BREFs.

CLRTAP

The Convention on Long-Range Transboundary Air Pollution (CLRTAP) was signed in 1979 and entered into force in 1983. As the first regional environmental convention, CLRTAP has been instrumental in the reduction of key harmful pollutants in both Europe and North America. The Convention has been extended by eight Protocols (including the Aarhus Protocol, which is summarised below), focused upon setting strict reduction targets for releases of pollution for the protection of human and environmental health. Each of these Protocols targets pollutants such as

sulphur, nitrogen oxide, persistent organic pollutants, volatile organic compounds, ammonia, and toxic heavy metals (including Pb).

The CLRTAP requires Contracting Parties to develop the best policies and strategies including air quality management systems and, as part of these, control measures compatible with balanced development, in particular by using the best available technology which is economically feasible and low and non-waste technology, in particular relation to new or rebuilt installations.

As mentioned, the CLRTAP has been extended by eight specific protocols, one of which, the Aarhus Protocol, relates to heavy metals. The Protocol, adopted in 1998 and entered into force on the 29th December 2003, targets heavy metals, in particular cadmium, Pb and mercury. The main objective of the Protocol is to control emissions of heavy metals caused by anthropogenic activities that are subject to long-range transboundary atmospheric transport and are likely to have significant adverse effects on human health or the environment. One of the basic obligations requires Parties to reduce emissions below 1990 levels (or an alternative year between 1985 and 1995). The Protocol aims to cut emissions from industrial sources (e.g. iron and steel industry, non-ferrous metal industry), combustion processes (power generation, road transport) and waste incineration. Parties are required to implement emission standards for these pollutants for stationary sources, based on the best available technologies suggested in the protocol. In addition, parties undertake to phase out the use of leaded petrol and to introduce measures designed to lower heavy metal emissions from other products.

Under the protocol, parties are to develop strategies, policies and programs, without undue delay, to discharge their obligations under the protocol. A range of measures are suggested for this purpose, including economic instruments, government/industry covenants and voluntary agreements, more efficient use of resources, use of less polluting sources, development of a less polluting transport system, phasing out certain polluting industrial processes and developing cleaner processes. Parties are free to adopt more stringent measures than those required by the protocol. As for other protocols, the heavy metals protocol promotes technology exchange and other forms of co-operation between the parties. Parties must report periodically to the Executive Body on measures taken to implement the protocol, with compliance overseen by the Implementation Committee (Sands 2003). As of 15 November 2011, 31 of the 36 signatories had ratified the protocol to at least some extent.

Basel Convention

Under the Basel Convention, Member Parties must report data on the generation and movement of hazardous wastes (including those containing Pb). Towards this end, an annual questionnaire is sent to Member States requesting information on the generation, export and import of the various hazardous wastes covered by the Convention. It is the responsibility of the designated responsible national Agencies ('focal points') to submit the required information to the Secretariat. This information is reviewed and compiled by the Secretariat and presented as an annual report that routinely includes statistical tables and graphic representations of data.

Helsinki Convention

The most recent Helsinki Convention (governed by HELCOM) for the 'Protection of the Marine Environment of the Baltic Sea Area' entered into force on the 17 January 2000 and covers the whole of the Baltic Sea area, including inland waters as well as the water of the sea itself and seabed. Pb is included under Appendix 3 of HELCOM recommendation 19/5, which establishes a list of selected substances for immediate priority action under the Convention. With specific relevance to industry, HELCOM recommendation 25/3 (adopted 2nd March, 2004), aims to reduce emissions and discharges from industry by effective use of the Best Available Technique (BAT) for the identified hazardous substances, and contains a number of specific provisions for Pb (e.g. for the waste incineration and glass industry).