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PART 2/2

**COMMISSION STAFF WORKING DOCUMENT**

**Union Synthesis Report on the application of Regulation (EC) No 850/2004  
on persistent organic pollutants**

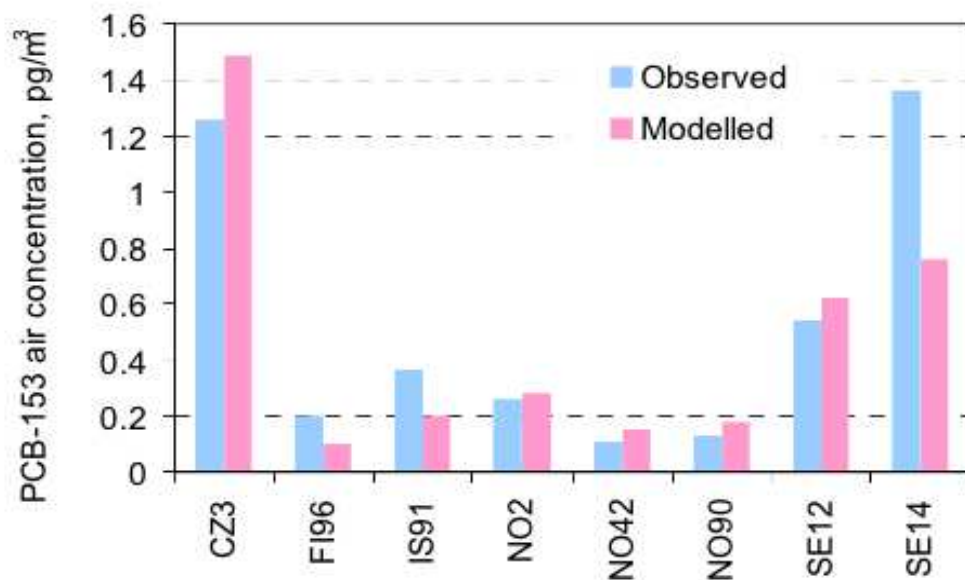
*Accompanying the document*

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE  
COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE  
COMMITTEE OF THE REGIONS**

**on the application of Regulation (EC) No 850/2004 on persistent organic pollutants**

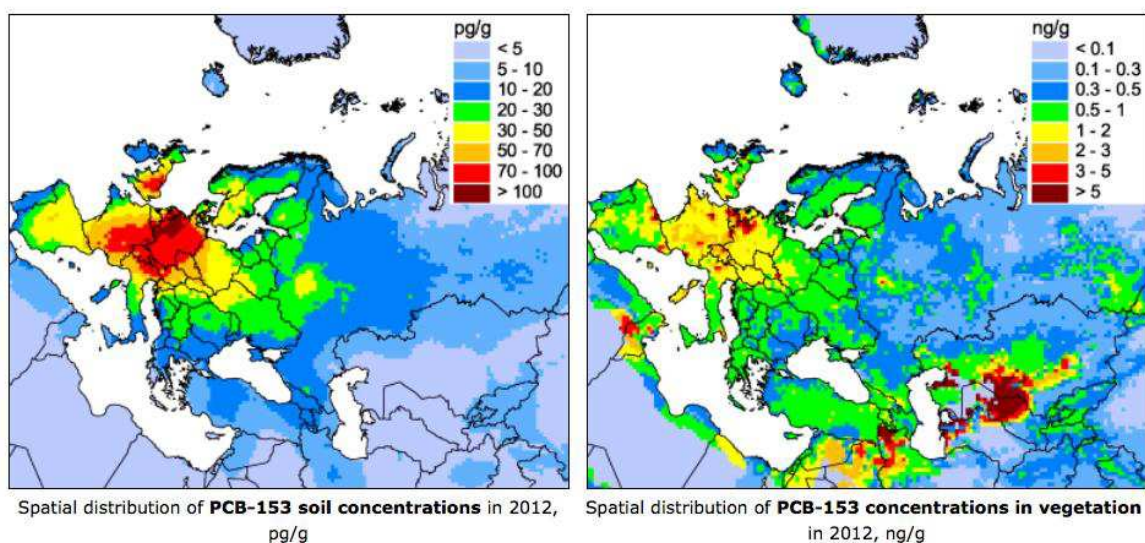
{COM(2021) 109 final}

Figure 7.30 Comparison of predicted ambient air concentrations for PCB-153 for sites with long-term monitoring data – EMEP Status report 2014



The importance of secondary sources in ambient air concentrations has been increasing, and in 2012 it has been estimated to contribute for 68% of the total. The remainder comes from on-going anthropogenic emissions (23%) and emissions outside the EMEP region (9%). Figure 7.31 shows the spatial distribution of PCB-153 in soils and vegetation for 2012, demonstrating a clear hotspot in the centre of Europe.

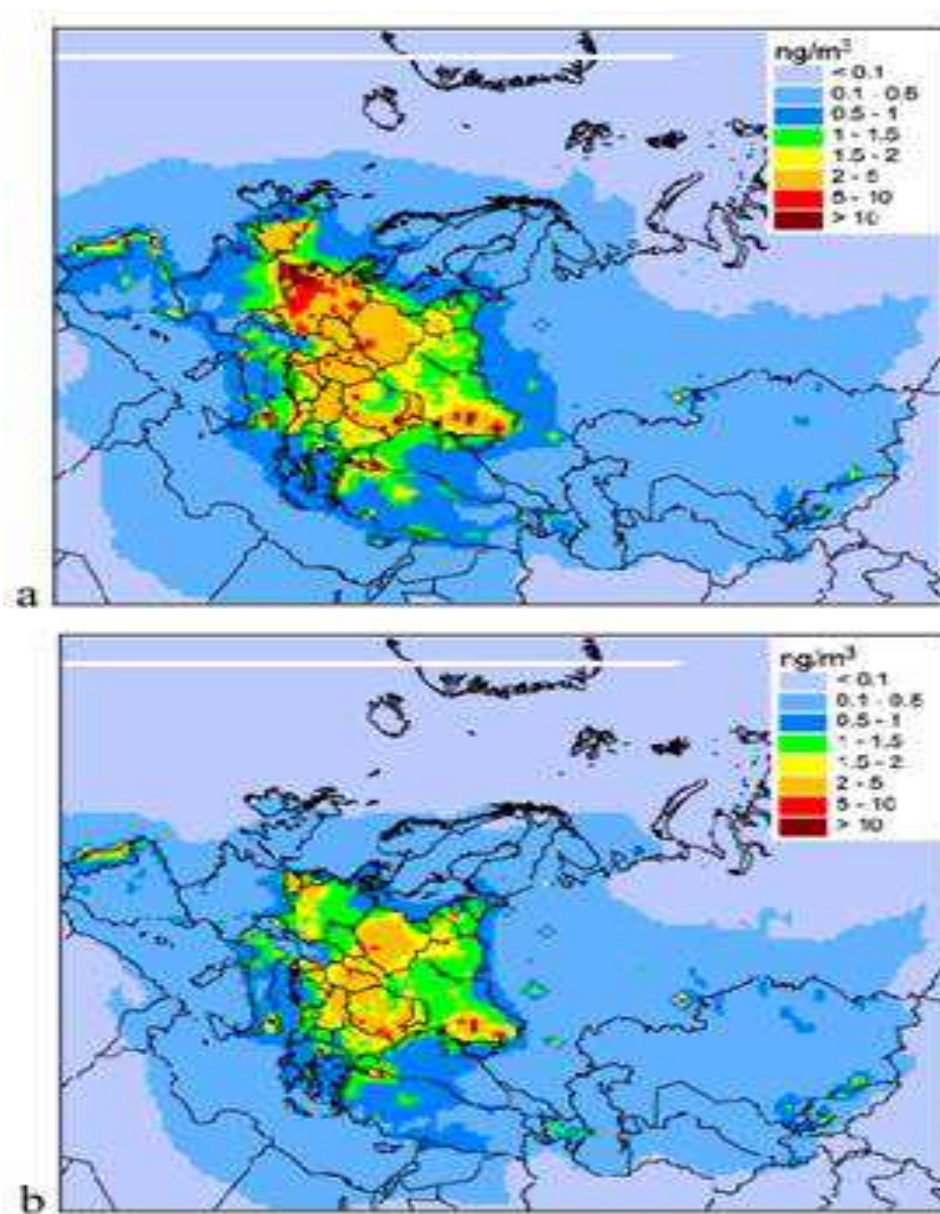
Figure 7.31 Predicted spatial distribution of soil and vegetation concentrations for PCB-153 in 2012 – EMEP Status report 2014



### PAHs

The reduction in emissions across the EMEP region (mean 40% reduction) for PAHs is reflected in the predicted air concentrations provided by the GLEMOS model. Figure 7.32 illustrates this change in atmospheric concentrations. Across the region the reduction is on average 30%, but it varies within sub-regions and countries. The majority of EU countries show a decrease in PAH concentrations. In the United Kingdom the reduction was 90%, in Germany 70%, while for some countries such as Finland, Bulgaria and Estonia the reduction was smaller (3 to 6%).

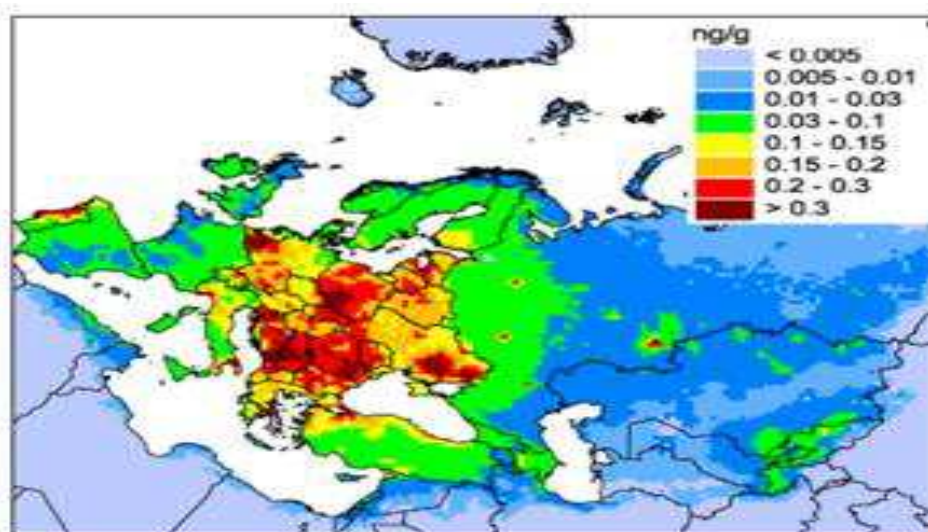
Figure 7.32 Predicted spatial distribution of ambient air concentrations for the sum of 4 PAHs for EMEP countries in 1990 (a) and 2012 (b) – EMEP Status report 2014



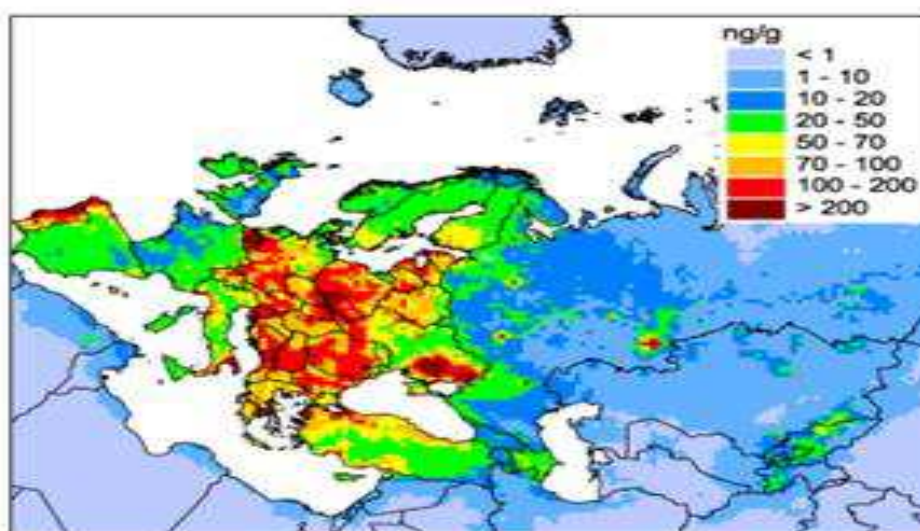
Benzo(a)pyrene (B[a]P) is the only PAH with an EU air quality standard (1 ng/m<sup>3</sup>). Over the period 1990 to 2012 the number of EMEP regions exceeding this value significantly reduced. However, in 2012 the areas where the value was exceeded still remained considerable, affecting about 16.5 million people. The model predicted concentration data was compared to monitoring data collected at 5 long-term monitoring stations, one in Norway, two in Sweden, one in Finland and one in the Czech Republic. Model performance was reported to be good with measured and modelled B[a]P concentrations agreeing within a factor of two.

The GLEMOS model also provides spatial estimates of soil and vegetation concentrations. Figure 7.33 shows the most recent estimates (2012) for B[a]P. B[a]P has limited potential for long-range atmospheric transport and so high soil and vegetation concentrations are generally found close to sources.

Figure 7.33 Predicted spatial distribution of soil and vegetation concentrations for B[a]P in 2012 – EMEP Status report 2014



Spatial distribution of B[a]P soil concentrations in 2012, ng/g

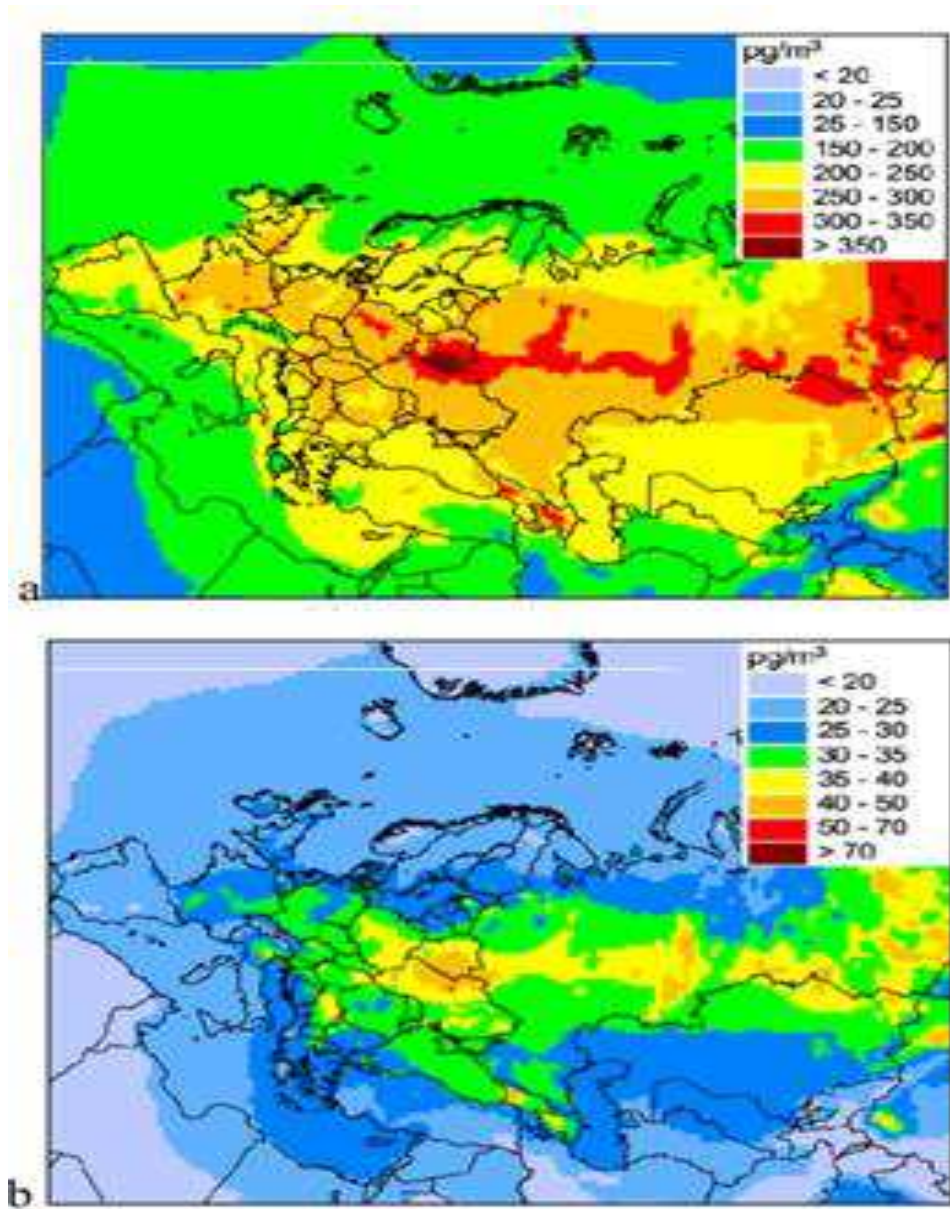


Spatial distribution of B[a]P concentrations in vegetation in 2012, ng/g

#### Hexachlorobenzene

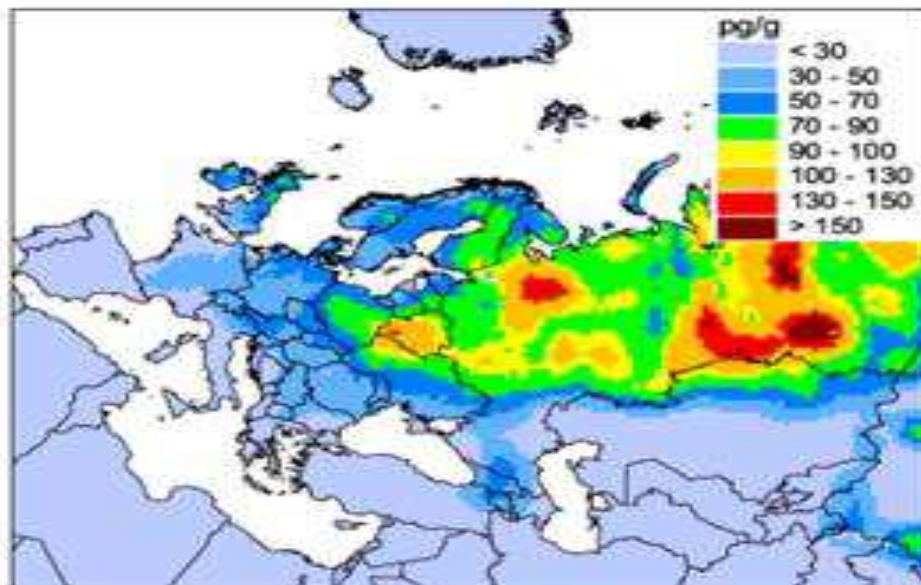
The reduction in emissions of HCB across the EMEP region as a result of banning its use in agriculture and controlling other anthropogenic sources is reflected in the predicted air concentrations provided by the GLEMOS model. Across the EMEP region, there has been a 90% reduction in ambient HCB concentrations. Current sources of HCB emissions to the atmosphere are mainly secondary sources (75%), followed by non-EMEP emissions (24%) and limited on-going anthropogenic emissions (1%). Figure 7.34 shows the spatial patterns in ambient air concentrations for HCB for 1990 and 2012.

Figure 7.34 Predicted spatial distribution of ambient air concentrations for HCB for EMEP countries in 1990 (a) and 2012 (b) – EMEP Status report 2014

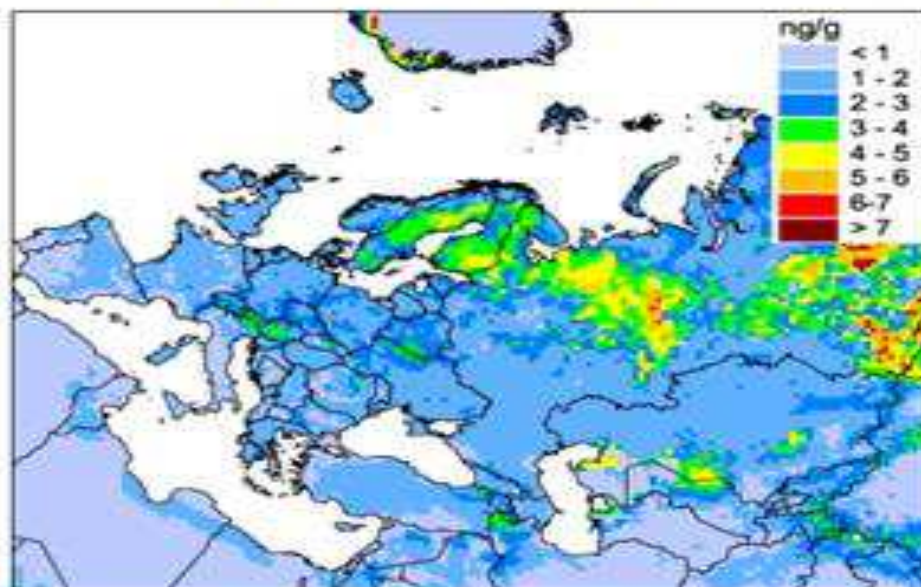


HCB is a semi-volatile and persistent POP and is readily able to undergo long-range atmospheric transport leading to a high degree of mixing in the atmosphere. Figure 7.35 shows the predicted spatial distribution of HCB in soil and vegetation in 2012.

Figure 7.35 Predicted spatial distribution of soil and vegetation concentrations for HCB in 2012 – EMEP Status report 2014



Spatial distribution of HCB soil concentrations in 2012, pg/g

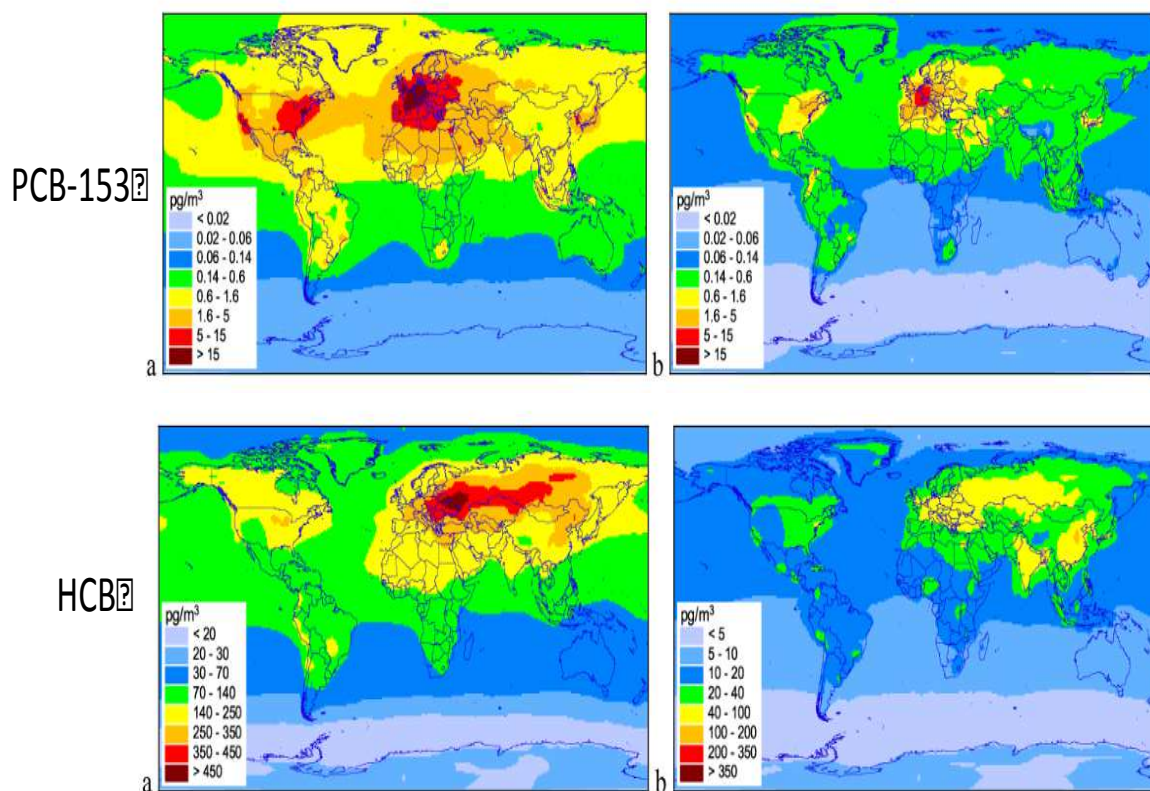


Spatial distribution of HCB concentrations in vegetation in 2012, ng/g

### *Environmental contamination from POPs on a global scale*

The spatial distribution of POPs on a global scale provided by the GLEMOS model demonstrates how the large scale patterns of emissions have changed between 1990 and 2012. Figure 7.36 shows the global distribution of ambient air concentrations for PCB-153 and HCB for the years 1990 and 2012. For both POPs there was a significant reduction in concentration, which reflects the emission reduction over this period. It is clear that in 2012 Europe remains a region with high PCB concentrations, whilst for HCB the distribution is more widespread, reflecting its ability to undergo long range atmospheric transport.

Figure 7.36 Comparison of predicted ambient air concentrations for PCB-153 ( $\text{pg}/\text{m}^3$ ) and HCB ( $\text{pg}/\text{m}^3$ ) for 1990 (a) and 2012 (b) – EMEP Status report 2014



### **Arctic Monitoring and Assessment Programme (AMAP) Technical Report No7 (2014) Trends in Stockholm Convention Persistent Organic Pollutants (POPs) in Arctic Air, Human media and Biota**

The AMAP Technical Report provides an update on the AMAP monitoring studies that are relevant to the Stockholm Convention. The long-term Arctic monitoring data provide an assessment of the importance of long range atmospheric transport of POPs from source regions such as Europe. The information on trends provided by these datasets can give insights into the effectiveness of source reduction measures and international agreements such as the Stockholm Convention.

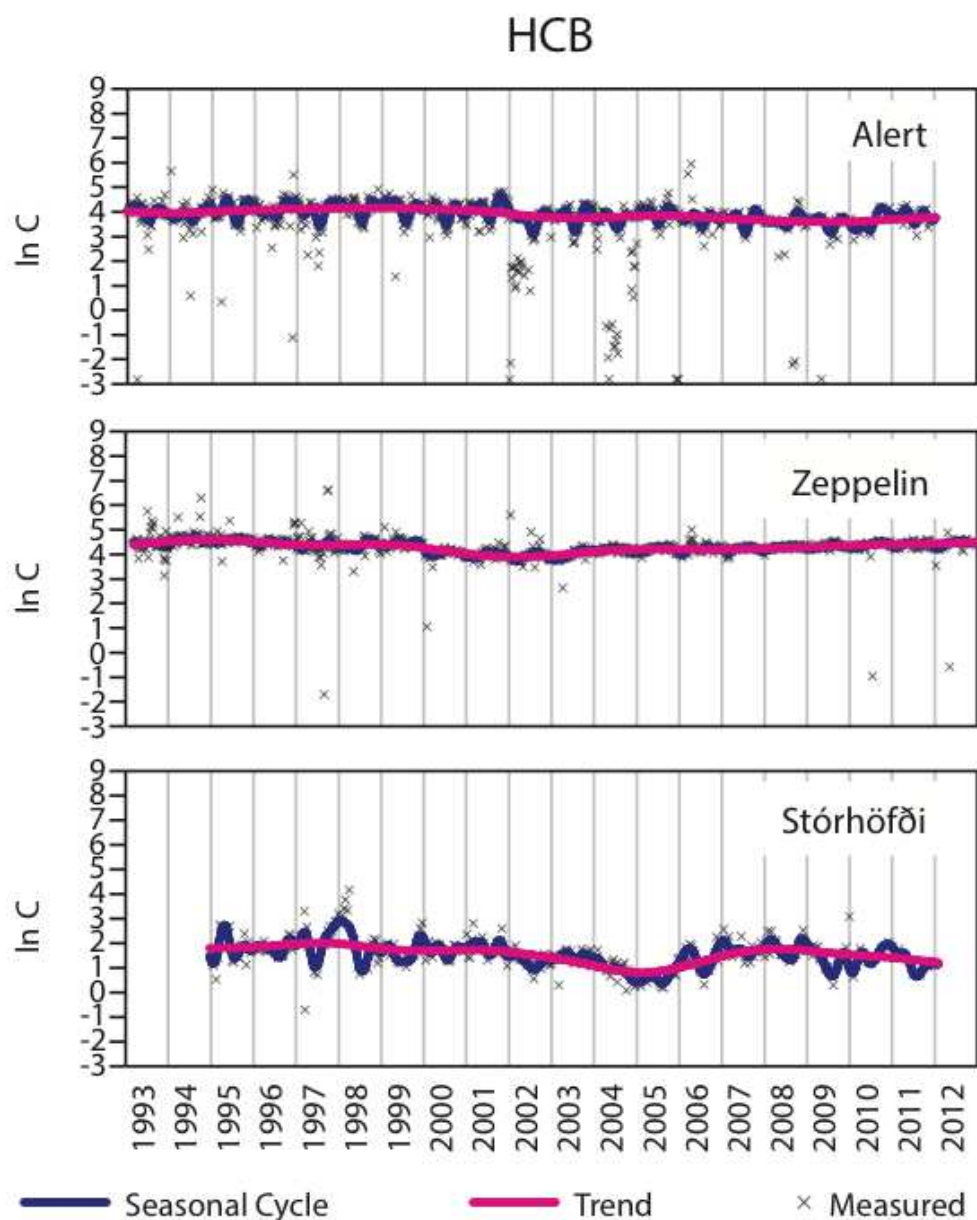




### *Hexachlorobenzene*

Ambient air monitoring data from 3 Arctic stations has shown either increasing trends or very slow declines ( $t_{1/2} > 20$  years) which suggests that while HCB was banned in Europe and North America for 30+ years emissions to air have continued. The source of such emissions however is less clear and could be either continued use of HCB outside of Europe and North America, or re-emission of HCB from the surface of contaminated soils cycling in the environment. The monitor site in Greenland, suggests that there is a lack of temperature dependence affecting air concentrations, which would make the issue of re-emission a less plausible reason for continued enhanced air concentrations. Figure 7.37 shows the  $\log_e$  transformed concentration data for HCB at three sites showing a lack of downward trend.

Figure 7.37 Time trends and seasonal cycles for HCB (InC) at three Arctic monitoring stations over the period 1993 to 2012.

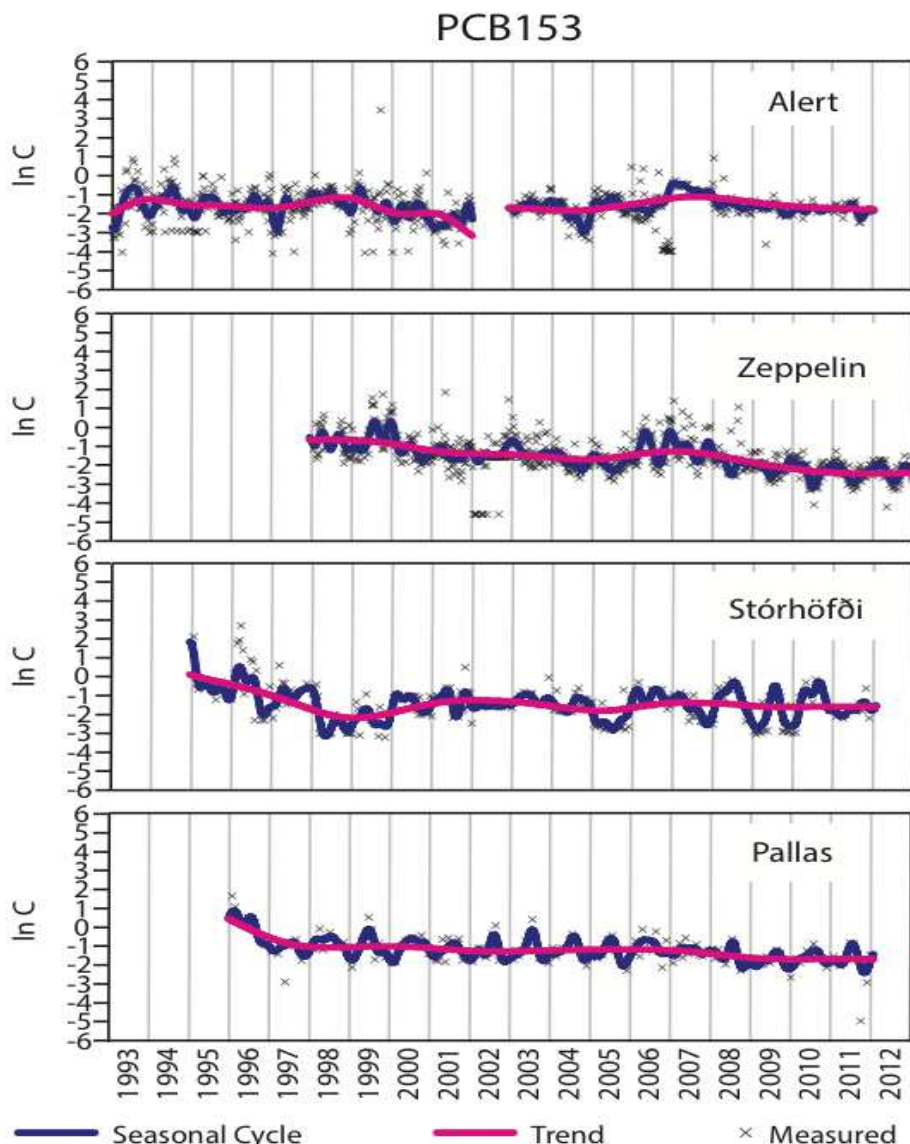


#### Polychlorinated Biphenyls

Ambient air monitoring data for PCBs from the Arctic monitoring stations generally show a declining trend since the 1990s, reflecting controls/restrictions across Europe, North America and Asia. The long term monitoring stations at Pallas, Stórhöfði and Zeppelin provide apparent first order half-lives for the PCB congener 153 of 9.8, 19 and 6.2 years. The site at Alert in the Canadian Arctic shows a half-life of 8.3 years between 1993 and 2001, but a half-life of 51 years over the period 2003 to 2011. Figure 7.38 shows the long term time trend data for PCB-153 at four Arctic monitoring stations. The time trend data show that the rate of decline is reducing at most monitoring stations. There has been a suggestion that de-glaciation and sea-ice retreat could be re-supplying the Arctic atmosphere with some of the lighter PCB congeners such as PCB52 and PCB101. Figure

7.38 shows the time trend data for four Arctic monitoring stations for PCB153 over the period of 1993 to 2012.

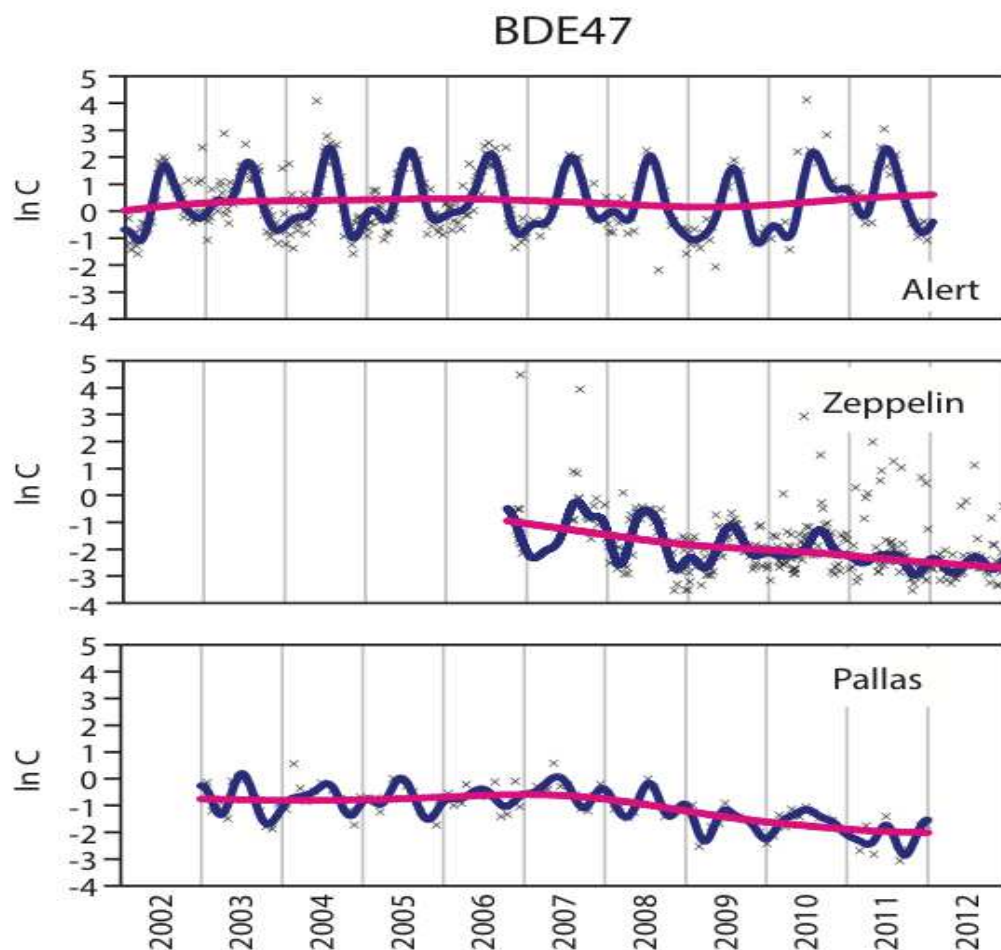
Figure 7.38 Time trends and seasonal cycles for PCB153 (lnC) at four Arctic monitoring stations over the period 1993 to 2012.



#### *Polybrominated diphenyl ethers*

Three Arctic monitoring stations, Alert, Zeppelin and Pallas, have been reporting PBDE congener data for ambient air since the early 2000s, around the time of the main restrictions on production and use of PBDEs. Data from Alert suggest that ambient air concentrations have remained unchanged, although for the stations at Pallas and Zeppelin there has been evidence of declining trends with half-lives of 2.6 to 4.5 years for three of the main congeners BDE47, 99 and 100. It has been suggested that the concentrations measured at Alert may be influenced by a nearby military base. Figure 7.39 shows time trend data for the Alert, Zeppelin and Pallas monitoring stations for one of the main PBDE congeners in the commercial penta- mixture, BDE47.

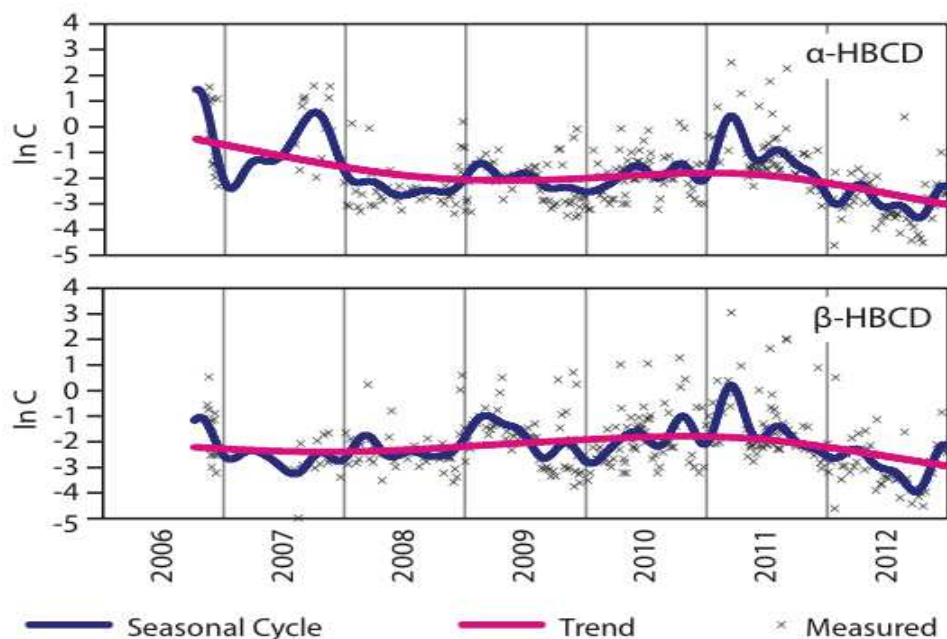
Figure 7.39 Time trends and seasonal cycles for BDE47 (lnC) at three Arctic monitoring stations over the period 2002 to 2012



#### Hexabromocyclododecane (HBCD)

Concentrations of alpha and beta-HBCD congeners in ambient air have been reported at the Zeppelin station over the period 2006 to 2012. The sum of the three isomers of HBCD have been showing a declining trend with a half-life of 2.4 years. Figure 7.40 shows the time trend data for alpha and beta-HBCD at the Zeppelin station.

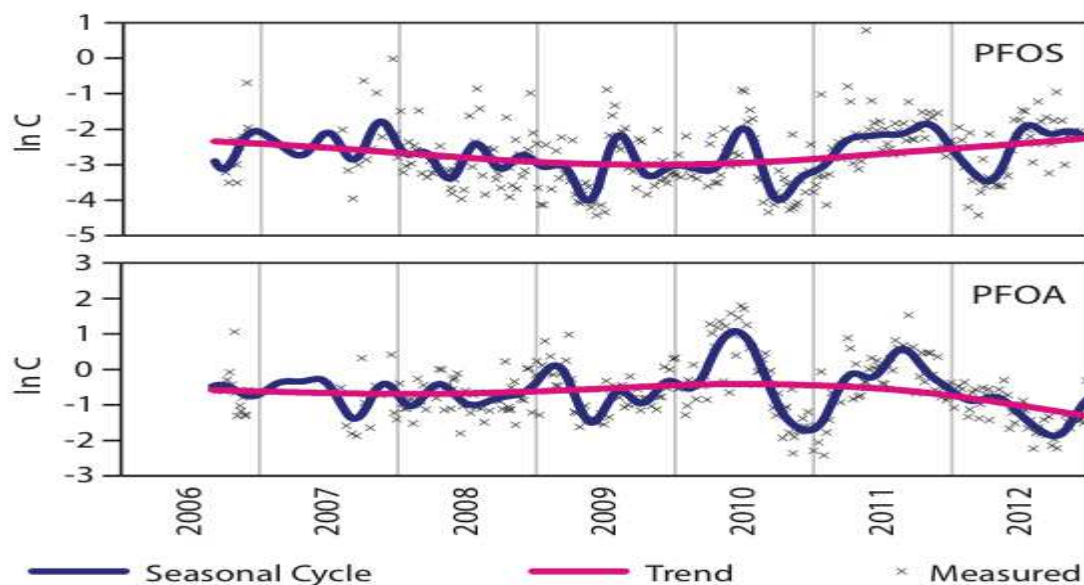
Figure 7.40 Time trends and seasonal cycles for alpha and beta-HBCD (lnC) at three Arctic monitoring stations over the period 2002 to 2012



#### PFOS and PFOA

Concentrations of PFAS in ambient air have been reported at the Zeppelin station over the period 2006 to 2012. PFOS and PFOA sorbed onto airborne particles remained constant over that period with no evidence of seasonality. Figure 7.41 shows the time trend data for PFOS and PFOA at the Zeppelin station.

Figure 7.41 Time trends and seasonal cycles for PFOS and PFOA (particle phase only, lnC) at three Arctic monitoring stations over the period 2002 to 2012



#### Conclusions

Predictions from the MSC-E model GLEMOS suggest that over the period from 1990 to 2012 there has been a reduction in environmental concentrations of PAHs, PCDD/Fs, HCB

and PCBs. GLEMOS uses gridded versions of the official emission data provided by the Parties to the Convention with additional expert input and unofficial emissions estimates. Model results are assessed against monitoring data, largely consisting of ambient air concentrations provided by the EMEP monitoring network. Decreasing environmental concentrations over this period are most evident in the atmosphere, largely driven by reductions in emissions. The reduction in primary emissions for some POPs has resulted in the increasing importance of secondary sources from environmental recycling, particularly for soil.

- PAHs and BaP. As a result of an average emission reduction of 40% across the EMEP region there has been a corresponding reduction of ambient air concentrations of 30%. There are some regional variations, with the United Kingdom and Germany showing reductions of 90% and 70%, respectively, while other countries show smaller reductions (e.g. Finland, Bulgaria and Estonia with a reduction of 3 to 6%). PAHs (e.g. BaP) generally show a limited long-range atmospheric transport potential and so ambient air concentrations generally reflect the presence of local source. Because of deposition from air, soil is an on-going sink for these substances and will show a slower response to emission reduction.
- PCDD/Fs. Across the EMEP region there has been an average emission reduction of 60%. In the EU there has been a reduction of ambient air concentrations of 75% over the period from 1990 to 2012. Emission estimates and modelling approaches have suggested that over this period secondary sources (e.g. volatilization from soil) has become dominant over primary sources.
- HCB. Emission estimates for HCB from 1990 to 2012 across the EMEP region have shown a reduction of 85%, largely as a result of restrictions of its use in agriculture. This has resulted in a 90% reduction in ambient air concentrations, with the main secondary source, volatilization from soil, accounting for approximately 75% of on-going emissions.
- PCBs. Across the EMEP region there has been an average emission reduction of 85%, resulting in an estimated reduction of 80% in ambient air concentration. This has occurred mostly thanks to control of primary sources. Secondary sources of PCBs now dominate and account for 68% of the total emissions. The soil ‘reservoir’ is likely to re-supply the atmosphere for still a long time.

## 8. Control measures

The POP Regulation requires Member States to take actions in identifying, controlling and ultimately reducing the emission of POPs in the environment. The key mechanism for action is the development of national implementation plans which should document the current situation and issues in each Member State. On the basis of this information, the Member States can develop action plans as part of the national implementation plan to address the identified issues. Various Articles of the POP Regulation contain those control measures (information box below):

**Article 3** and **Article 4** of the POP Regulation provide control measures for the production, placing on the market and use of substances listed in Annex I (banned) and Annex II (restricted) to protect human health and the environment from POPs.

Additionally the POP Regulation requires Member States to develop National implementation Plans (Article 8) Action Plans (Article 6) and emission inventories for Annex III (unintentional substances) (Article 6)

These issues are detailed within the POP Regulation as follows:

### **Article 8 – National Implementation Plans:**

- 8.1 When preparing their national implementation plans, Member States shall, in accordance with their national procedures, give the public early and effective opportunities to participate in this process.
- 8.2 As soon as a Member State has adopted its national implementation plan in accordance with its obligations under the Convention, it shall communicate it both to the Commission and to the other Member States.
- 8.3 When preparing their implementation plans, the Commission and the Member States shall exchange information on the content as appropriate.

### **Article 6 – Action Plans:**

- 6.2 A Member State shall communicate its action plan on measures to identify, characterise and minimise with a view to eliminating where feasible as soon as possible the total releases developed in accordance with its obligations under the Convention, to both the Commission and the other Member States as part of its national implementation plan, pursuant to Article 8.

### **Article 6 – Emission Inventories**

- 6.1 Within two years of the date of entry into force of this regulation, Member States shall draw up and maintain release inventories for the substances listed in Annex III into air, water and land in accordance with their obligations under the Convention and the Protocol

Member States need to ensure that the actions are enforced and reported back to the Commission as part of the annual and triennial Article 12 reporting. Control of Annex III substances is a more complex problem and the development of emission inventories (detailed in the previous chapter) is intended to inform Member State Competent Authorities on the specific issues that need to be addressed within their nation.

The development and continuous update of national implementation plans provide the reference information on policies and activities undertaken by a specific Member State to control POPs, which should be communicated to all other Members of the European Union to ensure close cooperation and coordination in the continued efforts to meet the overall aims of the POP Regulation.



The POP Regulation requires Member States to create emission inventories within two years of its entry into force. These inventories, together with supporting work and public consultation, are used to develop the action plans and national implementation plans. The first round of national implementation plans are typically dated between 2006 and 2008. From 2010, new substances were added to the Annexes of the POP Regulation in order to comply with listings adopted under the Stockholm Convention. This included a new Annex III substance, pentachlorobenzene, and other additions of legacy substances with potential for release into the environment, particularly polybrominated diphenyl ethers (PBDEs) and Perfluorooctanesulfonic acid (PFOS). These additions required an updated second round of national implementation plans which typically date from 2011 onward.

Based on the review of national implementation plans submitted to the Stockholm Convention, no national implementation plan has been developed by Greece or Malta, and the position for Italy is unknown as Italy has not directly ratified the Stockholm Convention. The second synthesis report of 2011 states that the two year deadline for developing a national implementation plan had expired for Greece and it is assumed that this situation is unchanged. The remaining 25 EU Member States have all developed national implementation plans and national action plans. Update of national implementation plans for inclusion of substances added to the POP Regulation since 2010 has been completed by most of the Member States. Seven Member States (Czech Republic, Croatia, Latvia, Lithuania, Luxembourg, Portugal and Slovenia) have yet to complete and submit updated national implementation plans, although work is expected to be ongoing.

Table 8.1 provides an overview of the Member States work to identify, characterise and minimise emissions of POPs based on the responses provided by the Article 12 reports to the European Commission. Concerning the questions on measures to identify and characterise emissions, one Member State (Hungary) stated that these issues were not applicable. This probably means that measures had already been put in place or that the addition of new POPs since 2010 were not relevant for Hungary. A number of Member States have provided detailed responses on the steps taken to prevent the release of POPs to the environment. The full detail of the Article 12 responses for control measures is provided in Appendix B of this document.

The second synthesis report commented on specific national policies that had been implemented to help reducing the emission of POPs. The Article 12 responses submitted for the period 2010 – 2012 further builds on this aspect. A number of Member States have implemented national legislation on emission limit values following or exceeding the requirements of the industrial emission directive (IED) (Czech Republic, Germany, France, Hungary, Netherlands, Romania, Finland and United Kingdom). Other Member States have reported specific targeted research on POPs and further development of action plans. For example, Finland carried out a research programmes (COHIBA) to monitor the release of 11 substances into the Baltic Sea; Sweden developed and maintained an inventory of contaminated land sites; the United Kingdom maintained an active monitoring network (TOMPs) for airborne concentrations of POPs to verify the success of policies addressing POPs emissions.

The second synthesis report noted that it was difficult to comment on the activities of some Member States due to the lack of information. This is still the case in the current synthesis report.

*Table 8.1 Breakdown of work completed based on Article 12 reports*

<b>Member State</b>	<b>Measures to Identify</b>	<b>Measures to characterise</b>	<b>Measures to Minimise</b>
<b>Austria</b>			
<b>Belgium</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Bulgaria</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Croatia</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Czech Republic</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Cyprus</b>			
<b>Denmark</b>			
<b>Estonia</b>			
<b>Finland</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>France</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Germany</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Greece</b>			
<b>Hungary</b>	n/a	n/a	<input type="checkbox"/>
<b>Ireland</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Italy</b>			
<b>Latvia</b>			
<b>Lithuania</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Luxembourg</b>			
<b>Malta</b>			
<b>Netherlands</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Poland</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Portugal</b>			
<b>Romania</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Slovakia</b>			
<b>Slovenia</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Spain</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Sweden</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>United Kingdom</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 9. Activities to promote knowledge exchange

The POP Regulation sees the knowledge exchange as key to raise awareness, involve stakeholder groups (including the general public) and provide assistance to other states to act proactively in order to minimise the impact of POPs. The POP Regulation addressed these points in Article 10, as explained in the information box below:

**Article 10** of the POP Regulation states that:

10.1. The Commission and the Member States shall facilitate and undertake the exchange within the Community and with third countries of information relevant to the reduction, minimisation or elimination, where feasible, of the production, use and release of persistent organic pollutants and to alternatives to those substances, specifying the risks and the economic and social costs related to such alternatives.

10.2. The Commission and Member States, as appropriate, shall promote and facilitate with regard to persistent organic pollutants:

- (a) awareness programmes, including relating to their health and environmental effects and their alternatives and on the reduction or elimination of their production, use and release, especially for
  - (i) policy and decision makers,
  - (ii) particularly vulnerable groups;
- (b) the provision of public information;
- (c) training, including workers, scientists, educators and technical and managerial personnel

10.3. Without prejudice to Directive 2003/4/EC of the European Parliament and of the Council of 28 January 2003 on public access to environmental information, information on health and safety of humans and the environment shall not be regarded as confidential. The Commission and the Member States that exchange other information with a third country shall protect any confidential information as mutually agreed.

Member States are required to implement this provision and promote knowledge exchange, public awareness and training. The information included in this section is based on Member States' reports for the 2010-2013 period. In addition, activities conducted by the Commission to raise public awareness and knowledge exchange platforms such as the E-PRTR are included.

## 9.1 Reporting activities

**Article 12** of the POP Regulation states that:

12.1 Member States shall every three years forward to the Commission information on the application of this Regulation, including information on infringements and penalties.

12.2 Member States shall provide the Commission every year with statistical data on the actual or estimated total production and placing on the market of any substance listed in Annex I or II.

12.3. Within three years of the date of entry into force of this Regulation and every three years thereafter, Member States shall provide the Commission with:

(a) summary information compiled from the notifications, concerning stockpiles, received pursuant to Article 5(2);

(b) summary information compiled from the release inventories drawn up pursuant to Article 6(1);

(c) summary information on the presence of dioxins, furans and PCBs as identified in Annex III in the environment, as compiled pursuant to Article 9.

12.4. As regards the data and information to be provided by Member States pursuant to paragraphs 1, 2 and 3, the Commission shall develop in advance a common format in accordance with the procedure referred to in Article 16(2).

12.5. Regarding the substances listed in the Convention, the Commission shall, at intervals to be determined by the Conference of the Parties of the Convention, compile a report on the basis of the information provided by the Member States in accordance with paragraph 2 and communicate it to the Secretariat of the Convention.

According to Article 12, the main reporting requirement for Member States is an annual report including statistical data on actual or estimated total production and placing on market of substances of Annexes I or II. During the 2010-2013 period, eighteen Member States have provided at least one annual report:

Belgium, Germany, Ireland, France, Croatia, Cyprus, Lithuania, Netherlands, Austria, Romania Finland and Sweden have submitted annual reports for 2010, 2011, 2012 and 2013;

Bulgaria and Czech Republic have submitted annual reports for 2010, 2012 and 2013;

Poland provided reports for 2011, 2012 and 2013;

Slovenia, Slovakia and the United Kingdom provided an annual report for 2012 in addition to 2010 (United Kingdom only) and 2013 (Slovenia only); and

Denmark and Hungary provided annual reports for only one year during the reporting period (respectively 2010 and 2011).

Article 12 also requires Member States to submit a triennial report on the application of the Regulation. The last triennial report covered the 2010-2012 period and was submitted by 17 Member States.

The reports submitted from 2007 to 2012 are presented in Table 9.1.

*Table 9.1 Information reported by Member States*

MS	2007 annual report	2008 annual report	2009 annual report	2007- 2009 triennial report	2010 annual report	2011 annual report	2012 annual report	2013 annual report	2010- 2012 triennial report
AT	✓	✓	✓	✓	✓	✓	✓	✓	X
BE	✓	✓	✓	✓	✓	✓	✓	✓	✓
BG	✓	✓	✓	✓	✓	✓	✓	✓	✓
CY	✓	✓	✓	✓	✓	✓	✓	✓	✓
CZ	✓	✓	✓	✓	✓	X	✓	✓	✓
DE	✓	✓	✓	✓	✓	✓	✓	✓	✓
DK	✓	✓	✓	✓	✓	X	X	X	X
EE	✓	✓	✓	✓	X	X	✓	X	X
EL	X	X	X	X	X	X	X	X	X
ES	✓	✓	✓	✓	X	X	X	✓	✓
FI	✓	✓	✓	✓	✓	✓	✓	✓	✓
FR	✓	✓	✓	✓	✓	✓	✓	✓	✓
HR	✓	✓	✓	✓	✓	✓	✓	✓	X
HU	X	✓	✓	✓	X	✓	X	X	✓
IE	✓	✓	✓	✓	✓	✓	✓	✓	✓
IT	✓	✓	X	X	X	X	X	X	X
LT	✓	X	✓	✓	✓	✓	✓	✓	✓
LU	✓	✓	✓	X	X	X	X	X	X
LV	✓	✓	✓	✓	X	X	✓	✓	X
MT	X	X	X	X	X	X	X	X	X
NL	✓	✓	✓	✓	✓	✓	✓	✓	✓
PL	✓	✓	✓	✓	✓	✓	✓	✓	✓
PT	X	X	X	X	X	X	X	X	X
RO	✓	✓	✓	✓	✓	✓	✓	✓	✓
SE	✓	✓	✓	✓	✓	✓	✓	✓	✓
SI	✓	✓	✓	✓	✓	✓	✓	✓	✓
SK	✓	✓	✓	✓	X	X	X	✓	X
UK	✓	✓	✓	✓	✓	X	✓	X	✓

The 2010-2013 reporting period has significant reporting gaps, with nine Member States failing to report any information (Estonia, Greece, Italy, Luxembourg, Malta and Portugal). For comparison the 2007-2009 reporting period only had three Member States failing to report any information (Greece, Malta and Portugal).

The notification procedure was discussed in previous sections. As required by Article 12.3, Member States must submit to the Commission information on notifications concerning stockpiles, information compiled from the release inventories as described in Article 6(1) and information on the presence of dioxins, furans and PCBs as identified in Annex III.

## 9.2 Information exchange

A total of seventeen Member States indicated to have established information exchange mechanisms, with ten providing details on those mechanisms. Three Member States (Bulgaria, Slovenia and United Kingdom) indicated that the information exchange mechanism is used for the update of the NIPs. The Netherlands launched a public consultation for the drafting and updating of the NIPs. This information is summarised in Table 9.2.

*Table 9.2 Overview of information exchange mechanisms reported by Member States*

<b>Member State</b>	<b>Information exchange mechanisms</b>	<b>Comments</b>
Belgium	Federal and regional cooperation	The federal authorities and the three regions have adopted a cooperation agreement on international environmental policy. This has led to the creation of a Coordination Committee for International Environmental Policy (CCIEP). It is responsible for monitoring, collection of data to meet international organisations' demands and drawing up joint reports.
Bulgaria	1. National website 2. Update of the NIP	Information is exchanged through the website ( <a href="http://www.chemicals.moew.government.bg/">http://www.chemicals.moew.government.bg/</a> ) and the updates of the NIP.
Cyprus	Cooperation within relevant Ministries	Information exchange is taking place through the Department of Labour Inspection of the Ministry of Labour and Social Insurance which is the coordinating and contact point between Cyprus and the European Commission for the implementation of the POP Regulation.
Czech Republic	1. Research Centre for Toxic Compounds in the Environment 2. Joint Centres	The Centre is an independent department of Masaryk University which focuses on POPs, including environmental chemistry and modelling, ecotoxicology and risk assessment and trace laboratory. All the research programmes are supported by advanced research infrastructure. The Czech Republic also established joint centres, such as the Regional POPs Centre for Central and Eastern Europe and the national laboratory for cyanotoxins.
France	Participation in information exchange with other Member States	France takes part in several international working groups. This is seen as a way to improve information sharing and best practices for POPs management. Since 2005, France has been part of the BAT-BEP group, since 2006 in the Toolkit group and since 2009 in the PEN group. Since 2011, France has been a member of the expert

Member State	Information exchange mechanisms	Comments
		group on DDT and the world alliance for the substitution of DDT. Finally, France is part of the network aiming at the removal of PCBs.
Germany	Cooperation with federal states National website	Germany created an information exchange mechanism with national stakeholders and representatives of German Federal states. It is used to help updating of the national implementation plan but also to build awareness and understanding to help enforcement. The German Federation Environment Agency has made available a wide range of information on its website including reports on research on POPs. This can be found at: <a href="http://www.umweltbundesamt.de/themen/chemikalien/chemikalien-management/stockholm-konvention/">http://www.umweltbundesamt.de/themen/chemikalien/chemikalien-management/stockholm-konvention/</a> .
Hungary	-	This question may have been misunderstood as Hungary indicated that it was not invited to join any information exchange mechanisms. It has not included information on whether information exchange mechanisms had been adopted at national level.
Ireland	1. Participation in information exchange with other Member States. 2. National information exchange between the Environment Protection Agency and the Public Authorities 3. Network for Ireland's Environmental Compliance and Enforcement	1. The Environment Protection Agency (EPA) and Department of Environment, Community and Local Government attend EU POPs Competent Authority Meetings which are held at least once a year and provide an opportunity for information exchange. 2. EPA exchanges information with the following public authorities: Department of Environment, Community and Local Government: Environmental policy and legislation concerning environmental protection including POP Regulations Food Safety Authority of Ireland: Monitoring of POPs in food and foodstuff and related legislation Irish Medicines Board: Regulatory control of POPs in medicinal products for human or veterinary use Department of Agriculture, Food and the Marine: Regulatory control of pesticides and monitoring of pesticides in food and feed including POPs



Member State	Information exchange mechanisms	Comments
	(NIECE)	<p>Health and Safety Authority: POPs subject to chemicals legislation</p> <p>Marine Institute: Monitoring of POPs in shellfish and marine sediments</p> <p>Revenue's Customs Service: Control of POPs being imported</p> <p>Health Service Executive: POPs and public health issues</p> <p>Local Authorities: Monitoring, permitting, licensing or enforcement systems relating to POPs</p> <p>3. The Network puts together the resources and expertise available nationally to co-ordinate a consistent and more effective approach to the enforcement of environmental legislation in Ireland.</p>
Netherlands	Public consultation	A public consultation was undertaken for the first and the revised NIP.
Romania	Common internet website for Basel Convention, Rotterdam Convention and Stockholm Convention	The aim of the common website is to include all relevant information on national legislation implementing the Conventions and on national reports and projects, with links to the topics managed by the Conventions
Slovenia	Measures detailed in the NIP	
United Kingdom	Measures detailed in the NIP	

Spain, Lithuania, Poland, Finland and Sweden indicated that information exchange mechanisms were established but their response did not include details on the type of mechanism.

### 9.3 Financial and Technical assistance

Article 11 of the Regulation provides that financial and technical assistance can be provided to other Member States and / or third countries with regards to POPs.

**Article 11** of the POP Regulation states that:

In accordance with Articles 12 and 13 of the Convention, the Commission and the Member States shall cooperate in providing appropriate and timely technical and financial assistance to developing countries and countries with economies in transition to assist them, upon request and within available resources and taking into account their particular needs, to develop and strengthen their capacity to fully implement their obligations under the Convention. Such support may also be channelled through non-governmental organisations.

Eleven Member States reported having provided financial and/or technical assistance during the reporting period (Belgium, Czech Republic, Germany, Ireland, Spain, France, Netherlands, Poland, Slovenia, Finland and Sweden).

The Member States indicating that no technical and financial assistance was provided explained that they received no request for their support (Cyprus, Lithuania, Hungary, and United Kingdom), and that they had limited financial or technical expertise to provide assistance (Bulgaria and Romania). Bulgaria indicated that it works within strict fiscal limitations and that the use of the fund allocated to the implementation of the Stockholm Convention and the POP Regulation is restricted to the implementation of the most urgent priority activities set up in the updated NIP. For the destruction of obsolete pesticides stockpiles, Bulgaria indicated that funds are granted from Switzerland through the Swiss government programme and national co-financing.

The range of technical and financial assistance reported by Member States is important. Some of the Member States reported having provided financial assistance through funding of the Stockholm Convention, the GEF, SAICM. However, most of the details were provided on national initiatives and cooperation programmes. The reported objectives include: building capacities and expertise in other countries through guidance, training and expert visits, improving monitoring of POP substances including sampling techniques and improving management of hazardous POP waste, including their destruction.

Several organisations are funded by Member States to provide technical support. The key multilateral initiatives reported include:

**Stockholm Convention Trust Fund:** Contributions have been reported by several signatory countries (Ireland, Spain, Netherlands), as detailed in Table 9.3.

*Table 9.3 Financial support provided to the Stockholm Convention Trust Fund*

<b>Member State</b>	<b>Year</b>	<b>Budget</b>	<b>Comment</b>
Spain	2012	€164,670	-
Spain	2013	€180,105	-

**Multilateral financing Global Environment Facility (GEF):** this is the financial mechanism of the Stockholm Convention. Table 9.4 (below) presents information reported by Member States on financial support provided through the GEF.

*Table 9.4 Financial support provided to the GEF*

<b>Member State</b>	<b>Year</b>	<b>Budget</b>	<b>Comment</b>
Belgium	-	-	Belgium reported being a donor to the GEF for the implementation of the POPs Convention.
Finland	2006-2010	€31.1 million	Finland is one of the only countries to have increased its support compared to the previous round. However it indicated that the earmarked support for the chemicals and waste conventions is relatively small.
	2011-2015	€57.3 million	
Ireland	2010-2013	-	Ireland reported that it has met the funding pledges during GEF5 despite some difficult national economic circumstances.
Slovenia	-	-	Reported being a donor to the GEF
Sweden	2011-2015	SEK 1015 million	10% of the funds are allocated for POPs projects. Sweden supports the ESEA BAT BEP Forum and a project under the GEF entitled 'Regional plan for introduction of BAT/BEP strategies to industrial clusters of Annex C of Article 5 sectors in the ESEA region'. The EPA arranged for a workshop to be held following a forum meeting.
United Kingdom	-	-	United Kingdom has provided funding to the GEF

**Strategic Approach to International Chemicals Management (SAICM):** adopted in 2006, SAICM is a policy framework aiming at fostering the sound management of chemicals. It was developed by a multi-stakeholder and multi-sectoral Preparatory Committee and supports the achievement of the goal agreed at the 2002 Johannesburg World Summit on Sustainable Development to ensure that by 2020 chemicals are produced and used in ways that minimise significant adverse impacts on the environment and human health. The information included in Member States' reports on SAICM is summarised in Table 9.5 (only one member state responded).

*Table 9.5 Financial support provided to the SAICM*

<b>Member State</b>	<b>Year</b>	<b>Budget</b>	<b>Comment</b>
Sweden	2006-2012	SEK 75 million	Sweden's contribution to the SAICM Quick Start Program aims at supporting capacity building and implementation activities in developing and transition economy countries and the SAICM secretariat.

**Funding provided UN institutions and projects:** A range of UN linked organisations are involved in chemical management and POPs. The information reported by Member States relating to financial support is summarised in Table 9.6 below.

*Table 9.6 Financial support provided to UN institutions and projects*

<b>Member State</b>	<b>Year</b>	<b>Budget</b>	<b>Comment</b>
<b>UNDP</b>			
Finland	2010-2012	0.5%	Finland has estimated that 0.5% of the UNDP funding is supporting the implementation of the Stockholm Convention.
Sweden	-	-	The Swedish Chemicals Agency (KemI) has supported the UNDP Case Studies in Partnership Initiative (testing in Cambodia and Zambia): Mainstreaming SMC Issues into MDG-based National Development Planning.
<b>UNEP</b>			
Sweden	2010-2012	-	Supported the work improving Global Monitoring of POPs, primarily for air monitoring activities in Africa.
Sweden	2010-2012	-	Supported a project to determine emission factors for dioxins, furans, HCB and PCBs from open burning of waste – toolkit category 6. This project was implemented in cooperation with China and Mexico.
Sweden	2013	-	The Swedish Chemicals Agency (KemI) supported UNEP in the development of the LIRA-Guidance on legal and institutional infrastructures for the sound management of chemicals, including POPs and testing in two countries (Nigeria, Uruguay) and the development of the report on Cost of inaction in the management of chemicals, published in February 2013.
<b>UNIDO</b>			
Sweden	-	-	Supported UNIDO work, the ESEA BAT BEP Forum.
<b>FAO</b>			
Sweden	-	-	The Swedish Chemicals Agency (KemI) supports in cooperation with FAO, PAN-AP and the Field Alliance a programme in South East Asia; Towards A Non-Toxic Environment. The main objective is to support sound pesticide management by development of farming methods and of legislative frameworks.

Member State	Year	Budget	Comment
			<p>KemI also supported bilateral cooperation with authorities in China, Vietnam, Tanzania, Macedonia and Serbia on chemicals risk management.</p> <p>KemI further supports a Masters course on Pesticide Risk Management organised by the University of Cape Town, South Africa (UCT) in collaboration with FAO. The course is aimed at regulators, inspectors (health, labour, customs and environment), disposal and waste management managers from African countries, but is also suited for a range of researchers, academics, NGO staff and laboratory staff who are working in the field of pesticide management. The pesticide registrar's e-list Server and the Vula web platform at UCT are also supported, with the objective to provide and develop tools for exchange of information and networking.</p>

Beyond international cooperation, Member States reported **national and bilateral cooperation**, as summarised in Table 9.7.

*Table 9.7 Other international cooperation reported by Member States*

Member State	Year	Budget	Description
Czech Republic	2010-2013	-	Masaryk University in Brno organized in 2010 – 2013 summer schools on environmental chemistry and ecotoxicology, the content of which is available online for reference <sup>1</sup> .
Czech Republic and the Slovak Republic	2011	-	Organisation of two international conferences: the 10th AIR 2011, the Czech-Slovak Conference and 'Identifying the Research Needs in the Global Assessment of POPs Ten Years After the signature of the Stockholm Convention, the International Workshop' at the Research Centre for toxic Compounds in the Environment, Masaryk University, Brno
France	2010-2012	-	<p>France is part to the Africa Stockpiles Programme (ASP) aiming at the destruction of obsolete pesticides and supports it with a national fund for environment (FFEM).</p> <p>France has implemented through the FFEM a regional programme for the sustainable management of soil and</p>

<sup>1</sup> <http://www.recetox.muni.cz/index-en.php?pg=events--recent-events--archive&archiv=true>

Member State	Year	Budget	Description
			adaptation to climate change in Sahel and west Africa. This includes the ecological management of PCBs held by energy companies in 14 African countries. Since 2011, France has designated a ministry official to attend the meetings of the DDT expert group.
Germany	2010-2013	-	Germany has supported through multiple in-country projects (including training and research) the implementation of measures to reduce POPs emissions. This includes work in India, Indonesia, Macedonia, the Philippines, Columbia, Bangladesh and Ecuador.
Finland & Sweden / Arctic	-	-	Finland and Sweden both reported being involved with ACAP initiatives and having funded a number of bilateral and multilateral projects in the Russian Federation on POPs and hazardous waste management. It includes Arctic Council projects on environmentally sound management of obsolete pesticides in Northern Russia <sup>2</sup> and phasing out the use of PCBs and improving PCB waste management in Russia. Sweden provided details on a on-going pilot project for reducing dioxin emissions from the Vorkutinskiy Cement Plant in Vorkuta, Komi Republic. The ACAP Project Steering Group on Dioxins (PSG) chaired by the Swedish EPA, has, through NEFCO, conducted a pre-feasibility study on the plant. The PSG plans further activities on inventories of other dioxin emission objects in North Russia as well as promotion of the Stockholm Convention.
Finland	-	-	Finland also supports NGOs for undertaking work in developing countries. It is estimated that 5% of such funding supports the implementation of the Stockholm Convention.
Finland, Sweden, Norway and the FAO	-	-	Funded project on the assessment of environmentally sound destruction technologies for hazardous waste in Russia
Finland	-	-	Bilateral project to enhance the environmental

<sup>2</sup> <https://arctic-council.org/index.php/en/our-work2/8-news-and-events/186-obsolete-pesticides-in-northern-russia-new-report-from-acap>

Member State	Year	Budget	Description
and Nepal			administration in Nepal which includes chemicals components. This covers the creation of an environmental monitoring capacity and the improvement of the implementation of MEAs in Nepal. From 2012 to the end of 2014 work was undertaken to phase out endosulfan and improve pesticides management.
Finland and Zambia	2011-2014	-	Bilateral project with the environmental management authority of Zambia to develop Zambia's POPs monitoring capacity. It aims at enhancing the capacity of water, sediment and fish sampling and the analysis for organochlorine pesticides.
	2010	-	Support Armenia with expert visits
	2010	-	Conducted electronic consultation with Nepal to help developing implementation plans of the Stockholm Convention
Poland	2011-2013	-	Polish aid projects carried out training on the management of chemicals which were funded by special reserve of the state budget. The beneficiaries of the funding were representatives of the government, industry and academic staff in Armenia, Moldova and Georgia.
Spain	-	-	Regional Activity Centre for Sustainable Consumption and Production in Barcelona is designated as a regional centre under the Stockholm Convention. The Centre is responsible for technical and capacity-building activities for the Mediterranean area. Workshops on POPs were organised in Morocco, Egypt and Malta.
Sweden	-	-	<p>The Swedish Chemicals Agency (KemI) and the Swedish EPA's have signed agreements with the Swedish International Development Cooperation Agency (Sida) for increased co-operation in the field of development co-operation. Based on that agreement, several bilateral and regional co-operative development programmes related to chemicals management started.</p> <p>The Swedish Chemicals Agency supports the development of national structures for chemicals management, with a focus on chemicals placed on the market. Swedish EPA's core areas of expertise in development co-operation involve the identification and disposal of POP waste in different medias.</p>

Member State	Year	Budget	Description
Sweden	2010-2012	-	Sweden had two projects with the Stockholm Convention Implementation Office in China: 1. To provide technical assistance in the substitution of DDT-based antifouling paints, where alternative paints have been tested on fishing boats. 2. Reduction and control of dioxin in the paper industry of China.
Sweden	2013	-	The Swedish EPA manages a governmental budget for cooperation with strategic countries in the areas of environment and climate. Within this framework, funds have been allocated to the Swedish Chemicals Agency, for cooperation with a number of countries (China, Vietnam, Indonesia, Uruguay and Brasilia) on activities related to the development of legal framework and institutional set-up for chemicals management.
Sweden / Belarus	2010–ongoing	-	The Swedish EPA support Belarus in the implementation of the Stockholm Convention. A project focusing on the management of contaminated sites in Belarus is on-going since 2010.

In addition, the Stockholm Convention provides information supplied by signatories on national initiatives and technical and financial support provided. The latest information reported was part of the third reporting round in August 2014 and is available on the following website:

<http://chm.pops.int/Countries/Reporting/NationalReports/tabid/3668/Default.aspx>

The review of the NIPs identified the following additional information:

**France** is the 5<sup>th</sup> highest donor to the GEF. Between 1991 and 2010 it has given 669.5 million euro plus 215.5 million euro as part of GEF-5 (2010-2014).

France indicated that the French Development Agency has signed a convention with 600,000 € funding for actions in Mali . This includes the removal of pesticides (€40,000) the prevention, awareness raising and communication (€520,000), management of the project €1,200 and the follow-up €28,800.

Support has also been provided to Tunisia for drafting an inventory of obsolete pesticides. The result was the identification of 1,280 tonnes of obsolete pesticides and 800 tonnes of waste spread over 205 depots.

Finally France has adopted a regional programme for sustainable management of the land and adaptation to climate change in Sahel and West Africa. It includes the creation of a regional centre for treating PCB, aiming for the full removal of PCBs by 2028.

The United Kingdom indicated having contributed over €570 million to the GEF since it was established. In addition it has provided €140,000 every year to the POPs Club established under UNEP to support the development of what is now the Stockholm



Convention. Since 2004, the United Kingdom has an obligation to make annual contributions to support the activities of the Secretariat, this contribution was assessed to be €340,000 in 2012.

#### **9.4 Public awareness and consultation**

##### **9.4.1 Raising awareness to POPs**

Article 10 of the POP Regulation encourages Member State to raise awareness of POP substances to the wider public in particular for policy and decision makers and particularly vulnerable groups.

The majority of the Member States having submitted the triennial questionnaire have indicated having adopted measures to raise public awareness during the 2010-2012 period. Several Member States (Belgium, Bulgaria, Spain, France, Poland, Romania, Finland and Sweden) indicated having produced information material and leaflets, either in hard copy or made available on Competent Authorities' websites. In addition, several Member States (Belgium, Ireland, Spain, Cyprus, Netherlands, Poland, Romania and Slovenia) have organised awareness raising campaigns or events, in order to disseminate information to the general public and concerned groups including farmers, industrial operators and vulnerable groups (pregnant woman, children, elderly). France and Lithuania indicated that the update of the NIP had given rise to a range of awareness raising events while the United Kingdom reported that its public awareness measures are included in its NIP. A breakdown of activities is provided in Table 9.8.

Hungary is the only Member State that has reported not having public awareness programme. It added that this is due to financial constraints but that it is aiming at developing some in future years.

Table 9.8 Information reported by Member States on public awareness

Member State	Public awareness tools used	Commentary
Belgium	Information campaign targeting farmers, crop-dusting companies and industrial sites Collection and processing of empty packages that have contained phytosanitary products Policy action plans	Flanders Region has adopted the Environmental Policy Plan (MINA 4) covering public awareness campaigns for dioxins, PAH, pesticides and other substances. Brussels-Capital Region is currently developing a Regional Pesticide Reduction Plan which includes general public awareness and information campaign to reduce and eliminate the use of pesticides.
Bulgaria	Brochures and leaflets	The Ministry of the Environment (MOEW) has developed and published brochures, manuals, guidelines, instructions and information materials on POPs. They target various parts of the population, the industry and the government administration.
Cyprus	Information campaign and workshop Website	The information included in the report relates to events held in 2006, 2007 and 2008. Cyprus added that its Department of Labour Inspection website includes details on the national implementation plan and information on eliminating POPs emissions from uncontrolled combustion.
Czech Republic	Update of the NIP	
France	Leaflets	Publication of material to inform the public on risks from chemical substances including POPs. In addition, several agencies (e.g. ADEME, ANSES, INERIS and CITEPA) provide information to the general public but also to experts on specific risks from chemicals.
Finland	Part of public information to be submitted Information material targeting consumers	Under the Baltic Sea Region Programme projects have been looking at pathways of hazardous substances in certain food items. It included

<b>Member State</b>	<b>Public awareness tools used</b>	<b>Commentary</b>
		training and the production of educational material to raise consumer awareness.
Ireland	Public information campaign Update of the NIP Training and awareness raising on PCBs	The EPA carried out a number of media campaigns on backyard burning and bonfires, in addition to a public awareness campaign highlighting the health and environmental dangers of burning waste in fireplaces and stoves.
Lithuania	Update of the NIP	Lithuania indicated that the 2010-2012 period was less active compared to the previous reporting period, where the preparation of the NIP gave rise to several awareness raising opportunities.
Netherlands	Workshop on firefighting foams and PFOS Events on POP transport and recycling Events on phase out of lindane as a pharmaceutical	Netherlands indicated that its NGOs are well informed and aware of risks posed by POPs.
Poland	Information to entrepreneurs for National Information Centre for REACH Dissemination of environmental data on the central website presenting statistics	Poland indicated that the public awareness raising efforts that were reported in the previous triennial reports have been on-going.
Romania	National awareness campaign including the organisation of 8 seminars with 20/30 participants, focusing on problems encountered in the implementation of the Stockholm Convention and solutions Public consultation and awareness raising during update of the NIP	-
Slovenia	Events on air quality as part of the 'Year of the Air' in 2013	The purpose was to inform a wider public and decision makers at local level on the state of air we breathe and on the necessary actions in energy and transport sectors. Residential wood burning, especially in

Member State	Public awareness tools used	Commentary
		<p>urban areas, is an important source of Dioxins/Furans and PAHs, which cause a huge environmental and health problem.</p> <p>Slovenia used 27 institutions working in the field of air quality like public institutions, agencies, researchers, NGOs and schools (eco-schools and healthy schools) and prepared events hosted by local authorities. Many municipalities agreed to be more active in taking actions for cleaner air as this is important for the health of people, especially children.</p>
Spain	<p>Update of the NIP Leaflets and information material</p> <p>Awareness raising programs to minimise open burning of waste</p> <p>Training of healthcare workers on health effects of POPs</p>	<p>The NIP includes specific information to consumers, users and workers on the Stockholm Convention and products or substances containing POPs and the risk related to their use.</p> <p>Information materials on POPs is targeted at vulnerable groups (e.g. children, pregnant women and highly exposed) groups and health personnel.</p>
Sweden	<p>Regular update of the published 'Non-toxic environment'. Dietary recommendations on food items that could contain elevated levels of POPs.</p> <p>Local and regional authorities information on food safety. Exchange of information between food authorities in different European countries.</p>	<p>“A non-toxic environment” is one of the environmental objectives and its achievements are regularly updated (for the last time, in 2012). Every year a follow up is conducted and the results are widely distributed and specifically addressed to the Swedish Parliament.</p> <p>The National food Administration (NFA) gives dietary recommendations on food items, such as fatty fish, that could contain elevated levels of POPs or organic mercury. The recommendations were reviewed in 2007 and can be found on the NFA website in several languages. They are communicated to Swedish newspapers, broadcasters and other media that could disseminate the information to Swedish consumers. In particular, the advice on fish consumption is conveyed to expectant mothers when they attend antenatal clinics.</p> <p>Information on the subject is also given in Swedish schools.</p> <p>Commercial and recreational fishermen and their families have been</p>

<b>Member State</b>	<b>Public awareness tools used</b>	<b>Commentary</b>
United Kingdom	Measures on awareness raising are detailed in the NIP	<p>identified as possible risk groups, with a high consumption of dioxin-contaminated fish. Within these groups, girls and women in their childbearing years should limit their consumption.</p> <p>The NFA also responds by telephone, e-mail or post to questions received.</p> <p>Local and regional authorities often have the necessary expertise to communicate with consumers on questions of food safety, and in such cases the NFA can provide information and knowledge.</p> <p>Exchange of information between food authorities in the different European countries often takes place through EU or EFSA (European Food Safety Authority) channels. Where rapid information is needed, the RASFF system is used.</p>

#### 9.4.2 Public information and consultation activities

In total 15 Member States reported having undertaken public information and/or consultation activities during the reporting period.

Belgium, Bulgaria, Ireland, Spain, France, Lithuania, Poland, Romania, Slovenia, Sweden and the United Kingdom indicated that up to date information on POPs can be found on the competent authorities' websites.

The Czech Republic, Spain and France referred back to their national centres focussing on POPs as source of additional public information.

Only two Member States, Belgium and Lithuania, reported having organised a public consultation in the context of the preparation and update of their National Implementation Plan. Additionally the Netherlands stated that they provide information to their non-governmental organisations to keep them well informed on the topic of POPs. Ireland indicated that key stakeholders were consulted in relation to PCBs and the requirements for notification, disposal and decontamination. The consultation included large organisations such as Ireland's biggest electricity supplier, defence forces and health service providers. France organised a wider consultation for the update of its NIP. No other mentions of public consultation activities were included in the Member States' responses. Table 9.9 provides a summary of the responses provided by Member States through Article 12 reporting.

*Table 9.9 Member States reports on public information and consultation*

<b>Member State</b>	<b>Comments</b>
<b>Belgium</b>	<ul style="list-style-type: none"> <li>• Belgium indicated that the information on POPs is updated and made available to the public through the following website: <a href="https://www.health.belgium.be/en/environment/chemical-substances/hazardous-substances/persistent-organic-pollutants-pops">https://www.health.belgium.be/en/environment/chemical-substances/hazardous-substances/persistent-organic-pollutants-pops</a></li> <li>• In addition, there was a public consultation on the first NIP, with the civil society and individual citizens.</li> </ul>
<b>Bulgaria</b>	<ul style="list-style-type: none"> <li>• Bulgaria indicated that the Ministry of the Environment publishes information on POPs through its website which is regularly updated.</li> <li>• In addition, Bulgaria started an information exchange mechanism during the reporting period, with a first meeting with the National Coordination Committee responsible for the update of the NIP in January 2011.</li> </ul>
<b>Czech Republic</b>	<ul style="list-style-type: none"> <li>• Information is publicly available through the Research Centre for Toxic Compounds in the Environment (RECETOX). It also serves as a Regional POPs Centre of the Stockholm Convention for Central and Eastern Europe.</li> </ul>
<b>France</b>	<ul style="list-style-type: none"> <li>• France indicated that information is available for the public on the Ministry of the Environment website and through its agencies that can provide detailed information on chemical risks.</li> <li>• France indicated having organised in 2011 and 2012 two days information campaigns on the control of biocides products.</li> </ul>

<b>Member State</b>	<b>Comments</b>
<b>Germany</b>	<ul style="list-style-type: none"> <li>Germany indicated that information is available for the public on the Federal environment agency website. This includes an overview of the Stockholm Convention and ongoing work on POPs.</li> </ul>
<b>Finland</b>	<ul style="list-style-type: none"> <li>Finland reported that a dedicated POPs website has been established. It includes updated information on activities on persistent organic pollutants.</li> <li>The Finnish National Action Plan for Stockholm Convention Annex C substances contains several actions to promote awareness and reduce emissions. Many of these actions are implemented at the municipal level.</li> <li>In addition, Finland developed a National Programme on Dangerous Chemicals (KELO Kansallinen kemikaalihjelma) under which several programmes and campaigns in chemicals management targeting POPs (inter alia) were initiated.</li> </ul>
<b>Hungary</b>	<ul style="list-style-type: none"> <li>Hungary indicated to have held public information campaigns to inform the public about POPs, their health effects and hazard. The campaigns also included presentations on the current situation on POPs in Hungary and at global level.</li> </ul>
<b>Ireland</b>	<ul style="list-style-type: none"> <li>Ireland reported about several public information and awareness raising campaigns undertaken during the reporting period.</li> <li>The EPA and the Department of Environment, Community and Local Government established a dedicated POPs webpage which informs the public about POPs, the POP Regulation and Ireland's National Implementation Plan consultation (<a href="http://www.pops.ie/">http://www.pops.ie/</a> and <a href="https://www.epa.ie/waste/hazardous/pops/">https://www.epa.ie/waste/hazardous/pops/</a>)</li> <li>The EPA publishes annual reports, available online, (<a href="http://www.epa.ie/pubs/reports/waste/prevention/">http://www.epa.ie/pubs/reports/waste/prevention/</a>) to detail the work that was carried out under the National Waste Prevention Programme and in relation to POPs.</li> <li>The EPA maintains a dedicated webpage (<a href="http://www.pcbs.ie/">http://www.pcbs.ie/</a>) relating to PCBs and regularly updates the national PCB holdings inventories.</li> <li>The PRTR website (<a href="http://prtr.epa.ie/">http://prtr.epa.ie/</a>) includes information on quantities of pollutant releases (including POPs) to air, water and waste water as well as off-site transfers of waste.</li> <li>The FSAI regularly publish food related studies including studies related to POPs available at: <a href="http://www.fsai.ie/resources_publications.html">http://www.fsai.ie/resources_publications.html</a>.</li> <li>The Marine Institute publishes reports relating to the monitoring for contaminants in the marine environment including POPs available at: <a href="https://oar.marine.ie/handle/10793/56">https://oar.marine.ie/handle/10793/56</a></li> <li>The Department of Agriculture, Food and the Marine publishes reports on pesticide residues in food, including detection of certain POP pesticides (<a href="http://www.pcs.agriculture.gov.ie/media/pesticides/content/foodsafety/">http://www.pcs.agriculture.gov.ie/media/pesticides/content/foodsafety/</a>)</li> </ul>

<b>Member State</b>	<b>Comments</b>
	<p>Pesticide%20Residues%20in%20Food%202017.pdf).</p> <ul style="list-style-type: none"> <li>• The EPA consulted with key stakeholders on the requirements for PCBs notification, disposal and decontamination, including large organisations such as Ireland biggest electricity supplier, defence forces and health service providers.</li> </ul>
<b>Lithuania</b>	<ul style="list-style-type: none"> <li>• Lithuania indicated that the main demand for awareness campaigns was during the preparation of the NIP and immediately following its approval.</li> <li>• In comparison, the follow-up period has been less active with regard to awareness raising.</li> <li>• Lithuania reported that materials developed in the 2005-2006 period were further distributed to different events during the reporting period.</li> <li>• It added that the experts of the regional environmental protection departments were particularly interested in the published information on possible methods to identify equipment polluted with PCBs, preventive and other POPs management measures and control of dioxin and furan emissions into the environment. Information was supplied to them by various means including, inter alia, publications, electronic explanatory documents and consultations.</li> <li>• All the information is available on the website of the Ministry of Environment (<a href="http://am.lrv.lt/en/">http://am.lrv.lt/en/</a> which is regularly updated).</li> <li>• The information about the status of soil and groundwater contamination with POPs at former pesticides storages is disseminated through seminars and the website of the Lithuanian Geological Survey under the Ministry of Environment: <a href="https://clu-in.org/athens/download/Tour_de_Table/Lithuania_Tour_de_Table.pdf">https://clu-in.org/athens/download/Tour_de_Table/Lithuania_Tour_de_Table.pdf</a></li> <li>• Finally, information about POPs and POPs management was published on the website of the Panevėžys Regional Department in 2010 (<a href="http://prd.am.lt/VI/index.php">http://prd.am.lt/VI/index.php</a>).</li> </ul>
<b>Netherlands</b>	<ul style="list-style-type: none"> <li>• The Netherlands indicated that the National Implementation Plan is publicly available</li> </ul>
<b>Poland</b>	<ul style="list-style-type: none"> <li>• Poland indicated that the activities described in its previous triennial reports have been continued during this reporting period.</li> <li>• In 2010 an information campaign was conducted to raise environmental awareness on the proper handling of waste. The campaign was national and targeted residents of towns and villages, including primary and secondary school</li> <li>• The website of the Ministry of the Environment provides information and reports on POPs. (<a href="https://www.gov.pl/web/environment/">https://www.gov.pl/web/environment/</a>)</li> </ul>
<b>Romania</b>	<ul style="list-style-type: none"> <li>• All relevant information is published on the website of the Ministry of Environment and Climate Change (<a href="http://www.mmediu.ro/">http://www.mmediu.ro/</a>) and on the website of the National Agency for Environmental Protection</li> </ul>



<b>Member State</b>	<b>Comments</b>
	( <a href="http://www.anpm.ro/">http://www.anpm.ro/</a> )
<b>Slovenia</b>	<ul style="list-style-type: none"> <li>Information on POPs is available to the public on the following pages: <a href="http://www.uk.gov.si/en/areas_of_work/persistent_organic_pollutants_ops/">http://www.uk.gov.si/en/areas_of_work/persistent_organic_pollutants_ops/</a> and <a href="http://www.arso.gov.si/">http://www.arso.gov.si/</a></li> </ul>
<b>Spain</b>	<ul style="list-style-type: none"> <li>The public can find information on POPs in the websites of the Ministry of the Environment and Agriculture (<a href="https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/productos-quimicos/contaminantes-organicos-persistentes-cop/">https://www.miteco.gob.es/es/calidad-y-evaluacion-ambiental/temas/productos-quimicos/contaminantes-organicos-persistentes-cop/</a>) and the National Reference Centre for POPs</li> <li>In addition, the Ministry of Agriculture, Food and Environment published the "Introduction and prevention of Persistent Organic Pollutants"</li> </ul>
<b>Sweden</b>	<ul style="list-style-type: none"> <li>Sweden indicated that consumers receives information about hazardous chemicals mostly via labelling.</li> <li>The websites of the Swedish Chemicals agency (KemI) and the Swedish EPA are continuously updated to provide relevant information on activities in the area of chemicals management and significant data on chemicals in both Swedish and English.</li> <li>The response did not include information on action taken specifically during the reporting period. However, it indicated that KemI invites regularly representatives from industry, environmental organisations and the research sector to inform them on relevant developments in the EU and on International agreements, including the POP Regulation and progress made under the Stockholm Convention.</li> </ul>
<b>United Kingdom</b>	<ul style="list-style-type: none"> <li>Measures taken for public information and consultations are outlined in section 7.1 and 7.2 of the 2012 National Implementation Plan.</li> </ul>

## 9.5 Training

Most Member States (Czech Republic, Ireland, Spain, France, Cyprus, Netherlands, Poland, Romania, Finland, Sweden and the United Kingdom) reporting for the 2010-2012 period indicated that they supported training in the field of POPs. They reported having organised specific training events, mostly targeting experts and competent authorities' staff dealing with POPs. Lithuania's response included a description of the current training programme for the management of PCBs and unintentional POPs.

According to the reports, a large range of stakeholders received training. For example, Ireland reported having organised training for its police force in 2011, following an increase in the price of metals, which led to an increase in theft and vandalism of equipment potentially contaminated with PCBs. This resulted in an increased risk of PCB-contamination of non-operational sites. The Irish Environmental Protection Agency worked with the Garda Síochána and placed emphasis on the identification and inspection

of non-operational sites that can potentially contain such equipment. Two Member States (Netherlands and Sweden) indicated that the legislation on hazardous goods or substances require that staff is trained, with Sweden adding that specific training for the substances covered by the POP Regulation is not seen as necessary.

The information reported is summarised in the Table 9.10 below.

*Table 9.10 Information reported by Member States on training*

<b>Member State</b>	<b>Comments</b>
<b>Bulgaria</b>	<ul style="list-style-type: none"> <li>• Three workshops with experts from 16 RIEWs under the Ministry of the Environment and Water were organised during the reporting period 2010–2012 for training on the implementation of the Bulgarian NIP for POPs. The focus was on the recently included new POPs in the Annexes of the Stockholm Convention and POP Regulation.</li> </ul>
<b>Cyprus</b>	<ul style="list-style-type: none"> <li>• Details included relates to training programs carried out in 2007 and 2009.</li> </ul>
<b>Czech Republic</b>	<ul style="list-style-type: none"> <li>• No details included on the training undertaken.</li> </ul>
<b>Finland</b>	<ul style="list-style-type: none"> <li>• Finland indicated that the Ministry of Environment participated in organising environmental education for experts (for instance in collaboration with UNEP and University of Joensuu).</li> <li>• The Finnish Environment Institute organised workshops and training seminars for experts, focusing for example on how chemicals use (including POPs) should be taken into account in environmental permits. The waste matters are dealt with in seminars organised by the Regional environmental centres.</li> <li>• The Finnish Environment institute organised a public seminar on 8.6.2012, following the update of the Finnish NIP. The main purpose of this event was to discuss POPs, their effects on human health and the environment, possible problems in the waste and recycling sector and the measures to reduce the emissions of these compounds in the near future. Participants were from other ministries, regional authorities, NGOs and industry unions.</li> <li>• Within the Finnish National Programme on Dangerous Chemicals, two seminars were planned for 2013 and 2014. The main goal was to promote the communications and information exchange between scientists, decision makers, consumers and the different operators.</li> </ul>
<b>France</b>	<ul style="list-style-type: none"> <li>• France’s competent authorities for POPs participated in events organised by other parties or organisations, for example the national conference for waste (last one organised in 2012).</li> </ul>
<b>Ireland</b>	<ul style="list-style-type: none"> <li>• Between 2010 and 2012 the EPA carried out 34 Training Events for Local Authorities to develop capacity for identifying PCB holdings</li> </ul>

<b>Member State</b>	<b>Comments</b>
	<p>and to re-enforce the obligations of local authorities as potential holders of PCBs. Ireland provided an overview of the topics covered including an overview of PCBs; regulations covering PCBs use and disposal; completing PCB surveys; notification requirements to the EPA; Health and Safety requirements; testing requirements for PCB oils; what to do if PCBs are found on sites. All local authorities received training and were provided with hard copies of a information package.</p> <ul style="list-style-type: none"> <li>• All EPA’s local authority water treatment inspectors within the Office of Environmental Enforcement in 2012 also followed a training session.</li> <li>• In 2011 a guidance document was compiled and submitted to the Local Authorities and the Garda Síochána (Irish Police Force) regarding the risks of theft of PCB-containing electrical equipment.</li> <li>• On-going guidance and support on potential PCB holdings is provided to stakeholders through regular telephone and email contact (national email helpdesk pcbs@epa.ie). Information received from the surveys and returns from known PCB holdings are used to periodically update the National PCB Inventory.</li> <li>• Finally, personnel within the EPA is dedicated to work in POPs-related areas. The EPA facilitates the training of personnel through, for example, attendance at conferences, EU Competent Authority meetings, and meeting with relevant stakeholders.</li> </ul>
<b>Lithuania</b>	<ul style="list-style-type: none"> <li>• Lithuania reported the development of a specific training programme or the inclusion of training material on PCBs management and unintentional POPs in the in-service training courses of the employees of regional environmental protection departments. The objective was to improve the qualifications of the inspectors and other experts involved.</li> <li>• This training was organised by the Ministry of Environment and Vilnius Gediminas Technical University.</li> <li>• The Long Term Training Programme included 4 Classroom training courses models (on Ambient Air Protection, Water Protection, Subsoil Protection, Waste Management and Prevention) and 2 Distance learning mode models (on Environmental Protection and enforcement and on Atmospheric pollution and Prevention).</li> </ul>
<b>Netherlands</b>	<ul style="list-style-type: none"> <li>• Training is arranged through the legislation concerning specific substances (e.g. PCBs) and through licences.</li> <li>• The industry involved in the destruction of POPs is aware of the necessity to train their staff handling these substances. Several research institutes and consultants are actively involved in POPs research.</li> </ul>
<b>Poland</b>	<ul style="list-style-type: none"> <li>• Poland indicated that the training activities reported in the previous</li> </ul>

<b>Member State</b>	<b>Comments</b>
	report were on-going.
<b>Romania</b>	<ul style="list-style-type: none"> <li>• Romania indicated that training was provided, limited to the extent of available funding.</li> <li>• In the period 2009-2012, the regional project GEF / FAO on strengthening ability to eliminate obsolete pesticide stocks in countries Region East Europe, Caucasus and Central Asia included the training of 8 experts from the central public authority for environmental protection, as well as the authorities subordinated or under its direction. The training focused on the development of an inventory of pesticide stocks, of a campaign for raising awareness on POPs in the use of Pesticides Management System (PSMS), plans repackaging, commissioning and safe disposal of hazardous waste.</li> </ul>
<b>Spain</b>	<ul style="list-style-type: none"> <li>• Spain reported that training of healthcare workers on the health effects of POPs was undertaken.</li> </ul>
<b>Sweden</b>	<ul style="list-style-type: none"> <li>• Sweden indicated that for the substances covered by the EU legislation,, specific training to workers is not needed. Employers have the legal obligation to label chemicals used in the work place, to ensure that Material Data Sheets are available as well as appropriate safety instructions, adapted to the kind of work carried out. This obligation is verified through inspections.</li> <li>• A web-based tool, called PRIO (in Swedish and English, <a href="https://www.kemi.se/en/prio-start">https://www.kemi.se/en/prio-start</a>), has been developed and maintained by the Swedish Chemicals Agency, with the objective to preventively reduce risks to human health and the environment from chemicals. PRIO facilitates the risk assessment so that people who work as environmental managers, purchasers and product developers can identify the need for risk reduction.</li> </ul>
<b>United Kingdom</b>	<ul style="list-style-type: none"> <li>• Measures taken in relation to training are outlined in the UK 2012 National Implementation Plan</li> </ul>

Belgium and Hungary indicated that no training was undertaken during the 2010-2012 period. Belgium did not include further information to explain why this was the case. However, Hungary explained that there is no training plan for the relevant staff but that it would like to make one available. It added that there are several mandatory training programmes for personnel dealing with hazardous goods or substances during their work. Hungary would like to widen these training programmes to include POPs.

Furthermore Lithuania indicated that the 2010-2012 period was less active regarding training. No new training material was developed, but the materials prepared during the previous reporting period were disseminated in the 2010-2012 period.

Finally Slovenia reported that there is no specific training available, but there is a provision requiring that every adviser for chemicals should have passed the exam on chemical legislation, which includes POPs.

In addition to training activities, Ireland provided information on its POP research structure. The Irish EPA has a dedicated research programme on a variety of environmental issues. Recent research included transboundary air pollution to assess its influence on Irish surface waters and soils, including PCB monitoring. During the period 2010-2012, the EPA has carried out a number of studies on various waste streams (Waste Electrical and Electronic Equipment (WEEE), Shredder Residue, Bulky Waste) and sewage sludge in order to determine the presence of new POPs (e.g. PBDEs, PFOS) and to gain experience with sampling and analysis. The results of these studies were communicated to the Commission to contribute to the EU understanding of the issues associated with the management of waste potentially containing new POP substances.

## 10. Dissuasive measures: Policy infringements and penalties

The POP Regulation sets in place a number of specific requirements and obligations for Member States to control the production, placing on the market and use of POP chemicals and articles that may contain POP chemicals. Through the national implementation plans and action plans it also places the responsibility on Member States to be proactive in the management of the national priorities on POPs. Enforcement is key to ensure that the obligations of the Regulation are met. Article 13 of the POP Regulation covers enforcement. Details of Article 13 are provided within the information box below:

**Article 13** of the POP Regulation states that:

Member States shall lay down the rules on penalties applicable to infringements of the provisions of this Regulation and shall take all measures necessary to ensure that they are implemented. The penalties provided for must be effective, proportionate and dissuasive. Member States shall notify those provisions to the Commission one year after entry into force of this Regulation at the latest and shall notify it without delay of any subsequent amendment affecting them.

All the Member States who provided Article 12 reports have adopted rules on penalties related to Articles 3, 5 and 7 of the Regulation. All Member States reported having adopted specific legislation, with the exception of Poland. Poland has not adopted the POP Regulations directly, but it has in place national legislation which covers all the provisions of the POP Regulation, including mechanisms for enforcement and penalties for breach of the national legislation.

Most of the Member States have given the task of enforcing the POP Regulation to the environmental agencies and inspectorates, with a duty to report back to their respective Ministries of the Environment, Agriculture or Health. The bodies in charge of ensuring the enforcement of the penalties in cases of infringements of the provisions of the POP Regulation typically ensure compliance through an inspection regime. This is the case in several Member States (Bulgaria, Ireland, Slovenia, Finland and United Kingdom).

Four Member States have reported having initiated infringement procedures in the 2010-2012 period, including:

- Bulgaria, who did not provide further details;
- Lithuania, reporting that 3 regional Environmental Department applied sanctions during the 2011-2012 period. Sanctions were applied to 6 cases involving the improper disposal of PCB containing equipment;
- Netherlands, reporting that proceedings were initiated in 2012 against two companies that had fire extinguisher containing PFOS; and
- Sweden, reporting that in 2013 nine companies were reported to the prosecutor due to SCCP present in plastic toys that they had placed on the market. No penalty has been set. In addition, during market surveillance in 2010 and 2011 HCB was found in nine samples of fireworks. The five companies had to withdraw the fireworks from the market. Three of the companies were reported to the prosecutor. All the companies received information on the POP Regulation and HCB. No penalty was set since breaches of the EU regulation 850/2004 were not criminalised before May 2012.

The review of the NIPs found additional information on infringement proceedings in the United Kingdom. In 2010 the Environment Agency, working alongside the Health and Safety Executive (HSE), served two enforcement notices to companies importing fireworks containing HCB. As a result a total of 32,150 fireworks were destroyed in accordance with the waste management requirements of the United Kingdom regulations.

Table 10.1 below summarises the information reported on enforcement and infringements in the triennial questionnaire.

*Table 10.1 Information reported by Member States on penalties and infringements*

<b>Member State</b>	<b>Information on the types of penalties</b>	<b>Details on the infringements procedure</b>	<b>Infringements during the reporting period</b>
Belgium	No information provided	Procedure is detailed in the regions' legislation	No
Bulgaria	Penalties vary from 10,000 BGN to 100,000 BGN (€5,000 to €50,000). Legislation stating the type, amount and procedure for imposing sanctions in case of environmental damages or pollution exceeding the limit values and/or in case of failure to comply with the fixed emission limit values and limitations has been in force since 10.11.2011.	Infringement procedure is enforced through inspection regime	Yes
Cyprus	Highest penalties are for infringement of article 5.1 (up to €500,000 and imprisonment up to three years)	Infringement procedure is enforced through inspection regime	No
Czech Republic	The highest possible penalty for illegal POP waste management that may be imposed is 50,000,000 CZK (approx. €2,000,000).	Procedure is detailed in the legislation	No
Germany	The highest possible penalty for illegal placing	Procedure is detailed in the legislation	No

<b>Member State</b>	<b>Information on the types of penalties</b>	<b>Details on the infringements procedure</b>	<b>Infringements during the reporting period</b>
	on the market of POPs is two years in prison or a fine. The enforcement of the measures follows the details set down in the EU POP Regulation.		
Finland	No information provided	Legislation is in place detailing infringements and penalties. Enforcement is managed through inspection regimes for operators	No
France	Penalties vary from fine payment, with a maximum amount of €15,000, to daily payments of up to €1,500 until infraction is corrected. If criminal intent is demonstrated, the fine can be up to €75,000 and two years imprisonment.	Coordinated enforcement strategy involving several ministries and agencies. In 2012 actions were focused on PAHs, PCB and dioxins.	No
Hungary	No information provided	Procedure is detailed in the legislation	No
Ireland	No information provided	Infringement procedure is enforced through inspection regime	No
Lithuania	No information provided	The training material described in the section above includes a component on POPs management and enforcement (including management of PCB contaminated equipment, preventive and other POPs management measures, enforcement tasks, etc.). The inspectors and other specialists from regional environmental protection departments are informed with in-service training	Yes



<b>Member State</b>	<b>Information on the types of penalties</b>	<b>Details on the infringements procedure</b>	<b>Infringements during the reporting period</b>
		courses. In 2012, 165 inspectors and experts from regional environmental protection departments were trained on POPs management and enforcement with classroom training courses (40 hours). 50 other inspectors and experts followed distance learning courses.	
Netherlands	No information provided	Procedure is detailed in the legislation	Yes
Poland	Causing unacceptable threat to human health or the environment is punishable by a fine, penalty or imprisonment for up to 2 years.	Procedure is detailed in the legislation	No
Romania	No information provided	Procedure is detailed in the legislation	No
Slovenia	No information provided	The legislation sets out that the Inspectorate of Ministry of Agriculture and Environment is the competent administrative offence body for implementation of penal provisions of the Decree	No
Spain	No information provided	Procedure is detailed in the legislation	No
Sweden	The applicable sanctions for private individuals include fines (set on the basis of the personal income) or imprisonment up to six years. Companies can be required to pay a from €500 up to €1,000,000. An environmental penalty charge must be paid by business operators who in the	The Swedish Chemicals Agency is conducting market surveillance activities directed towards producers and importers of materials or articles that may contain POPs. Fireworks, carpets, sports apparel, toys and textiles have been identified as relevant for POPs-related surveillance.	Yes

Member State	Information on the types of penalties	Details on the infringements procedure	Infringements during the reporting period
	<p>conduct of commercial operations neglect specific requirements included in the environmental legislation. The charge is founded on strict liability. The charge varies from SEK 1,000 to SEK 50,000. The supervisory authority decides on the environmental penalty charge. The decision may be appealed in the environmental court.</p>		
United Kingdom	No information provided	<p>The Competent and Enforcement Authorities have been designated as the Environment Agency in England, Natural Resources Wales in Wales, the Department of the Environment in Northern Ireland and the Scottish Environment Protection Agency (SEPA) in Scotland.</p>	No

## **11. Concluding remarks and recommendations**

This section aims to present an overview of the preceding sections, covering the management of POPs substances by Member States; the emission inventories and environmental concentrations of POPs across the EU; the work on information exchange and public involvement and planning by Member States. It also provides a brief set of recommendations to help providing greater clarity and better use of the Member States data in future reporting. A short summary report accompanies this report to present the overall findings of this document in an abridged format for quick reading. This summary section is not intended to replace the short summary document but to provide a natural conclusion to the details already presented in the earlier chapters.

### **11.1 Overview of the management of POPs substances**

The management of POP substances covers multiple elements of their life cycle. It includes the production, placing on the market, and use of chemicals; as well as the stockpiles of obsolete goods, waste management issues and enforcement of the POP Regulation.

Based on the reports of the Member States, enforcement of the POP Regulation is the responsibility of the environmental agencies or inspectorates who manage the inspection regime and report back to their respective Ministries of the Environment, Agriculture or Health. Based on the information in the reports, no known production of Annex I or II substances took place in the European Union for the period 2010 – 2012. In terms of placing on the market, a small number of Member States made use of the Article 4 provisions for use of specific substances in research and development. In a number of Member States, PFOS was placed on the market using the exemptions under Annex II. This was mostly for use in the chrome metal plating industry as a mist suppressant.

Two Member States stated that small quantities of POP substances were exported from the EU. Companies in France sent a quantity of dieldrin to Egypt, while the United Kingdom companies sent a quantity of lindane to South Korea. The reason for these exports was not clear in the Article 12 reports. France was concerned that the shipment was not for the purposes of research and is investigating further.

Five Member states have also started infringement proceedings for the illegal sale of POP substances in the EU. This specifically concerned the presence of HCB in fireworks, as also presented in the second synthesis report, and the presence of SCCPs in toys.

Stockpiles of POP substances are normally found in three types of goods: PCBs or PCB contaminated di-electric equipment, obsolete pesticides, stockpiles of phase-out goods covered by the addition of substances to the POP Regulation since 2009. Many of the Member States had already taken significant steps to identify and remove PCB containing equipment from service at the time of the second synthesis report. This process is still ongoing with at least one Member State reporting that use of PCB containing equipment may still happen. The identification and removal of PCBs from such equipment is difficult where in-use equipment does not clearly identify whether PCBs have been previously used. For obsolete pesticides, a number of Member States reported that they either never

manufactured/used many POP pesticides or began early phase out. In the latest case, stocks no longer existed and Sweden is a good example.

Other Member States noted that large quantities of obsolete pesticides were still in place and that they had programmes of management or destruction. Final disposal of obsolete pesticides includes incineration; either in the Member State or through export to neighbouring facilities, or long term storage. In particular, Bulgaria highlighted the use of BB cubes, concrete structures used to hold pesticide waste minimising the risk of loss to environment. Bulgaria has also sent a significant quantity of obsolete pesticides to Germany for final destruction through incineration.

Ireland and the United Kingdom also report stockpiles of PFOS and PBDE-containing goods for final destruction. The German National Implementation Plan comments on the quantities of PBDEs likely to be found within end of life vehicles and the need to remove and dispose of these goods in an appropriate way, avoiding recycling.

The current report has also highlighted the issue of contaminated land. While a large part of Member States have now enacted programmes to gather, stockpile and destroy obsolete pesticides, an additional problem is contaminated land, particularly land close to sites of former manufacture. Data from the Netherlands and Finland highlighted the potentially high numbers of sites that may pose an issue, and that in remediating such sites would mean excavation which generates large quantities of contaminated soil that has to be treated as hazardous waste.

## **11.2 Overview of environmental releases and environmental concentrations of POP substances**

Article 6(1) places the obligation on Member States to develop emission inventories to air, land and water for those substances listed in Annex III of the POP Regulation within 2 years of the Regulation entering into force. The intention is that, by developing emission inventories, Member States' Competent Authorities are informed of what are the key issues for POPs management at national level. The development of the emission inventories, along with supporting work on other aspects of the Regulation, should help Member States' Competent Authorities in the development of national implementation plans (NIPs) and of action plans. They present in detail the measures a Member State will enact to either minimise emissions to the environment or carry out further research to further characterise emission sources that are not well defined.

Nine Member States provided emission estimates as part of the Article 12 reporting, highlighting major data gaps in the available datasets. To have a more complete picture, the present report used data from the EMEP webdab website, which includes the data submitted to the UNECE as part of the Aarhus Protocol and data submitted to the Stockholm Convention as part of the second round of reporting (31 October 2010). Comparisons were made with the data of the E-PRTR website and with the monitoring data from EMEP MSC-E and AMAP to corroborate emission trends.

Based on the data available, 26 out of 28 Member States have developed and reported estimates of emissions for dioxins and furans, PCBs and HCB. 24 out of 28 Member States have developed and reported emission estimates for PCBs. Greece and Luxembourg are the only Member States that did not report emission estimates on any of the Annex III substances. In all cases most of the data developed and reported are for emissions to air,

with only a small number of Member States deriving and reporting emission estimates to vectors other than air. It should be noted that the POP Regulation requires estimates for air, land and water.

In 2012 Whiting<sup>28</sup> carried out a review of all POP emission inventories submitted to the UNECE on behalf of the Centre for Emission Inventories and projections (CEIP). The review found that the dioxins/furans and PAHs inventories had the greatest completeness and consistency, while PCBs and HCB had greater data issues. In particular, it was highlighted that for sources where activity and emission factor data was readily available the source tended to be reported. When data was scarce, particularly activity data (such as backyard burning of waste), the source was less likely to be reported. This potentially indicates significant gaps in emission inventories and underreporting by Member States. The review highlighted, for example, that only four nations made estimates for PCBs in dielectric equipment, the single largest commercial use of PCBs. It was also noted that for HCB, 7 nations (out of the 28 that reported to the UNECE) had inventories of HCB with three or fewer sources. Given the potential for HCB to be generated through combustion, this proves that inventories are poorly developed.

#### *Dioxins and Furans*

Dioxins and Furans are a family of chemicals that are not commercially produced and are typically associated either incomplete combustion processes, such as open burning or metallurgy. Based on the data provided by EMEP, the major source for Europe is residential use of solid fuels (38% of total emissions). As a comparison, the energy generation sector is responsible for 5% of the emissions and combustion of fuels for heat and power in industry for 18%. While the power generation sector consumes large quantities of solid fossil fuels, the high operating temperature and advanced levels of abatement required by the waste incineration directive (WID) (now the industrial emissions directive) leads to much lower emission per tonne of coal than in residential places. Apart from residential use of fuels, the next largest industrial source was iron and steel (15%). The E-PRTR data corroborates that iron and steel facilities are the single largest point source for emissions and dioxins and furans.

The review of data over the 2010 – 2012 period demonstrated that the emissions of dioxins and furans in the majority of Member States were declining. Comparison to 1990 emission levels showed an emission reduction across the EU of 45% in 2012. The average per capita emissions for dioxins and furans in 2012 was 5.5 µg I-TEQ/person /year.

Where Member States provided estimates for vectors other than air, emissions to air were generally reflecting those to the residue vector. When air emissions control has improved thanks to the WID, emissions of dioxins and furans to air from industrial activities have dropped significantly. However, this leads to the generation of residues, sometimes called fly ash, which can be heavily contaminated with pollutants such as dioxins and furans. However, data need to be interpreted with care. Emissions to air, land and water are direct and uncontrolled releases to the environment. Residue refers to the contaminated solid waste which is disposed of in a controlled way and does not necessarily constitute a total loss to environment.

#### *Polychlorinated biphenyls (PCBs)*

PCBs are a family of chemicals which previously had commercial use in a variety of applications, in particular in di-electric equipment. Their high chemical stability and persistence made them ideal heat-transfer fluids for this application. PCBs can also be unintentionally produced, particularly in combustion. The data submitted by nations to the UNECE identified as the main source of emissions from dielectric equipment, with 32% of total emissions to air. It is however important to recognise that, of the 25 national inventories submitted to the UNECE under CLRTAP, only four (Croatia, Ireland, Hungary and United Kingdom) estimated the emissions of PCBs, highlighting a major data gap. Other major sources included domestic use of fossil fuels (21%) and metallurgy (16%).

The emission trend for the 2010-2012 period mostly indicates declining emissions, In comparison to the 1990 levels, data from 2012 show an average decline of 50% across the EU. Monitoring data by both EMEP for Europe and arctic monitoring by AMAP corroborate this trend towards a decline in emissions since 1990.

Limited data is available on the emission of PCBs to vectors other than air. No clear pattern was apparent from the data of the six Member States that provided estimates for other vectors. Different Member States highlighted the importance of water, land and residue to different extents.

#### *Polyaromatic hydrocarbons (PAHs)*

PAHs are a family of chemicals defined by their multiple aromatic rings. They can form naturally in the environment from the combustion of vegetation such as forest fires, but also have anthropogenic sources, particularly from the combustion of fossil fuels. The data submitted to the UNECE as part of CLRTAP identified as the main source of PAH emissions the use of domestic fuels, particularly coal, corresponding to 57% of total emissions. Emissions of PAHs from power generation was 3% of the total emissions and use of fuels for heat and power in industry was 5%. As stated earlier, while the power generation sector consumes large volumes of fossil fuels such as coal, the high operating temperatures and advanced abatement lead to much smaller emission of PAHs per tonne of fuel than the domestic use of coal for heating.

The emission trends for the 2010–2012 period, based on reported data, showed a decline, although to a lesser extent than the decline seen for dioxins/furans and PCBs. Again the overall reduction since 1990 has been significant, with on average annual emissions 37% lower in 2012 compared to 1990. However this emission reduction is smaller than that seen for dioxins/furans and PCBs, as confirmed by the EMEP environmental monitoring. Data from EMEP indicate a 40% decline in airborne PAH concentrations since 1990, compared to a reduction of 60% for PCBs and 85% for dioxins and furans.

Limited data is available for other vectors beyond air for PAHs. However, based on the four Member States that provided data, water and residue are also key emission vectors for PAHs. Comparison with the E-PRTR suggests that the key source of emissions of PAHs to water is from petroleum refinery processes, while combustion wastes, metallurgic wastes and auto repair waste are all important sources for residue.

#### *Chlorobenzenes (hexachlorobenzene and pentachlorobenzene)*

Chlorobenzenes are a family of chemicals with a single benzene ring and substitution of hydrogen atoms with chlorine up to a maximum of six. Hexachlorobenzene (HCB) was identified as an Annex III substance at the time of the POP Regulation adoption.

Pentachlorobenzene (PeCB) was added to Annex I and III of the Regulation in 2010, following its inclusion in the Stockholm Convention. Both HCB and PeCB had previous commercial use as pesticides and were generated as by-products of other industrial processes, particularly the manufacture of chloro-organic solvents. PeCB was also used to reduce the viscosity of PCBs used in dielectric equipment. Both HCB and PeCB are a by-product of combustion of solid fossil fuels, waste oils and waste material.

Data for PeCB are very limited, with only two Member States (Netherlands and United Kingdom) providing estimates. The Netherlands reports emissions of PeCB in 1990 of 0.8 kg, with an increasing trend reaching annual releases of 2.3 kg in 2012. The United Kingdom provides estimates of emissions to air for PeCB in 2009-2011 of broadly 35 kg per annum.

The HCB data submitted for air show that 75% of all emissions are from metallurgy, although the data is largely dominated by emissions from one Member State. Other sources include agriculture (6%), energy generation (5%), waste incineration (5%) and residential combustion of fuels (4%). The review of Member States' emissions for the period 2010 – 2012 suggests no clear patterns with emissions rising, falling and remaining static in roughly equal measure across the EU. However, a comparison between 1990 and 2012 levels shows a decline of annual emissions by on average 54%. This average decline masks an increase in emissions in three Member States. EMEP monitoring across Europe indicates more significant falls in airborne concentrations of HCB, which has dropped by 85% since 1990. AMAP monitoring however shows a different picture with broadly static or very minor decline in airborne concentrations of HCB over the Arctic area.

Very limited data is available for emissions to non-air vectors, with only four Member States providing such information. Based on the data available, water and residue are highlighted as secondary key emission vectors behind air emissions.

### **11.3 Overview of the mechanisms for knowledge exchange and public involvement on the work surrounding POPs substances**

14 Member States provided full triennial reports to the European Commission as part of the Article 12 reporting, compared to 22 Member States that responded in time for the second synthesis report. A further 10 Member States did not provide either annual or triennial reports for the Article 12 Reporting. This made it more difficult to comment on the activities of Member States on knowledge exchange, public involvement and awareness due to the significant data gaps.

Based on the information received, all of those that answered indicated that systems were put in place to allow knowledge exchange and dissemination of information. Three Member States commented that they used their knowledge exchange networks to fully engage with stakeholders in the development of national implementation plans to ensure that industry, academia, non-government organisations and the general public endorsed the work completed.

Ten Member States provided either financial or technical support during the 2010-2012 period. This mostly happened via organised schemes such as the Global Environment Fund (GEF) or Strategic Approach to International Chemicals Management (SAICM). For example, France provided 669 million euro to the GEF pool of funding and the United Kingdom provided 410 million euro to the same fund.

Alongside support to global schemes, many Member States also reported on national initiatives, including:

- Hosting workshops and conferences for international experts;
- Funding of research programmes for work of waste POPs in Africa;
- Funding of Arctic monitoring research programmes;
- Bi-lateral communication and knowledge building with non-EU countries;
- Research programmes on the presence of POPs in Eastern European States.

Member States also worked to build awareness and engagement on POPs with the general public. Some of the initiatives were:

- Production of literature and information to be disseminated to the general public;
- Workshops and seminars for stakeholders;
- Public awareness campaigns and questionnaires to seek feedback from the general public.

#### 11.4 Conclusions

The third synthesis report covers all required aspects of the initial POPs Regulation (EC) No 850/2004 and its implementation in the Union and at Member State level. This section draws some conclusions about the work done and the progress made to eliminate POPs in the Union.

##### *Production, placing on the market and use*

The POP Regulation prohibits the production, placing on the market and use of POPs in the Union. Only very few exemptions are granted by the POPs Regulation, mainly for production and use of PFOS. The only Member State that still produced PFOS during the reporting period was Germany. About 35% of the produced quantity of around 9 tonnes per annum were used in that country and 65% were shipped to other countries, mainly countries outside the EU.

##### *Emissions*

In general, the regulatory measures established by and implemented through the POPs Regulation show the expected effects since emissions of chemicals listed in the POPs Regulation are declining in the Union.

For dioxins and furans, the data demonstrate that the atmospheric emissions were reduced by 45% between 1990 and 2012 across the EU. For PCBs, emissions were overall about 50% lower in 2012 as compared to 1990. The average annual emissions of PAHs were estimated to be 37% lower in 2012 compared to 1990. Emission estimates for HCB from 1990 to 2012 illustrated a decline of annual emissions of 54% by 2012. These data are corroborated by EMEP emission estimates, which show in general a more important decline during the same period.

However, this general trend was not observed in all Member States, where in some cases emissions increased. This shows that further efforts are needed to achieve the objective of zero emissions.



The emission estimates data submitted by Member States showed a high degree of heterogeneity, which made it very difficult to aggregate and compare the data amongst Member States and at regional or global level. A better harmonisation of data formats would be very useful and improve the value of submitted data. Under the new POPs Regulation (EU) 2019/1021, the heterogeneity of data will be addressed by using a common template for reporting.

#### Monitoring of POPs in the environment

The POPs monitoring data from EMEP and AMAP and corresponding data generated by models confirm the trends observed for emission estimates. All data sources indicated a declining trend in ambient air concentrations over the period 1990 to 2012 across Europe. In general, equivalent results were obtained at global level, which indicates that the Stockholm Convention achieves its objectives. However, it should be noted that the vast majority of data reflects the situation for air, whereas very little information is available for water and soil. In order to get a more complete picture, it is necessary to invest more in the generation of data for these two media.

#### Stockpiles and waste

Stockpiles of POPs or products that contain POPs already manufactured but no longer permitted for use have to be managed as waste. Provisions on waste management include that any contamination of waste by POPs shall be avoided and that POPs contained in waste shall be destroyed.

The waste management was a challenge of diverging importance for Member States and depending on the nature of the waste. In particular the presence of POPs in products that are suitable and interesting for recycling is becoming an increasing issue for waste management since recycling of POPs is forbidden by the Stockholm Convention.

#### Contaminated sites

The POPs Regulation covers management of wastes contaminated with POPs, which is closely linked with a potential contamination of land, if the waste is not properly managed. There is in particular a potential problem of soil contamination where POPs were previously manufactured and used. A number of Member States already addressed this issue in their national implementation plans, but further efforts are needed to identify, inventory and remediate contaminated sites, including a better coordination and cooperation at Union level. To improve the exchange of information on measures that target contaminated sites, the new POPs Regulation (EU) 2019/1021 requests Member States and the Commission to exchange information to that effect.

#### Data quality and coherence

The emission inventory estimates illustrate that there are potential issues between different estimates from different Member States that make a comparison very difficult or even impossible. One important problem is that Member States do not follow harmonised approaches in data gathering and reporting. In addition, there is indication of a high variability in completeness of data which probably leads to underreporting by many but not all Member States. Greater support and communication amongst Member States would help addressing some of these issues. The sections on knowledge exchange and technical

support highlighted that many initiatives are underway but Member States are mostly working in isolation, making the impact of their activities less significant.

Bi-lateral initiatives (communication and knowledge building between Member States and with non-EU countries) may be helpful, in particular for additional support, review and benchmarking of emission inventory estimates. The systematic use of the Information Platform for Chemical Monitoring (IPCHEM) for the storage, processing and management of POPs monitoring data stipulated in the new POPs Regulation (EU) 2019/1021 is expected to improve the quality and coherence of such data.

## **Appendix A – Explanation of how Toxic Equivalent Factors (TEFs) are developed for dioxins and Furans, and dioxin-like PCBs**

### *Dioxins and Furans*

Dioxins and furans are a family of chemicals with 210 different congeners with different levels of chlorination (1 – 8 chlorines) and different placement of chlorine atoms in the ring structure. Toxicity and potential carcinogenicity of individual congeners varies significantly across the family, making the hazard difficult to quantify. In order to address this problem, a system of toxic equivalent factors (TEFs) were developed. This system works in a comparative fashion against the most toxic dioxin congener (2,3,7,8 tetrachlorodibenzo-p-dioxin (TCDD)). The 17 most toxic congeners were awarded a TEF based on their level of toxicity compared to TCDD. Using this comparative tool, total quantities of dioxins released can be converted into a quantity equivalent to TCDD. For example during a combustion event it could be possible that 10 kg of total dioxins and furans were released. However, only a small quantity would be TCDD and for the 17 most toxic congeners, these would all be less toxic than TCDD. Therefore, in terms of exposure while 10kg of total dioxin and furan had been released, it may be equivalent to 10 µg of TCDD. Using TEFs in this fashion allows a comparative scale between different sources to understand the scale of toxicity within the release. Estimates quantified under the TEF approach can be recognised by the use of 'I-TEQ' as units.

The approach was developed by NATO in 1998 and reviewed by WHO in 1998. WHO included also PCBs with dioxin-like effects. Figure A.1 provides the latest set of TEFs (2005 update).

Figure A.1 WHO Toxic Equivalent Factors 2005

**Recommended Toxicity Equivalence Factors (TEFs) for Human Health Risk Assessment of Polychlorinated dibenzo-*p*-dioxins, Dibenzofurans, and Dioxin-Like Polychlorinated Biphenyls<sup>1</sup>**

Compound	1998 TEF <sup>2</sup>	2005 TEF <sup>3</sup>
<b>Polychlorinated dibenzo-<i>p</i>-dioxins (PCDDs)</b>		
2,3,7,8-Tetrachloro-dibenzo- <i>p</i> -dioxin (TCDD)	1	1
1,2,3,7,8-Pentachloro dibenzo- <i>p</i> -dioxin (PeCDD)	1	1
1,2,3,4,7,8-Hexachloro- dibenzo- <i>p</i> -dioxin (HxCDD)	0.1	0.1
1,2,3,6,7,8-Hexachloro- dibenzo- <i>p</i> -dioxin (HxCDD)	0.1	0.1
1,2,3,7,8,9-Hexachloro- dibenzo- <i>p</i> -dioxin (HxCDD)	0.1	0.1
1,2,3,7,8,9-Heptachloro- dibenzo- <i>p</i> -dioxin (HpCDD)	0.01	0.01
Octachloro-dibenzo- <i>p</i> -dioxin (OCDD)	0.0001	0.0003
<b>Polychlorinated dibenzofurans (PCDFs)</b>		
2,3,7,8-Tetrachlor-dibenzofuran (TCDF)	0.1	0.1
1,2,3,7,8-Pentachloro-dibenzofuran (PeCDF)	0.05	0.03
2,3,4,7,8-Pentachloro-dibenzofuran (PeCDF)	0.5	0.3
1,2,3,4,7,8-Hexachloro-dibenzofuran (HxCDF)	0.1	0.1
1,2,3,6,7,8-Hexachloro-dibenzofuran (HxCDF)	0.1	0.1
1,2,3,7,8,9-Hexachloro-dibenzofuran (HxCDF)	0.1	0.1
2,3,4,6,7,8-Hexachloro-dibenzofuran (HxCDF)	0.1	0.1
1,2,3,4,6,7,8-Heptachloro-dibenzofuran (HpCDF)	0.01	0.01
1,2,3,4,7,8,9-Heptachloro-dibenzofuran (HpCDF)	0.01	0.01
Octachloro-dibenzofuran (OCDF)	0.0001	0.0003
<b>Polychlorinated biphenyls (PCB congener number)</b>		
3,3',4,4'-Tetrachloro-biphenyl (77)	0.0001	0.0001
3,4,4',5-Tetrachloro-biphenyl (81)	0.0001	0.0003
3,3',4,4',5-Pentachloro-biphenyl (126)	0.1	0.1
3,3',4,4',5,5'-Hexachloro-biphenyl (169)	0.01	0.03
2,3,3',4,4'-Pentachloro-biphenyl (105)	0.0001	0.00003
2,3,4,4',5-Pentachloro-biphenyl (114)	0.0005	0.00003
2,3',4,4',5-Pentachloro-biphenyl (118)	0.0001	0.00003
2',3,4,4',5-Pentachloro-biphenyl (123)	0.0001	0.00003
2,3,3',4,4', 5-Hexachloro-biphenyl (156)	0.0005	0.00003
2,3,3',4,4',5'-Hexachloro-biphenyl (157)	0.0005	0.00003
2,3',4,4',5,5'-Hexachloro-biphenyl (167)	0.00001	0.00003
2,3,3',4,4',5,5'-Heptachloro-biphenyl (189)	0.0001	0.00003

There have been debates on which is the most suitable scheme of TEFs to be used for emission inventory compilation. While the WHO-TEQ system is more modern and allows the calculation of emissions for dioxin-like PCB, the NATO scheme has been in place longer and there is more research available for use of inventory compilers. The estimates developed for the UNECE and UNEP inventories typically use I-TEQ with the Standardised dioxins and furans tool kit and EMEP guidebook also uses the I-TEQ. Estimates reported to the European Commission for the POP Regulation should ideally be in WHO-TEQ. However, given the levels of uncertainty in deriving estimates, the differences between the two schemes are not very large. It is more important to clarify which scheme has been used and whether the derived estimates also include dioxin-like

PCBs in the totals. Ideally dioxin-like PCBs should be reported as a separate fraction and not included within the totals for dioxins and furans.

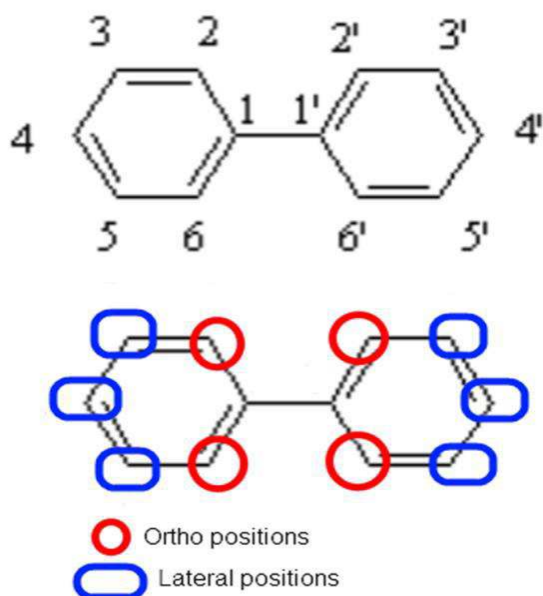
#### Polychlorinated Biphenyls (dioxin-like PCBs)

Polychlorinated biphenyls are a family of chemicals based on two benzene rings with a single carbon to carbon bond and varying numbers of chlorines. In total 209 different congeners exist, based on the number and position of chlorines (see top part of Figure A.2). As with dioxins and furans, the toxicity of individual congeners varies across the whole spectrum. Additionally, 12 congeners have been identified by the World Health Organisation as having carcinogenic effects and for this reason they are considered to be similar to dioxins and furans. These 12 congeners are the so-called 'dioxin-like PCBs'.

Structurally, the majority of PCBs have a co-planar (flat) formation. However, when there is more than one chlorine atom in the ortho positions (see Figure A.2), the repulsion of electrons in the corresponding chlorine atoms causes one of the benzene rings to twist, forming a non-planar shape. The dioxin-like PCBs are those congeners with at least four chlorines in the lateral positions shown in Figure A.2 and a maximum of one chlorine in an ortho position to maintain the co-planar shape.

The specific PCB congeners with dioxin-like properties are included in Figure A.1.

Figure A.2 Structural role of PCBs in dioxin-like behaviour



A value of 'total' PCB is reported to the Stockholm Convention, UNECE Convention on Long Range Transboundary Air Pollution and POP Regulation. However, the POP Regulation prefers that Member States use the WHO TEQ system, so that they can report also dioxin-like PCBs. As previously stated, it is important that quantities are clearly detailed and aggregation of dioxins and dioxin-like PCBs should be avoided to ensure clarity in the values reported.

## **Appendix B Technical Annexes**

*Table B.1: Control Measure details based on Article 12 reports for the period 2010 – 2012*

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
<b>Austria</b>	No response received	No response received	No response received	No response received
<b>Belgium</b>	Yes	<p>Flemish Region: Assessments were undertaken to identify dioxins, furans and PCB's near waste treatment plants, for instance. An assessment was undertaken concerning PAH's. Concerning the characterisation of sources, the Flemish Environment Agency develops yearly emission inventories for furans and dioxins (and many other pollutants). She also measures the deposition of dioxins, furans and PCB 126.</p> <p>Walloon Region: A network for the monitoring of dioxins coming from municipal waste incinerators has been set up.</p> <p><a href="http://environnement.wallonie.be/data/air/dioxines/index.htm">http://environnement.wallonie.be/data/air/dioxines/index.htm</a></p> <p>Other atmospheric emissions measurements have been made at some waste recovery facilities.</p> <p><a href="http://environnement.wallonie.be/data/air/valorisation/Pages/PRESENTATION/Presentation__Reseau_de_controle.html">http://environnement.wallonie.be/data/air/valorisation/Pages/PRESENTATION/Presentation__Reseau_de_controle.html</a></p>	Yes	Inherent to (1) and (2).
<b>Bulgaria</b>	Yes	Bulgaria identifies sources of substances listed in Annex III on the basis of the inventory on these substances. The inventory has been	Yes	The action plan for characterisation of the sources of substances listed in Annex III is updated in 2012 as a result of the first update

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
		<p>updated in 2011 and it is basis for reporting according to the POP Protocol of the UNECE and of the Stockholm Convention.</p> <p>These measures are introduced in the first update of the National Implementation Plan (NIP) for the management of POPs in Bulgaria, 2012 –2020 and in the Action plan for unintentional POPs Emissions of PCDD/PCDF, PCB, HCB, PeCB and PAH.</p>		of the National Implementation Plan (NIP) for the management of POPs in Bulgaria, 2012 –2020.
<b>Cyprus</b>	No response received	No response received	No response received	No response received
<b>Czech Republic</b>	Yes	<p>The measures are parts of the National Implementation Plan for Implementation of the Stockholm Convention in the Czech Republic. Other direct measures and obligation are included in national legislative documents implementing the European law:</p> <ul style="list-style-type: none"> <li>- Act No. 69/2013 Coll., amending Act No. 76/2002 Coll. on integrated pollution prevention and control, on the integrated pollution register and on amendment to some laws (Act on integrated prevention)</li> <li>- Government Regulation No. 145/2008 Coll., on the list of substances and thresholds for the integrated register of pollution, as amended</li> <li>- Government Regulation No. 615/2006 Coll.,</li> </ul>	Yes	<ul style="list-style-type: none"> <li>- Government Regulation No. 145/2008 Coll., on the list of substances and thresholds for the integrated register of pollution, as amended</li> <li>- Act No. 69/2013 Coll., amending Act No. 76/2002 Coll. on integrated pollution prevention and control, on the integrated pollution register and on amendment to some laws (Act on integrated prevention)</li> <li>- Government Regulation No. 615/2006 Coll., on the definition of emissions limits and other obligations for the management of other stationary sources of air pollution, as amended</li> <li>- Government Regulation No. 354/2002</li> </ul>



Member State	Measures to identify	Details	Measure to characterise	Details
		<p>on the definition of emissions limits and other obligations for the management of other stationary sources of air pollution, as amended</p> <ul style="list-style-type: none"> <li>- Government Regulation No. 354/2002 Coll., on the definition of emissions limits and other obligations for the incineration of wastes, as amended</li> <li>- Decree No. 205/2009 Coll., on monitoring the emissions from the stationary sources of air pollution and other obligations of the Act on air protection, as amended</li> <li>- Act. No. 350/2011 Coll., on chemical substances and mixtures, as amended</li> <li>- Act. No. 201/2012 Coll., on the air protection, as amended</li> </ul>		<p>Coll., on the definition of emissions limits and other obligations for the incineration of wastes, as amended</p> <ul style="list-style-type: none"> <li>- Decree No. 205/2009 Coll., on monitoring the emissions from the stationary sources of air pollution and other obligations of the Act on air protection, as amended</li> <li>- Act. No. 350/2011 Coll., on chemical substances and mixtures, as amended</li> <li>- Act. No. 201/2012 Coll., on the air protection, as amended</li> </ul>
<b>Germany</b>	Yes	<p>At European level Germany follows the Integrated Pollution Prevention and Control Directive. This is implemented nationally through the Federal Emission control Act (BImSchG). The BImSchG works by setting guidance on best available technologies and practices and the introduction of emission limit values for POPs. In particular an emission limit value of 0.1 ngfTEQ/M<sup>3</sup> of exhaust gas has been established for dioxins and furans within large combustion plant, incineration, crematoria, and agricultural plant.</p> <p>The Article 12 report from Germany</p>	Yes	<p>As part of the requirements of the Stockholm Convention and UNECE POPs Protocol emission inventories have been established for dioxins and furans, PCBs, HCB, PeCBz, PAHs and HCH. Update of these inventories is used as the primary tool for source identification and characterisation.</p>

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
		<p>highlighted backyard burning, accidental fires and residential small combustion plant as being key potential sources for POPs emissions. While it has not been possible to set emission limit values for all of these additional sources, work is ongoing to target emission reduction.</p> <p>Additionally military smoke munitions were identified as a source of dioxins and furans, hexachlorobenzene and hexachlorohexane. Measures were introduced in 2011 to phase out the use of smoke munitions that generate these substances.</p>		
<b>Denmark</b>	No response received	No response received	No response received	No response received
<b>Estonia</b>	No response received	No response received	No response received	No response received
<b>Greece</b>	No response received	No response received	No response received	No response received
<b>Spain</b>	Yes	The directive 2010/75/EU has been transposed into Spanish law through Law 5/2013, of June 11, amending Law 16/2002, of July 1, of amending integrated prevention and control of pollution and the Law 22/2011, of 28 July,	There has been no change to the information reported in	There has been no change to the information reported in 2010

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
		waste and contaminated soil, and Royal Decree 815/2013, of 18 October, by which Regulation of industrial emissions and development of the Law 16/2002 of 1 approved July, integrated prevention and control of pollution. There have been no activities Additional specific to those reported in 2010.	2010	
<b>Finland</b>	Yes	Air emission inventory for PCB was developed in February 2008. In addition there was a comprehensive research project (COHIBA <a href="http://www.helcom.fi/helcom-at-work/projects/completed-projects/cohiba/">http://www.helcom.fi/helcom-at-work/projects/completed-projects/cohiba/</a> ) where the sources and inputs of 11 hazardous substances or substance groups of the HELCOM Baltic Sea Action Plan (BSAP), were studied.	Yes	Air emission inventory for PCB was developed in February 2008. Emissions and emission sources of PCDD/F and PCB into air, soil and surface water were estimated more detailed in the COHIBA –project, using system flow analysis.
<b>France</b>	Yes	See the general response below	Yes	See the general response below
<b>Croatia</b>	No response received	No response received	No response received	No response received
<b>Hungary</b>	No	N/A	No	N/A
<b>Ireland</b>	Yes	In 2007 the EPA tendered a project to develop an inventory of POPs in Ireland which includes releases to air, land and water. The emission estimates were drawn upon data from measurements and research within Ireland, but	Yes	Ireland prepared and transmitted its National Implementation Plan on POPs in 2012 in accordance with its obligations under Article 7 of the Stockholm Convention. Section 4 of the Plan details the measures used to

Member State	Measures to identify	Details	Measure to characterise	Details
		<p>are also supplemented by calculations using literature emission factors and available activity data such as industry information in Ireland. The project report provides detailed information in relation to activity data for the diverse range of sources that give rise to emissions of POPs within Ireland.</p> <p>Measures used to identify sources of Annex III substances as part of the inventories for POPs releases to air, land and water have included:</p> <ul style="list-style-type: none"> <li>• UNECE EMEP/CORINAIR Emission Inventory Guidebook 2007;</li> <li>• UNEP Toolkit 2005 Standardised Toolkit for Identification and Quantification of Dioxin and Furan Releases;</li> <li>• Consultation with a wide range of industry sectors, service providers and government bodies;</li> <li>• Targeted research of specific data sources for relevant source sectors; and</li> <li>• Literature sources including research literature on POPs emissions from specialist research symposia and conferences, and POPs inventories of other Member States.</li> </ul> <p>Please refer to Ireland Informative Inventory Report 2013 Air Pollutant Emissions in Ireland 1990–2011 (available at <a href="http://erc.epa.ie/clrtap/#2013">http://erc.epa.ie/clrtap/#2013</a>) for further</p>		<p>characterise sources of unintentional POPs. The 1998 Protocol on Persistent Organic Pollutants to the Convention on Long Range Transboundary Air Pollution (CLRTAP) requires the compilation of an inventory of anthropogenic emissions to air. This inventory is reported annually.</p> <p>In order to illustrate the current releases of unintentional POPs for the National Implementation Plan on POPs and national reporting requirements under the Stockholm Convention, the releases of unintentional POPs were mapped and reported under the main source categories established in the UNEP Standardized Toolkit for Identification and Quantification of Dioxin and Furan Releases. This helped to identify and characterise the key sources of unintentional POPs emissions. Further information is available in Section 4 of Ireland’s National Implementation Plan on POPs (available at <a href="http://www.pops.ie">www.pops.ie</a>).</p>

Member State	Measures to identify	Details	Measure to characterise	Details
		<p>information on sources used to estimate emissions to air.</p> <p>Other measures used by Ireland to identify sources of substances listed in Annex III include:</p> <p>a) E-PRTR The Electronic Pollutant Release and Transfer Register (E-PRTR) Regulation (EC) No 166/2006 came into force in 2006 and was enacted into Irish legislation by national regulations concerning the establishment of a European Pollutant Release and Transfer Register (S.I. No. 123 of 2007).</p> <p>The E-PRTR database is an effective means for identifying potentially hazardous chemical substances and/or pollutants released to air, water and soil and wastes transferred off-site for treatment or disposal. The aim of the inventory is to make information more available to the public on pollutant emissions and waste transfers from a range of operations. Reporting under PRTR is an annual process. The E-PRTR Regulation (EC) No 166/2006 requires that emissions and waste transfers from specified industrial and waste management operations which are above the reporting thresholds must be reported to the European Commission for publication on a</p>		

Member State	Measures to identify	Details	Measure to characterise	Details
		<p>dedicated website which is available at the following link:  <a href="https://prtr.eea.europa.eu/">https://prtr.eea.europa.eu/</a></p> <p>Ireland has a dedicated website for information on Pollutant Release and Transfer Register including information on quantities of pollutant releases (including POPs) in accordance with E-PRTR reporting thresholds:  <a href="http://prtr.epa.ie/">http://prtr.epa.ie/</a></p> <p>The EPA's AER / PRTR Electronic Website and Workbook data reporting system provides facilities with a standardised reporting mechanism to report their annual environmental information returns. The EPA extracts the relevant E-PRTR information for reporting to the European Commission. Such data is reported by quarries, Integrated Pollution Prevention and Control (IPPC) facilities, waste and wastewater facilities which help identify potential sources of emissions. Annex III substances (in accordance with the reporting threshold requirements) are included in the list of parameters that are available.</p> <p>b) PCB Inventory  As required under the Council Directive 96/59/EC on polychlorinated biphenyls and polychlorinated terphenyls (PCBs/PCTs) and national regulations (Waste Management</p>		

Member State	Measures to identify	Details	Measure to characterise	Details
		<p>(Hazardous Waste) Regulations 1998) Ireland is required to prepare and update the national inventory of PCB holdings. In seeking to have a comprehensive inventory, the EPA has engaged in widespread inspections to identify as many PCB holdings as possible. This work is on-going and such information allows the EPA to identify potential sources of PCBs.</p> <p>Initially in August 2008 the EPA updated and published on its website the Management Plan for Polychlorinated Biphenyls (PCBs) in Ireland including a Code of Practice for the in-use management of PCBs and PCB-containing equipment. This plan includes a database of known sources and brands of equipment that is considered to potentially contain PCBs.</p> <p>Further work was carried out in 2009 to identify potential sources of PCBs and a risk profile was developed to establish in-scope electrical equipment and PCB contamination.</p> <p>The National Large PCB holdings and Small PCB holdings was updated and published on the EPA website in early 2010 (<a href="http://www.pcbs.ie/">http://www.pcbs.ie/</a>). However, during 2011 an increase in the price of metals in Ireland meant that theft and vandalism of potentially PCB-contaminated equipment had increased. As a precautionary measure the inventory was</p>		

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
		temporarily removed from the PCB website during 2011 and 2012. See page 21 for further details.  As described under Section II, 1.1 above, approximately 302 PCB inspections were carried out over the three year period 2010-2012 to identify confirmed and suspected PCB holdings.		
<b>Italy</b>	No response received	No response received	No response received	No response received
<b>Lithuania</b>	Yes	The procedure for submission of information on sources of pollution and basic pollutants emitted (released) from them, determined by the Order of the Minister of Environment of the Republic of Lithuania - requires the enterprises to provide information on the emission of pollutants, including dioxins, furans and HCB and sources thereof, to Regional Environment Protection Departments of Lithuania.	Yes	Order of the Minister of Environment of the Republic of Lithuania (of 27 February 2002 No 80, new edition of 29 June 2005 No. DI-330, as amended) On Regulations for the Issuance, Renewal and Repeal of Permits of Integrated Pollution Prevention and Control, based on Directive 96/61/EC obliges enterprises to get IPPC permit. Therefore locations of industrial pollution sources could be determined as well as characteristics of the sources defined.
<b>Luxembourg</b>	No response received	No response received	No response received	No response received
<b>Latvia</b>	No	No response received	No response	No response received



<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
	response received		received	
<b>Malta</b>	No response received	No response received	No response received	No response received
<b>Netherlands</b>	Yes	The Netherlands interprets the question as follows: From the literature it is known which sources contribute to the emissions. In the request for licenses for these sources information has to be submitted about the sources. In a number of cases an environmental assessment report is requested before the license is granted. Emissions have to be reported by companies above a certain limit. For a number of sources, such as traffic, emissions are estimated if relevant.	Yes	There is a general notion of sources of annex III substances. Occasionally research is dedicated to specific sources, for instance as a result of enforcement actions.
<b>Poland</b>	Yes	In the reporting period, there were no changes in relation to the data provided in the three-Year report for the period from 1 January 2007 until 31 December 2010.	Yes	In the reporting period, there were no changes in relation to the data provided in the three-Year report for the period from 1 January 2007 until 31 December 2010.
<b>Portugal</b>	No response received	No response received	No response received	No response received
<b>Romania</b>	Yes	National Environmental Protection Agency, together with the National Administration "Romanian Waters" hold inventory sources of	Yes	EPER was replaced by a new registry according to Regulation (EC) No 166/2006 of the European Parliament and of the Council

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
		substances listed in Annex III, which updated annually		of 18 January 2006 establishing the European Pollutant Release and Transfer. Thus, National Environmental Protection Agency, conducted Register Pollutant Release and Transfer (E-PRTR) emissions and transfers data for the years 2007, 2008, 2009, 2010 and 2011 data have been submitted to the European Commission. These emissions from the activities covered by the IPPC Directive and a number of activities non IPPC which are covered by the E-PRTR. Register for E-PRTR period 2007-2011 include emissions of dioxins and furans (PCDD / PCDF) resulting from production of energy and metals and polycyclic aromatic hydrocarbon emissions (PAH) from the extractive industry. Although the registry is a tool pollution reduction through information provided can be identified activities to be to improve their environmental performance through the application of best available techniques available
<b>Sweden</b>	Yes	Inventories have been carried out within the sectors of the ferrous and non ferrous metal industry, pulp and paper industry and waste incineration. Studies have also been performed in order to characterise and evaluate the relative importance of long range (atmospheric)	Yes	Industrial sources have been characterised in Sweden since years back. In Sweden, the permitting process of industrial installations includes an environmental impact assessment. When necessary, this environmental impact assessment also

Member State	Measures to identify	Details	Measure to characterise	Details
		<p>transport of these contaminants. Pattern analysis has been developed in order to achieve a preliminary identification of individual sources.</p> <p>An inventory is in place of sites where potentially contaminating activities are taking place or have taken place. The identification has been carried out sector wise focusing on different industrial sectors which potentially could contaminate soil, waters and sediments. The identification procedure has been based on a surveys carried out by the Swedish Environmental Protection Agency, on which industrial sectors (activities) that should be included in the assessment (Naturvårdsverket report 4393, 1995 (in Swedish)). This work covers all potential pollutants and hence also POPs in the Stockholm Convention.</p> <p>A Swedish ordinance ((Order 2007:19 on PCB:s etc March 2007) requires that anyone who owns a building or other installation in which joint-sealing compounds or anti-skid flooring compounds may have been used during erection or renovation in the period from 1956 to 1973 shall investigate whether the joint-sealing compound or flooring compound is a PCB product. The owner shall ensure that sealants and flooring containing more than 500</p>		<p>includes measurements of pollutants released. The permitting process also includes an assessment of what is BAT and an undertaking of BAT-measures to reduce formation and releases of pollutants whilst considering what is economically feasible.</p> <p>An inventory with identification of 80 000 potentially contaminated sites is in place. Inventories of actual risks at the potential sites, including risk classification /simplified risk assessment are nearly completed. The inventory work is carried out according to a method provided by the Swedish EPA (Naturvårdsverket Report 5053 Methods for inventories of contaminated sites, 2002 (in English)) and appr.1000 sites are found in the highest risk class.</p>

Member State	Measures to identify	Details	Measure to characterise	Details
		ppm (500 mg/kg) PCB product is removed according to the timelines given in the ordinance i.e. 2016 at the latest.		
<b>Slovenia</b>	Yes	<p>When preparing the inventory in Slovenia the National Emission Inventory (NEI) for calculation and reporting emissions was established. This inventory (NEI) enables the calculation of the emission data (release data) for the four main pollutants, heavy metals, particulate matter and POPs according to the EMEP/EEA methodology. NEI has been prepared on the basis with the INSTRUCTION for organizing the emission inventory of sources of air pollution (OJ of SRS No. 12-20, IV 1979). NEI is a subject of continuous development.</p> <p>The major sources of activity data are the Statistical Office of the Republic of Slovenia, however, the Environmental Agency obtains much of its data through other activities, which are performed under the Environment Protection Act (OJ RS, No. 41/04, 20/06, 39/06, 70/08, 108/09, 48/12, 57/12, 92/13)</p> <p>Emission factors (default versions), which are used for the calculation are published in EMEP/EEA Atmospheric Emission Inventory Guidebook, 2009.</p>	Yes	Emissions of POPs (Polycyclic Aromatic Hydrocarbons, Polychlorinated Biphenyls, Dioxins/Furans and Hexachlorobenzene) for Slovenia were calculated and reported since year 1990. The calculations of POPs are based on methodology described EMEP/EEA Atmospheric Emission Inventory Guidebook, 2009 and Technical Paper to the OSPARCOM-HELCOM UNECE Emission Inventory (Emission Factors Manual PARCOM-ATMOS). Since then POPs emission are included in annual report format and also reported according to POPs Protocol.

<b>Member State</b>	<b>Measures to identify</b>	<b>Details</b>	<b>Measure to characterise</b>	<b>Details</b>
		The Republic of Slovenia, as a party to the Convention, is obligated to perform annual emission inventories and to report them.		
<b>Slovakia</b>	No response received	No response received	No response received	No response received
<b>United Kingdom</b>	Yes	<p>The measures developed include source reduction measures and exposure reduction measures. The details are outlined in the UK Dioxin Action Plan which formed part of the UK 2007 National Implementation Plan. In addition, permitted processes are required to report releases above a threshold which is designed to capture the majority of releases.</p> <p>A programme of monitoring also takes place which checks compliance with permit conditions on a selection of regulated processes. Releases from processes which do not report releases through the PRTR mechanism, either because they are below the substance release threshold or do not require a permit for the relevant release media, are estimated by standard emission inventory techniques such as finding the product of a release factor and an appropriate activity statistic. Action undertaken as part of the UK's 2007 Dioxin Action Plan led to the</p>	Yes	A programme of routine measurements has been in place for some years for certain key sources such as incinerator ash and sinter plant emissions to air. Further research is undertaken to characterise sources and factors which may influence their emissions as the required technical and financial resources become available.

Member State	Measures to identify	Details	Measure to characterise	Details
		<p>development of multi-vector inventories for emissions to air, water and land. The programme has also been used to identify release routes of greatest uncertainty to close data gaps, and develop inventories for emissions to residue and product vectors. Outputs of the activity undertaken are detailed in the review of the Dioxin Plan annexed to The UK 2012 National Implementation Plan.</p>		

*Table B.2: Control measures to minimise emissions based on the data submitted in Article 12 reports*

<b>Member State</b>	<b>Measure to minimise</b>	<b>Details</b>
<b>Austria</b>	No response received	No response received
<b>Belgium</b>	Yes	<p>Inherent to (1) and (2) Flemish Region: If necessary to manage the risks from Annex III substances, specific prevention and reduction measures are incorporated in the environmental permits of industrial installations. Information and sensibilisation campaigns are held towards the general public on the risk of dioxins and furans from open fires and woodstoves.</p> <p>Brussels-Capital Region: These are incorporated as technical prescriptions, according to the BATNEEC principle, in the environment permits, in situations where they are required (air filtration, DeNOx with action on PCDD/PCDF, etc.).</p> <p>Walloon Region: the implementation of the principles of the IPPC directive through the environmental permit obliges the authority to deliver integrated environmental permits, taking into account BAT's and, where appropriate, specific conditions and ELV's are set, including for POP's.</p>
<b>Bulgaria</b>	Yes	<p>The action plan for reduction and minimisation of sources of substances listed in Annex III is updated in 2012 as a result of the National Implementation Plan (NIP) for the management of POPs in Bulgaria, 2012–2020.</p> <p>Legislation:</p> <p>Emmissions to air: Regulation (EC) No. 166/2006 of 18 January 2006 concerning the establishment of a European Pollutant Release and Transfer Register (EPRTR) EPRTR obliges the EU Member States to report the releases from all activities within the scope of Annex I of the Regulation.</p>

Member State	Measure to minimise	Details
		<p>Annex I of the Regulation includes 65 activities, grouped into 9 sectors. The operator of each facility that undertakes one or more of the activities specified in Annex I exceeding the applicable capacity thresholds specified therein is obliged to report the release and the transfer of the pollutants, listed in Annex II, which includes 91 pollutants.</p> <p>Limit values (thresholds) are defined for the releases to air, water and soil, as well as the transfer outside the site of any pollutant specified in Annex II. This Annex specifies the following limit values for POPs emissions to the air of HCB (10 kg/g), PCDD/F( 0,0001 TEF), PeCB (1 kg/g), PCB (0,1 kg/g), PAH (50 kg/g).</p> <p>Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control (IPPC) (OJ 2008 L 24/29.01.2008) The aim of the Directive is to achieve integrated prevention and control of pollution arising from different categories of industrial activities. The main objectives of IPPC are achieved through undertaking a number of measures, including also through application of any possible measures for prevention of the pollution by using BAT.</p> <p>Annex III of Directive 2008/1/EC specifies an exemplary list of the main polluting substances, which should be considered, if related to the setting of air emission limit values. Among those are the limit values for PCDD/PCDF.</p> <p><b>Environmental Protection Act</b> The requirements of Directive 2008/1/EC on IPPC are transposed in the Bulgarian legislation in the Environmental Protection Act – Chapter Seven —Prevention and Limitation of Industrial Pollution, Section II —Integrated Permits. The integrated approach to prevention and control of pollution (incl. also of POPs – is applied for installations and activities falling within the scope of Annex No. 4 of the Environmental Protection Act.</p> <p><b>Clean Ambient Air Act (CAAA)</b> The act regulates the specification of indices and emission limit value of ambient of air quality, limitation</p>



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of the emissions, the rights and obligations of the respective authorities as regards the control, management and maintenance of the ambient air quality.

In view of securing ambient air quality in line with the established standards, the law aims to limit the emissions and the by-laws thereto introduce limit values for concentrations of harmful substances, released in the atmosphere from stationary sources.

The observance of the existing national legislation regarding the management of POPs in emissions from unintentional production guarantees the reduction of their adverse effects on the human health and the environment.

Emission limit values for PCDD/PCDF, PCB, PAH and HCB in ambient air, approved by the national legislation.

Ordinance No. 1 dated 27.06.2005 concerning emission limit values of harmful substances (pollutants), released in the atmosphere from facilities and activities with stationary sources of emissions (promulgated SG 64/05.08.2005, in force from 06.08.2006)

The Ordinance specifies emission limit values (ELV) of harmful substances, emitted in the atmosphere from facilities and activities with stationary sources of emissions, in view of prevention and limitation of any possible direct and/or indirect effects of the emissions on the environment, as well as any related potential risks for the human health.

No.	Dioxines and furans (PCDD/PCDF)	ELV ng TE/m <sup>3</sup>
1	Total emissions of dioxines and furans, released in the atmosphere from operating and new stationary sources of emissions, within a certain site or activity upon reporting their toxic equivalency factors.	0,1 ng TE/m <sup>3</sup> 0,25 mg/h
2	Emissions of dioxines and furans from iron ore sintering plants	0,4 ng TE/m <sup>3</sup>

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3	The total emissions of dioxines and furans in the waste gas from installations for production of non-ferrous crude metals, excluding aluminum and ferrous alloys	0,4 ng TE/m <sup>3</sup>
4	The emissions of dioxines and furans in the waste gas - in the smelting, alloying and refining of non-ferrous metals, excluding aluminum - in smelting of copper in blast furnaces	0,1 ng TE/m <sup>3</sup> 0,4 ng TE/m <sup>3</sup>

Ordinance No. 2 concerning the emission limit values (concentrations in waste gas) of harmful substances, released in the ambient air from stationary sources, promulgated SG issue 51/06.05.1998, as last amended in SG, issue 19/08.03.2011) The objective is through observing the ELV to prevent or limit the emissions of harmful substances, released in the ambient air from stationary sources.

ELV of Dioxines (2, 3, 7, 8- tetrachlordibenzodioxines), emitted from installations for incineration of solid household waste

Waste incineration installations	ELV (relative to 11% concentration of O <sub>2</sub> in the fume gases) ng/m <sup>3</sup>		
	Less than 1 t/h	between 1 and 3 t/h	3 t/h or more
Household waste	0,1	0,1	0,1

Ordinance No. 6 concerning the terms and requirements for the construction and operation of waste incineration and co-incineration plants, promulgated SG, issue 78/07.09.2004, as amended SG, issue

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The Ordinance stipulates the terms and requirements for the construction and operation of waste incineration and co-incineration plants in view of preventing, reduction and/or minimizing the environmental pollution, including the emissions of harmful substances released in the ambient air, soils, the surface and ground water, and any risks arising for the human health there from.

**Daily average ELVs of dioxines and furans in the ambient air from waste incineration plants, fixed as average value for not less than a six-hour and not more than an eight-hour sampling period:**

Harmful substances	ELV, ng /m3
Dioxines and furans	0,1

The emission limit value relates to the total concentration of dioxines and furans, calculated on the bases of their toxic equivalency, according to Annex No. 6.

**Emission limit values for maximum level of harmful and hazardous substances in discharges of waste water from flue gas cleaning**

Harmful substances	Emission limit values, ng/l
Dioxines and furans, as a sum of separate dioxines and furans*	0,3

In order to determine the accumulated values (toxic equivalency, TE) the mass concentrations of PCDD and PCDF should be multiplied by TEF before adding them up (see table 126 above for the values of TEF)

Ordinance No. 11 dated 11.05.2007 concerning the limit values for arsenic, cadmium, nickel and polycyclic aromatic hydrocarbons in the ambient air (promulgated SG issue No. 42 dated 29.05.2007)  
This Ordinance regulates the establishment of target limit values for the levels of arsenic, cadmium, nickel

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and benzo[a]pyrene in the ambient air and deposition thereof from the ambient air on open areas, the establishment of unified method and criteria for evaluation of their level in the ambient air, as well as improvement of the air quality in the regions where the limit values are exceeded. The limit values are established in view of elimination, prevention or limitation of any possible harmful effects on the human health and the environment related to arsenic, cadmium, nickel and benzo[a]pyrene, (used as a marker for carcinogenic risk from PAH)

<b>Target limit values for the levels of benzo[a]pyrene in the ambient air</b>	
Pollutant/harmful substance	Assessment threshold (a)
Benzo[a]pyrene	1 ng/m <sup>3</sup>

<b>Upper and lower assessment thresholds of the levels of benzo[a]pyrene in the ambient air within a certain region or agglomeration</b>	
Assessment threshold	Benzo[a]pyrene
Upper – expressed in percentage of the target limit value	60 % (0,6 ng/m <sup>3</sup> )
Lower - expressed in percentage of the target limit value	40 % (0,4 ng/m <sup>3</sup> )

Emmissions to water:

Directive 2008/105/EC of the European Parliament and of the Council of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending

Member State	Measure to minimise	Details
		<p data-bbox="580 328 1469 357">Directive 2000/60/EC of the European Parliament and of the Council</p> <p data-bbox="580 376 1944 443">Water Act (effective as of 28.01.2000, promulgated, SG 67/27.07.1999, as amended SG 98/14.12.2010, as amended SG 80/14.10.2011, last amended SG 45/15.06.2012, effective as of 1.09.2012)</p> <p data-bbox="580 451 1720 480">Ordinance No. 1 of 11 April 2011 on water monitoring, promulgated, SG 34/29.04.2011.</p> <p data-bbox="580 488 1921 555">Ordinance on environmental quality standards for priority substances and certain other pollutants, SG 88 of 9.11.2010, effective as of 09.11.2010</p> <p data-bbox="580 571 1921 638">Ordinance No. 9/2001 on the quality of water intended for drinking and domestic purposes, promulgated SG 30/28.03.2001, as amended SG 87/30.10. 2007, as amended, SG 1/4.01. 2011)</p> <p data-bbox="580 683 875 711">Measures and Actions:</p> <ol data-bbox="580 719 1944 1350" style="list-style-type: none"> <li data-bbox="580 719 1912 786">1. Application and enforcement of existing Bulgarian legislation for Integrated Pollution Prevention and Control (IPPC Directive), relating POPs releases from unintentional production.</li> <li data-bbox="580 802 1921 981">2. Annual update of the inventory of the sources of POPs emissions in the ambient air, divided in the following 11 groups of source categories: heat and power stations, domestic combustion, combustion processes in industry, non-combustion production processes, extraction and processing of fuel resources, solvents usage, road transport, other transport, waste treatment and disposal, agriculture and nature resources.</li> <li data-bbox="580 997 1944 1106">3. Inclusion of conditions in the Integrated Permits of combustion installations, metallurgical installations, chemical installations and installations for production of cement clinker for prevention/restriction of POPs emissions, including emission restrictions, based on the Best Available Techniques (BAT).</li> <li data-bbox="580 1121 1928 1230">4. Application of BAT, the use of environmentally friendly fuels for household heating, the enhancement of the energy efficiency and the improvement of the quality of fuels for the transport and the renewal of the motor vehicle fleet have a significant potential for reducing the POPs emissions.</li> <li data-bbox="580 1246 1944 1350">5. Integrated prevention and control of the pollution from certain categories of industrial activities (cement plants, metallurgical plants, installations for disposal of hazardous hospital waste and incineration of household waste etc.) through the application of BAT, including POPs.</li> </ol> <p data-bbox="580 1366 1137 1394">Source: Updated NIP for POPs, 2012-2020</p>

<b>Member State</b>	<b>Measure to minimise</b>	<b>Details</b>
		<a href="http://www.moew.government.bg/">http://www.moew.government.bg/</a>
<b>Cyprus</b>	No response received	No response received
<b>Czech Republic</b>	Yes	<ul style="list-style-type: none"> <li>- Government Regulation No. 145/2008 Coll., on the list of substances and thresholds for the integrated register of pollution, as amended</li> <li>- Act No. 69/2013 Coll., amending Act No. 76/2002 Coll. on integrated pollution prevention and control, on the integrated pollution register and on amendment to some laws (Act on integrated prevention)</li> <li>- Act. No. 201/2012 Coll., on the air protection, as amended</li> <li>- Act. No. 350/2011 Coll., on chemical substances and mixtures, as amended</li> <li>- Decree No. 205/2009 Coll., on monitoring the emissions from the stationary sources of air pollution and other obligations of the Act on air protection, as amended</li> </ul>
<b>Germany</b>	Yes	<p>The centrepiece of national legislation is the Federal Immission Control Act (BImSchG) which regulates environmental quality. Its provisions apply to the construction and operation of installations and to the manufacture, placing on the market and import of installations, fuels and other relevant substances. The section of the Act concerning authorisation of installations complies with Community law. A number of Administrative Regulations were issued on the basis of Article 48 of the Federal Immission Control Act. They contain threshold values, amongst other things, for PCDDs/PCDFs that must on no account be exceeded and emission values that can be feasibly adhered to using best available technology.</p> <p>Emissions to air:</p> <p>The requirement that the best available techniques be used has been implemented in the individual Immission Control Ordinances and in the Technical Instructions on Air Quality Control (TA Luft)<sup>5</sup> which stipulate limit values for maximum concentrations in atmospheric emissions from certain installations:</p> <ul style="list-style-type: none"> <li>- First Regulation implementing the Federal Immission Control Act<sup>6</sup> In Germany, combustion installations that do not require a license under Article 4 of the Federal Immission Control Act are subject to the provisions of the Ordinance on Small- and Medium Scale Combustion Plants. This regulation has</li> </ul>

Member State	Measure to minimise	Details
		<p>been updated recently in 2010 implementing new requirements concerning the quality of fuels, new pollutant limit values along with regular monitoring of emissions. The amended regulation will lead to optimised combustion conditions in small installations and will achieve a general reduction in the emission of pollutants. It stipulates for PCDD/F a test stand limit value of 0,1 ng TEQ/m<sup>3</sup> for straw and similar agricultural fuels. However, it can be assumed that emissions of Annex III of Regulation (EC) No 850/2004 chemicals will be further reduced as a result of optimised combustion.</p> <ul style="list-style-type: none"> <li>- Fourth Regulation implementing the Federal Immission Control Act<sup>7</sup> Certain installations are subject to official licensing. The licenses are based on emission-restricting requirements to maintain air quality on the basis of the best available technology as defined in more detail in the regulation or the Technical Instructions on Air Quality Control.</li> <li>- Thirteenth Regulation implementing the Federal Immission Control Act<sup>8</sup> sets the limit value for PCDDs/PCDFs at 0.1 ng TEQ/m<sup>3</sup>.</li> <li>- Seventeenth Regulation implementing the Federal Immission Control Act<sup>9</sup> This regulation specifies requirements relating to the construction, type, and operation of waste incinerators or co-incinerators. It stipulates that PCDD/PCDF concentrations in the exhaust stream of incinerators may not exceed an emissions limit value of 0.1 ng TEQ/m<sup>3</sup>. Emission limit values for incinerators burning solid municipal waste are also 0.1 ng TEQ/m<sup>3</sup>.</li> <li>- Nineteenth Regulation implementing the Federal Immission Control Act<sup>10</sup> This regulation prohibits the use of chlorinated and brominated compounds as fuel additives.</li> <li>- Twenty-seventh Regulation implementing the Federal Immission Control Act<sup>11</sup> Article 4, in conjunction with Annex 2, specifies an emission limit value for PCDDs/PCDFs of 0.1 ng TEQ/m<sup>3</sup> for crematoria.</li> </ul> <p>In general, the requirements of the “Technical Instructions on Air Quality Control” must be observed when licensing installations under the Federal Immission Control Act. This specifies as a minimum requirement that the mass concentration of PCDDs/PCDFs in atmospheric emissions also be 0.1 ng/m<sup>3</sup> and the mass flow 0.25 µg/h. For other substances that are particularly harmful to the environment, such as polybrominated dibenzo-p-dioxins and dibenzofurans or polyhalogenated biphenyls, emissions must be</p>

<b>Member State</b>	<b>Measure to minimise</b>	<b>Details</b>
		<p>restricted under the general requirement to reduce emissions. Any existing installations that did not comply with the requirements applicable to new installations with regard to best available technology, set out in the “Technical Instructions on Air Quality Control” as amended in 2002, had to be retrofitted as a rule by 30 October 2007.</p> <p>Emissions to water: Requirements relating to the discharge of effluent into water bodies are set out in permits and licenses granted under water law, as defined in Article 2 ff. of the Federal Water Act (WHG). All these requirements are based on the use of the best available technology as a minimum to avoid and reduce emissions or on the corresponding BAT as defined in the IPPC Directive. The IPPC Directive is implemented in secondary legislation at state level.</p>
<b>Denmark</b>	No response received	No response received
<b>Estonia</b>	No response received	No response received
<b>Greece</b>	No response received	No response received
<b>Spain</b>	There has been no change to the information reported in 2010	There has been no change to the information reported in 2010



Member State	Measure to minimise	Details
<b>Finland</b>	Yes, as a part of the National Implementation Plan (NIP) for the Stockholm Convention.	<p>The following measures, inter alia, have been included in the National Action Plan and the NIP:</p> <ul style="list-style-type: none"> <li>Regulating emission requirements for stoves, furnaces, and boilers to be placed on the market. Other measures will include ensuring proper combustion by means of instructions and training.</li> <li>Providing citizens with education on the combustion of wood and other biofuels.</li> <li>Paying special attention to the good management of PCDD/F and PCB releases in the environmental permit process when dealing with industrial processes, energy production, and waste incineration.</li> <li>Improving companies' awareness of POPs, their management, and obligations concerning their release. Permit applications will examine the possible formation of dioxin and furan releases in industrial and energy production processes.</li> </ul> <p>The authorities produce new data on POPs created during industrial processes and combustion to support the environmental permit process and companies' voluntary environmental management systems.</p> <p>Measures to reduce traffic related emissions and landfills.</p> <p>Rehabilitation plan for river Kymi's contaminated sediments.</p> <p>Mapping the possibilities to reduce or to prevent POP emissions from landfills.</p> <p>Evaluating more detailed the atmospheric emission for PeCB. Estimating the emissions of PeCB, HCB and PCB on surface water and soil.</p> <p>Screening the POP concentrations in sludge and evaluating the possible risks of using sewage sludge on agriculture or on landscaping purposes. It is also worth mentioning that in 2012 a decision to not remediate the sediments of River Kymi for the time being was made based on Environmental Impact Assessment. River Kymi is the most significant source of POPs in Finland today, and also accounts for the largest single input of dioxins into the Baltic Sea. The total amount of contaminated sediments between Kuusankoski and the Gulf of Finland is approximately 5 million cubic meters. These sediments contain about 6,000 kg of PCDD/F (corresponding to 17 kg ITEQ). Concentrations of PCDD/F up to 350 µg/kg ITEQ have been recorded in riverbed sediments. The river also transports polychlorinated phenols (PCP, max. conc. 720 µg/kg) and polychlorinated diphenyl ether (PCDE, 500 µg/kg) into the Gulf of Finland. This EIA can be downloaded at <a href="http://www.ymparisto.fi/download/noname/%7BB7FB5F4A-90B0-4B54-">http://www.ymparisto.fi/download/noname/%7BB7FB5F4A-90B0-4B54-</a></p>

Member State	Measure to minimise	Details
France	Yes	<p data-bbox="580 328 1167 357">8327-B68D3FAC2308%7D/116446 (14 MB)</p> <p data-bbox="580 387 1944 751"> <b>General response:</b>  <b>Émissions dans l'air :</b>            Dans la continuité du premier Plan National Santé Environnement (PNSE) couvrant la période 2004-2008 qui a permis d'atteindre l'objectif global de réduction des émissions, un second PNSE couvrant la période 2009-2013 a été adopté. Une des actions prioritaires est relative à la réduction des rejets de 6 substances toxiques dans l'air et dans l'eau, parmi lesquelles figurent les dioxines, furanes, HAP et PCB. L'objectif est d'en réduire les rejets atmosphériques et aqueux de 30 % entre 2007 et 2013. La circulaire du 21 mai 2010 relative au programme pluriannuel de réduction des émissions de substances toxiques dans l'environnement – Volet ICPE – a défini cette stratégie pour les installations classées. Le suivi de ces établissements doit être exercé jusqu'au 31 décembre 2013.         </p> <p data-bbox="580 794 1944 1007">           De plus, le plan particules de juillet 2010, impulsé par le Grenelle de l'Environnement, présente des mesures phares dans 4 secteurs (domestique, industriel, transport, agriculture) afin de réduire la pollution de fond, et pas seulement lors des pics de pollution. L'action 7 de ce plan interdit le brûlage à l'air libre des déchets verts, source d'émission importante de dioxines et furannes. La circulaire du 18 novembre 2011 relative à l'interdiction du brûlage à l'air libre des déchets verts vient préciser les actions à entreprendre à ce sujet.         </p> <p data-bbox="580 1050 1944 1377"> <b>Émissions dans l'eau :</b>            En France, une action de recherche et de réduction des rejets de substances dangereuses dans l'eau (« action RSDE ») par les installations classées a été lancée dans chaque région en 2002, dans le cadre de l'opération nationale découlant de la circulaire du 4 février 2002 du ministère chargé de l'environnement. Cette action, qui a couvert 106 substances, a concerné les substances prioritaires identifiées dans la directive-cadre. Ces substances ont été recherchées dans 39 secteurs et sous-secteurs industriels. Suite à l'analyse des données récoltées lors de cette opération, le ministère a engagé une nouvelle action de recherche et, le cas échéant, de réduction ciblée sur une liste de substances déclinée par secteur d'activité auprès des installations classées soumises à autorisation sur l'ensemble du territoire. La         </p>

Member State	Measure to minimise	Details
		<p data-bbox="580 328 1939 432">circulaire du 5 janvier 2009, complétée par les notes du 23 mars 2010 et du 27 avril 2011, encadre cette nouvelle opération. L'annexe I à cette circulaire donne la liste des substances dangereuses potentiellement présentes dans les rejets aqueux des établissements par secteur d'activité industrielle.</p> <p data-bbox="580 475 1939 691">L'objectif fixé pour 2013 est que l'ensemble des permis d'exploiter des installations classées autorisées ayant une activité visée à l'annexe I de la circulaire et ayant des rejets d'eaux industrielles soit complété de telle sorte que soit imposée la surveillance des substances dangereuses rejetées par le site. Pour certaines de ces substances, des études technicoéconomiques envisageant la réduction voire la suppression de ces émissions devront être engagées par l'exploitant, en fonction de ses niveaux d'émission, et un échéancier précis des mesures de réduction envisagées devra être établi.</p> <p data-bbox="580 734 1939 983">De plus, afin de contribuer à l'atteinte des objectifs imposés par la directive 2006/11/CE du 15 février 2006 concernant la pollution causée par certaines substances dangereuses déversées dans le milieu aquatique de la Communauté qui détermine une réglementation générale pour la pollution des eaux causée par certaines substances (150), le décret n° 2005-378 du 20 avril 2005 a établi un programme national d'action contre la pollution des milieux aquatiques par certaines substances dangereuses, décrit dans l'arrêté ministériel du 30 juin 2005, modifié et complété par les arrêtés du 21 mars 2007, et du 8 juillet 2010.</p> <p data-bbox="580 994 1939 1394">Par ailleurs, après une large concertation, le ministère en charge de l'environnement a engagé le 14 octobre 2010, un plan micropolluants 2010-2013. Il a pour objectifs de définir, dans un document unique, la stratégie globale de réduction de la présence des micropolluants dans les milieux aquatiques et décliner les actions correspondantes engagées ou à engager par le ministère, les établissements publics dont il assure la tutelle, et l'ensemble des acteurs de l'eau, pour la période 2010-2013. Il contribue à satisfaire les objectifs fixés par la directive-cadre sur l'eau et la directive cadre stratégie pour le milieu marin renforcés par le Grenelle de l'Environnement et du Grenelle de la Mer. Il vient compléter et actualiser le programme national d'action contre la pollution des milieux aquatiques par certaines substances dangereuses. 14 POP figurent dans ce plan : l'hexachlorobenzène, l'hexachlorocyclohexane, le pentachlorobenzène, l'aldrine, le dieldrine, l'endrine, le DDT, l'heptachlore, le chlordane, la chlordécone, le mirex, le toxaphène, les SPFO et les PCB. Ce plan micropolluants présente trois axes :</p>

<b>Member State</b>	<b>Measure to minimise</b>	<b>Details</b>
		<ul style="list-style-type: none"> <li>- améliorer les programmes de surveillance des milieux et des rejets,</li> <li>- réduire les émissions des micropolluants les plus préoccupants, en agissant à la source sur les secteurs d'activité les plus contributeurs, et les milieux les plus dégradés, pour atteindre les objectifs de la directive cadre sur l'eau,</li> <li>- renforcer la veille prospective relative aux contaminations émergentes.</li> </ul>
<b>Croatia</b>	No response received	No response received
<b>Hungary</b>	Yes	In the case of waste incinerators, Hungary has limit values for all the substances listed in Annex III. That measurement effected that many waste incinerators were closed in Hungary in 2002.
<b>Ireland</b>	Yes	<p>In 2010 Ireland introduced national legislation concerning POPs (Persistent Organic Pollutant Regulations 2010). The regulations designate the EPA as the competent authority for the purposes of the EU POP Regulation (Regulation (EC) 850 of 2004). The EPA's responsibilities include the preparation and maintenance of release inventories and, in consultation with certain public authorities concerned and the public, the preparation of a national action plan and implementation plan setting out how Ireland is meeting its obligations under the Stockholm Convention. The regulations also set out the roles of certain public authorities concerned in relation to POPs.</p> <p>Controls on emissions from major industrial and waste management activities</p> <p>The Integrated Pollution Prevention Control (IPPC) Directive and Waste Incineration Directive (which are superseded by the Industrial Emissions Directive) sets out the framework for the control of emissions including dioxins from major industrial installations and waste facilities. Such facilities are required to have licences for their operations and must comply with certain conditions including compliance with emission limit values.</p> <p>In Ireland, the EPA licenses over 500 industrial facilities and over 200 waste and waste water facilities through IPPC licensing and waste licensing. The EPA's Office of Environmental Enforcement undertakes regular inspections of these operations. Emissions monitoring is also undertaken to ensure compliance with their licence conditions. Local Authorities also have a role in regulating and enforcing specified</p>

Member State	Measure to minimise	Details
		<p>waste activities.</p> <p>EPA licenced operations are required to operate to Best Available Techniques (BAT) Guidance and have monitoring requirements imposed as part of their licences. The concept of BAT was introduced as a key principle in the IPPC Directive. Thus, for activities falling within the scope of the Directive and regulated by Irish legislation (e.g., Environmental Protection Agency Act 1992, Waste Management Act 1996 and Protection of the Environment Act 2003 (as amended)), BAT must be applied. The EPA continues to develop BAT guidance notes for various industrial sectors. Where relevant, controls on POPs emissions are included in order to ensure BAT compliance and minimise emissions from specific sectors. Ireland has introduced national regulations in 2013 to transpose the Industrial Emissions Directive.</p> <p><b>National Waste Prevention Programme</b></p> <p>In 2004 the Minister for the Environment, Heritage and Local Government established the National Waste Prevention Programme (NWPP) which is led by the EPA. The EPA publishes annual reports detailing the work that was carried out under the programme. This includes work that has been undertaken in relation to POPs and PCBs. In addition, the NWPP and other programmes are implementing concrete projects with industry, commercial sectors and general society to promote resource efficiency in conjunction with a variety of stakeholders which are leading to a reduction in resource consumption and consequent reduction in POPs emissions. The annual reports for 2010 (2009-2010), 2011 &amp; 2012 are available at: <a href="http://www.epa.ie/pubs/reports/waste/prevention/">http://www.epa.ie/pubs/reports/waste/prevention/</a></p> <p><b>National Hazardous Waste Management Plan</b></p> <p>The National Hazardous Waste Management Plan 2008 - 2012 is the second National Hazardous Waste Management Plan to be issued, the first plan having been published in 2001. This Plan sets out the priority actions that should be taken in relation to the prevention of hazardous waste including:</p> <ul style="list-style-type: none"> <li>• prevention of hazardous waste generation;</li> <li>• improved collection rates for certain categories of hazardous waste;</li> <li>• steps that are required to improve Ireland's self-sufficiency in hazardous waste management; and</li> <li>• management of certain legacy issues (e.g. closed historic landfills)</li> </ul> <p>The National Hazardous Waste Management Plan (2008-2012) is available at <a href="http://www.hazardouswaste.ie">www.hazardouswaste.ie</a>. A</p>

Member State	Measure to minimise	Details
		<p>Proposed Revised Plan which is a revision of the National Hazardous Waste Management Plan (2008-2012) has recently been prepared and is currently available for public consultation at <a href="http://www.hazardouswaste.ie">www.hazardouswaste.ie</a>.</p> <p><b>Code of Practice for unregulated waste disposal sites</b>  In 2007 the EPA published a Code of Practice for the Environmental Risk Assessment for Unregulated Waste Disposal Sites. The Code of Practice sets out a risk-based assessment procedure to be applied to historic unregulated waste disposal sites and sites at which waste disposal activities, being activities which involved hazardous waste to a significant extent, have been carried on. It provides guidance on completing environmental risk assessment of unregulated waste disposal sites, which have been identified through the application of the EPA's site identification methodology. A web based system for local authorities to provide registers for such sites has been rolled out by the EPA and is updated as new information is received.</p> <p><b>Controls on waste disposal by burning</b>  In September 2009, regulations concerning waste disposal by burning were brought into force, strengthening the law against waste disposal by uncontrolled burning. These regulations make explicit the offence of disposal of waste by uncontrolled burning and prohibits such disposal within the curtilage of a dwelling. Failure to comply with these regulations is an offence and fines of up to €3,000 may be imposed.</p> <p>The EPA and local authorities have regularly organised advertisement campaigns covering backyard burning and illegal waste collection. The aim of these campaigns is to increase public awareness of the dangers of illegal burning (including the potential for unintentional POP emissions) and the problems of illegal waste and hence reduce the emissions from these practices. These campaigns are typically organised at Halloween at the end of October when bonfires traditionally take place.</p> <p>Local Authorities carry out annual inspections covering a range of environmental legislation. This includes enforcement relating to the prevention of backyard burning and the following number of backyard burning related inspections was carried out by local authorities during the period 2010-2012:</p> <ul style="list-style-type: none"> <li>• 2010 - approx. 260 inspections</li> </ul>

Member State	Measure to minimise	Details
		<ul style="list-style-type: none"> <li>• 2011 - approx. 380 inspections</li> <li>• 2012 - approx. 530 inspections</li> </ul> <p>Other enforcement activities</p> <p>The EPA and Local authorities have engaged in enforcement and awareness activities concerning unauthorised use of waste oils in burners for space heating (e.g. targeted inspections and awareness via national and sector advertisements (e.g. car garages)).</p> <p>For example in 2010, the EPA published the Smart Garage Guide which is aimed at promoting best environmental practice in garages including awareness regarding illegal burning. The smart garage guide is available at:  <a href="http://www.epa.ie/pubs/reports/waste/wpp/Smart%20Garage%20Guide%202010%20small.pdf">http://www.epa.ie/pubs/reports/waste/wpp/Smart%20Garage%20Guide%202010%20small.pdf</a></p>
<b>Italy</b>	No response received	No response received
<b>Lithuania</b>	Yes	<p>The Action programme as part of National Implementation Plan (NIP) called for in Article 7 of the Stockholm Convention, Article 8 of the Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants (adopted by Governmental Resolution on 4 October 2006, No 970) is under implementation from October 2006. The NIP on POPs was re-adopted by Order of the Minister of Environment of 23 May 2010, No D1-1034) and titled as "National programme on POP's management for 2010-2015" (a detailed justification is provided in Section IV).</p> <p>There are some measures in order to minimise sources of pollutants, to reduce the emission to the environment of unintentional POP determined in Action Programme:</p> <ul style="list-style-type: none"> <li>- To manage obsolete pesticides including POPs pesticide, to collect, store, decontaminate and/or dispose of PCB containing oil and equipment;</li> <li>- In order to solve the problem to reduce the emission to the environment of unintentional POPs</li> <li>- to develop the public municipal waste management system, which allows the collection and handling of more waste and thus the amount of waste incinerated in households will be reduced;</li> <li>- To update National Environmental Monitoring Programme with the aim to better monitor POPs in environmental compartments and to conduct POPs monitoring in environmental compartments, biota and</li> </ul>

Member State	Measure to minimise	Details
		<p>food products;</p> <ul style="list-style-type: none"> <li>- Aiming at lower releases of dioxins and furans into the environment one of the most important measures - is related to the awareness raising inter alia</li> <li>• to educate the society and other interested parties regarding sorting of waste,</li> <li>• to disseminate knowledge on POPs,</li> <li>• to disseminate information material on the environmental and human health impact of POPs and prevention of their formation.</li> </ul> <p>The Environmental Protection Requirements for Waste Incineration (adopted on 31 December 2002 by Order of the Minister of Environment No 699 as last amended on 1 October 2010) are in force from 01 April 2003. The Environmental Protection Requirements for Waste Incineration define operating conditions, limit values of released pollutants, including dioxins and furans, measurement requirements of pollutants and technical requirements for all enterprises operating or planning the operation of waste incineration and co-incineration plants attributed to main generation sources of POPs from unintentional production.</p> <p>The National Strategic Waste Management Plan (adopted by Governmental Resolution of 31 October 2007, No 1224) provides for the principles and priorities for the waste management, strategic aims, tasks, implementing measures, describes the Lithuanian waste management system. This plan was implemented during the period 2007- 2013.</p> <p>It should be noted that there are no specific measures for the waste containing POPs, but the tasks, principles, approaches, etc. are equally attributed to all waste types, including POPs. The most important related tasks could be mentioned as follows:</p> <ul style="list-style-type: none"> <li>- to ensure a complex management of dangerous waste (including waste containing POPs), e.g., collection, classification, treatment, use and disposal,</li> <li>- to improve medical waste management system by ensuring safe management of this waste type.</li> </ul> <p>The implementing measures include inter alia the development of a number of new legal acts or amendments of legislation in force, methodological guidance for identification and classification of dangerous waste, etc. In 2013 waste incineration plant started operation in Klaipeda with annual capacity</p>



Member State	Measure to minimise	Details
		<p>of 180 000 tons of municipal waste. The hazardous waste incineration facility should start operation in 2014 in Šiauliai district. This solution allowed reducing fugitive POPs sources. It is planned to build waste incineration plants in Vilnius and Kaunas in near future. Waste incineration plants are to be first built in or near the largest cities (as provided in the National Energy Independence Strategy (adopted by Resolution of the Parliament of the Republic of Lithuania of 26 June 2012, No XI-2133).</p> <p>The problem concerning one of the potential POPs sources, i.e. incineration of medical wastes, is addressed in the way that it is prohibited to decontaminate medical wastes with chemicals if it is supposed to be incinerated. Hygienic Standard HN 66:2008 on Safety Requirements for Management of Medical Waste (adopted by the Minister of Health on 14 February 2008, No V-1 17, which replaced Hygienic Standard HN 66:2000 which was in force from 2000) sets obligation for personal and public health services to handle and dispose medical waste according to the requirements provided for in this Hygienic Standard. As a result of the National Strategic Waste Management Plan for 2002-2006 (adopted by Governmental Resolution of 12 April 2002, No 519) and as reported in 2010 the waste incineration facility for medical waste was established in company UAB "Senove" (Vilnius) and has been in operation from 2006 until April 2010. Aiming at improving the situation of medical waste management the hazardous waste incineration facility in Šiauliai to be in operation from 2014 will be used for medical waste incineration also.</p> <p>The Rules on management of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT) approved by the Order of the Minister of Environment (on 26 September 2003, No 473) - obliges the possessors of equipment with PCB volumes of more than 5dmJ to ensure that this equipment without any delay and not later than December 31, 2010, will be decontaminated and/or disposed. The possessors of equipment must provide the respective Regional Environmental Protection Departments with upgraded inventory reports of equipment with PCB specifying decontaminated or disposed used PCB or equipment containing PCB.</p> <p>Reduction of POPs from unintentional releases in Lithuania is mostly motivated by IPPC permits developed, issued, renewed and repealed in accordance with the rules for the Issuance, renewal and repeal of Permits of Integrated Pollution Prevention and Control (IPPC) (based on Directive 96/61/EC) determined by the Order of the Minister of Environment of the Republic of Lithuania.</p>

<b>Member State</b>	<b>Measure to minimise</b>	<b>Details</b>
<b>Luxembourg</b>	No response received	No response received
<b>Latvia</b>	No response received	No response received
<b>Malta</b>	No response received	No response received
<b>Netherlands</b>	Yes	<p>a. The IPPC directive is applicable to a number of sources</p> <p>b. A license following national law is granted</p> <p>c. The license may contain conditions on emissions</p>
<b>Poland</b>	Yes	<p>No change since the last report for 2007-2010.</p> <p>Table 1 summarizes the data on the emission of dioxins and furans, HCB and polycyclic aromatic hydrocarbons for the years 1988 and 2011.</p>
<b>Portugal</b>	No response received	No response received
<b>Romania</b>	Yes	<p>Water users have been authorized in terms of water management, with an Annex Staging program that included measures and set deadlines for targets to be included within plans of implementation for Directive 76/464 / EEC and Directive 96/61 / EEC, as well as action plans for eliminating / reducing Annex III substances.</p> <p>Also, measures were taken to reduce emissions of substances listed in Annex III by:</p> <ul style="list-style-type: none"> <li>- Modernization of successive combustion plants that produce heat and BAT and BEP electricity using;</li> <li>- Implementation of modern systems for air pollution control;</li> <li>- Introduction of legal regulations on pollution prevention and control integrated (IPPC);</li> <li>- Standard emission limit values;</li> <li>- The environmentally sound management of POPs deposit, collection, storage, decontamination and / or</li> </ul>

Member State	Measure to minimise	Details
		<p>disposal of equipment containing PCBs.</p> <p>In 2012 the National Implementation Plan or the National Action Plan for the persistent organic pollutants has been updated to introduce actions and measures for 10 new POPs substances listed in Annexes A, B and C Convention, and was sent to the Secretariat of the Stockholm Convention on October 9, 2012.</p>
<b>Sweden</b>	Yes	<p>Primary sources: In Sweden has an environmental legislation that requires the use of BAT as long as not unreasonable. This legislation also applies to sources of substances listed in Annex III and is for example used in permitting situations. This approach has resulted in concrete measures to prevent and reduce releases from the industrial sectors.</p> <p>There are however some sectors where further measures to reduce releases may be necessary. One example is the metallurgical sector, where there is still reasonable scope to reduce releases to air, in particular of dioxins. Another area in which further measures may be necessary is the burning of bio-fuels and other alternative fuels. National regulation on chlorinated dioxins and furans exist in relation to the incineration of waste, under the Waste Incineration Directive (WID) (EC/2000/76). In Sweden this directive is implemented as general binding rules setting minimum standards for the whole waste incineration (and co-incineration) sector. Since the regulation not only includes emission limit values but also construction and management obligations, it is also expected to promote the reduction of other POPs than dioxins and furans.</p> <p>Secondary sources: Studies of the contributions of secondary and diffuse sources to overall environmental loadings of POPs, especially those that are directly connected to exposure of humans and wildlife are undertaken. Sweden is also participating at the global level to support the work to achieve the objectives of the Stockholm Convention.</p> <p>Households: Information and guidance are key instruments, alongside general regulations and their enforcement. Above all, it is necessary to create an awareness of the importance of the selection of optimal fuel and good practices, and that these individual choices, make major difference to emissions. There are information campaigns done by central agencies and municipalities.</p> <p>Contaminated sites (soil, waters and sediments). Extensive work to investigate (including assessing the</p>

Member State	Measure to minimise	Details
		<p>risks) and when needed in order to reduce risks, remediate contaminated sites in Sweden is undertaken.</p> <p>Long-range transboundary air pollution: The programme (BalticPOPs report: <a href="http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6566-9.pdf">http://www.naturvardsverket.se/Documents/publikationer6400/978-91-620-6566-9.pdf</a>) dealt with dioxins and PCB in the Baltic and was terminated in 2012. Peak levels of dioxins appeared during 1966-84 in coastal hot-spot areas, and later (1982-96) in off-shore areas. Sources related to air emission are and have been important for the Baltic region throughout the studied time period, and particularly so for the southern sub-basins. Previous mass-balance modelling has shown that reduction of air levels will also reduce future water and sediment levels in the Baltic Sea.</p>
<b>Slovenia</b>	Yes	<p>Fundamental Slovenian strategic document in the field of environmental protection is the Resolution on National Environmental Action Plan 2005-2012 (OJ RS, No. 2/2006). Its basic goals are improvement of environment, quality of life and protection of natural resources. It addresses climate change, nature and biodiversity, waters, air, chemicals, noise, electromagnetic radiation, urban environment, waste, industrial pollution and related international commitments. For each of the above mentioned areas, targets, preferential tasks and measures to achieve the targets are set. Based on NEAP, policies for specific issues are developed. For POPs, the following three policy documents are relevant:</p> <ul style="list-style-type: none"> <li>• National Implementation Plan (NIP) as pursuant to article 7 of the Stockholm Convention on Persistent Organic Pollutants (adopted by the Government in 2009);</li> <li>• Action plan of reduction and minimization of releases of PAH, PCDD/DF and HCB (in use by the Ministry of Agriculture and the Environment</li> <li>• Operational programme for the disposal of polychlorinated biphenyls and polychlorinated terphenyls for 2003-2006 (adopted by the Government in 2003) – no longer valid</li> <li>• Operational programme for the disposal of polychlorinated biphenyls and polychlorinated terphenyls for the period of 2009 – 2012 (adopted by the Government on 19.3.2009)</li> </ul> <p>The Environment Protection Act (OJ RS, No 41/04, 20/06, 39/06, 70/08, 108/09, 48/12, 57/12, 92/13) requires that all major stationary sources have to apply for an integrated environmental permit (for larger so called IPPC installations and for smaller installations). This applies to both existing and new installations, which is regulated in Decree on activities and installations causing large-scale environmental pollution (OJ RS, No. 97/2004, 71/2007, 122/2007); Decree on the emission of substances into the</p>

Member State	Measure to minimise	Details
		<p>atmosphere from stationary sources of pollution (OJ. RS, No. 73/1994, OJ. RS, No. 68/1996, 109/2001, 41/2004-ZVO-1, 31/2007) and Rules on initial measurements and operational monitoring of the emission of substances into the atmosphere from stationary pollution sources and on the conditions for their implementation (OJ. RS, No. 70/1996, OJ. RS, No. 71/2000, 99/2001, 17/2003, 105/2008). For existing industrial installations permits in most cases are issued and some are still in preparation; the emission reduction requirements in permits are based on BAT, as defined in the BREF documents of the European IPPC Bureau in Sevilla.</p> <p>PCB in existing products, when taken out of use, is considered in Slovenian legislation as hazardous waste and has to be treated accordingly, in line with the EU legislation and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.</p> <p>Production of electrical equipment containing PCB (transformers and capacitors) in Slovenia was terminated in January 1985. A study “A Concept of Handling the PCB/PCT in Slovenia” was made in 1999. The former Ministry for Environment and Spatial Planning also defined the measures on how to eliminate electrical equipment (capacitors or transformers) contaminated with PCB from 2003 to 2006. PCB containing equipment has to be registered to the EARS (Environmental Agency of the Republic of Slovenia – competent authority). The following data have to be reported: location and amount of the PCB equipment in kg (it comprises the amount of PCB substance and the overall contaminated parts of the equipment – an estimation), the planned (estimated) date of the disposal of the PCB equipment, type of the PCB equipment (whether it is a transformer, capacitor or waste oil containing PCB) and the name of the owner (legal person) responsible for the PCB equipment and its disposal. ARSO keeps the inventory on these data.</p> <p>It is also obligatory for the proprietors / owners of the PCB equipment to report to the competent authority, whether, when and how the PCB equipment was disposed off and where it was sent according to the principles of shipment of hazardous waste.</p> <p>Slovenia has taken all necessary measures to ensure that all PCB/PCT containing material in the environment will be disposed until 2010. Based on the Directive 96/59/EC on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT), the following legislative documents were adopted and implemented in Slovenia:</p>

Member State	Measure to minimise	Details
		<ul style="list-style-type: none"> <li>- Rules on the Disposal of Polychlorinated Biphenyls and Polychlorinated Terphenyls (OJ RS, No. 15/00, 54/02, 18/03) – no longer valid - replaced by another legislative act</li> <li>- Operational programme for the disposal of polychlorinated biphenyls and polychlorinated terphenyls for 2003-2006 (adopted by the Government in 2003) – no longer valid – replaced by another programme</li> <li>- Decree on the disposal of polychlorinated biphenyls and polychlorinated terphenyls, (OJ RS, No. 34/08 and 9/09),</li> <li>- Operational programme for the disposal of polychlorinated biphenyls and polychlorinated terphenyls for the period of 2009 – 2012 (adopted by the Government on 19.03.2009),</li> <li>- Decree on the disposal of waste oils (OJ RS, No. 25/08)</li> </ul>
<b>Slovakia</b>	No response received	No response received
<b>United Kingdom</b>	Yes	<p>The implementation of Integrated Pollution Prevention and Control (IPPC) and related measures (now recast into the industrial emissions Directive) has led to a significant reduction of releases from industrial source sectors. Measures to address energy efficiency and increase the spread of the natural gas network have significantly decreased emissions from domestic solid fuel use. The implementation of measures on waste management has altered domestic waste disposal behaviour and publicity has helped raised public awareness about good practice in backyard burning.</p> <p>The UK has a well-established source inventory for emissions to air, this may be found at: <a href="http://www.naei.org.uk/">http://www.naei.org.uk/</a>. A comprehensive multimedia inventory has also been established. This currently provides emissions data for air, water, land, residue and product vectors, knowledge of which will inform measures to minimise emissions.</p>