Stockholm Convention on Persistent Organic Pollutants (POPs)

National Implementation Plan

Federal Republic of Germany

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1 INTRODUCTION

Persistent organic pollutants (**POP**s) are chemical substances that remain in the environment for a long time after their release and accumulate in the food chain, particularly in fatty tissue, and in that way ultimately reach concentrations that have harmful effects on human health and the environment. POPs can also potentially be transported over great distances and can spread around the world on air and ocean currents. Thus, they pose a risk to the environment and human health not only locally and regionally, but also in regions of the world at a great distance from the point of emission. Arctic and mountainous regions seem to be at particular risk; it is in these regions that airborne POPs are more likely to be deposited through condensation.

In implementing the Stockholm Convention on Persistent Organic Pollutants, the Contracting Parties commit to take appropriate measures to prevent the release of these substances into the environment or least to reduce it as far as is technically feasible and economically reasonable.

1.1 THE NATIONAL AND INTERNATIONAL LEGAL FRAMEWORK

1.1.1 THE STOCKHOLM CONVENTION

The Stockholm Convention is a global treaty established under international law that is aimed at protecting human health and the environment from persistent organic pollutants. It was officially adopted after three years of negotiations under the auspices of the United Nations Environment Programme (UNEP) by 127 countries and signed by 91 countries and the European Union on 22 May 2001 in Stockholm. It came into force on 17 May 2004, 90 days after the fiftieth ratification document was deposited with the United Nations in New York. Now[a] 110 countries and the European Community are Parties to the Convention. The first Conference of the Parties to the Convention took place after a total of 7 preparatory meetings of an "Intergovernmental Negotiating Committee" from 2- 6 May 2005 in Punta del Este in Uruguay.

On 25 April 2002 the Federal Republic of Germany became one of the first signatory states to ratify the treaty. With this action, it underlined its particular commitment to promoting measures to improve chemicals safety on a global level.

The text of the Convention and other up-to-date information can be found on the website of the Secretariat for the Convention at http://www.pops.int.

1.1.2 POPS PROTOCOL

As well as the Stockholm Convention on Persistent Organic Pollutants, a Protocol on Persistent Organic Pollutants was also adopted in 1998 under the UNECE's 1979 **C**onvention on **L**ong-**R**ange **T**ransboundary **A**ir **P**ollution, (CLRTAP). Germany and the European Community are Parties to this multilateral treaty, so that its obligations are also binding in law.

The text of the Convention and up-to-date information can be found on the website of the Secretariat for the Convention at http://www.unece.org/env/lrtap/pops_h1.htm.

[a] October 2005

1.1.3 POPs ACT

In order to achieve swift ratification of the Stockholm Convention and the POPs Protocol, the two treaties were enacted into national law in the Federal Republic of Germany's by an Act[1] passed on 9 April 2002.

1.1.4 EC'S POPs REGULATION

In order to align existing Community legislation with the provisions of the Stockholm Convention and the POPs Protocol before ratification by the European Community, the Council and Parliament adopted Regulation (EC) No. 850/2004.[2] It creates directly applicable uniform law in the Member States.

1.2. THE NATIONAL IMPLEMENTATION PLAN

One of the obligations of the Parties to the Convention involves drawing up a specific National Implementation Plan. Article 7, paragraph 1 (a) of the Convention stipulates that each Contracting Party shall develop its own National Implementation Plan and transmit it to the Conference of the Parties within two years of the date on which the Convention enters into force (Article 7, paragraph 1 (b)). The Plan must be reviewed and updated at regular intervals to be specified by the Conference of the Parties (Article 7, paragraph 1 (c)).

For the Federal Republic of Germany this means that the first version of a National Implementation Plan must be submitted by 17 May 2006. The Plan must describe the extent to which the obligations under the Convention have either already been fulfilled or what strategies the interest groups intend to follow in the future in order to fulfil any commitments outstanding.

The Federal Republic of Germany is a Contracting Party not only to the Stockholm Convention, but also to the POPs Protocol under CLRTAP. There are also a number of Community regulations on POPs. All these commitments have been incorporated into the following summary description of the current situation and planned action on POPs.

To date, the Federal Ministry for the Environment, Nature Conservation and Reactor Safety has held two meetings in Bonn (11 November 2004, follow-up meeting on 15 November 2005) with the principal interest groups (representatives of the *Länder* (German Federal States), relevant departments within the Ministry, industry representatives, NGOs) to plan the measures to be taken under the National Implementation Plan.

2 STRUCTURES IN GERMANY

2.1. PRODUCTION, EXPORT/IMPORT AND USE OF CHEMICAL SUBSTANCES

General information on the production, import and export, and use of chemicals and on the current status of chemicals managements in Germany is available in the National Profile compiled by the Federal Institute for Occupational Safety and Health (BAuA) in 2005.[3]

2.2 LEGISLATION AND PROCEDURES TO REGULATE CHEMICALS

German law on chemicals is essentially based on that of the European Community. EC law becomes effective in the Member States in the form of Directives or Regulations. The *Länder* are responsible for implementation of the legislation.

The European Community, like Germany and other Member States, is a Contracting Party to various international treaties on chemicals safety (e.g. the Rotterdam Convention, Stockholm Convention, Basel Convention). To implement the Stockholm Convention and ensure harmonisation across the Community of the obligations arising from it, the EC has adopted the content of the Convention in Regulation (EC) No. 850/2004. In the ratification document it submitted to the Stockholm Convention, the Community declared its legal competence and willingness to adapt its acquis to any future changes.[b]

2.2.1 GENERAL LEGISLATION ON CHEMICALS

As far as placing chemicals on the market in the EU is concerned, the following framework directives are currently applicable: 67/548/EEC (on the classification, packaging and labelling of dangerous substances), 1999/45/EC (classification, packaging and labelling of dangerous preparations) and 76/769/EEC (restrictions on the marketing and use of certain dangerous substances and preparations). New European chemicals legislation is currently being developed in the draft REACH Regulation. The currently applicable framework directives and the individual directives and amendments pursuant to them are principally enacted in German law by the Chemicals Act (ChemG),[4] the Ordinance on Hazardous Materials (GefStoffV)[5] and the Prohibition of Chemicals Ordinance (ChemVerbotsV).[6] The Ordinance on Hazardous Materials and the Prohibition of Chemicals Ordinance currently contain bans and restrictions on the production, use and marketing of the chemicals listed in Annexes A-C of the Convention: DDT, PCDDs/PCDFs and PCBs.

The Ordinance on Hazardous Materials contains a flexible reference to the EU Directives which makes it possible to waive implementation of EU law in national law in the area of

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[b] *The Community declares that, in accordance with the Treaty establishing the European Community, and in particular article 175 thereof, it is competent for entering into international environmental agreements, and for implementing the obligations resulting therefrom, which contribute to the pursuit of the following objectives:*

- *Preserving, protecting and improving the quality of the environment,*
- *Protecting human health,*
- *Prudent and rational utilisation of natural resources,*
- *Promoting measures at international level to deal with regional or worldwide environmental problems*

Moreover, the Community declares that it has already adopted legal instruments, binding on its Member States, covering matters governed by this Convention, and will submit and update, as appropriate, a list of those legal instruments to the Conference of the Parties in accordance with article 15 (1) of the Convention. The Community is responsible for the performance of those obligations resulting from the Convention which are covered by Community law in force. ...

classification, packaging and labelling of hazardous substances, preparations and products, making the rapid application of new regulations possible. There are also a number of different pieces of legislation on specific areas of chemicals law e.g. biocide products (Biocide Act), plant protection products (Plant Protection Act) and pharmaceuticals (Pharmaceuticals Act).

→ Further information on procedures, Ministries and Government agencies involved can be found in the National Profile.

2.2.1.1 NEW SUBSTANCES

Council Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances obliges Member States to take the necessary measures to ensure that hazardous substances can be marketed only if they have been classified, packaged and labelled in compliance with the provisions of the Directive. This basic Directive has been amended several times and a registration and testing procedure that is uniform across the Community has been added. It has been translated into national law by the Chemicals Act (ChemG). Under this Act, new chemical substances can be marketed only after prior registration. New substances are defined as all substances that are not listed in EINECS (European Inventory of Existing Commercial Chemical Substances). There is a facility for searching the EINECS database under "New Chemicals" on the website of the European Chemicals Bureau (ECB) (http://ecb.jrc.it). Manufacturers or importers submit data on the physical/chemical, toxicological and ecotoxicological properties of substances. The data is examined and evaluated by the national authorities and then, accompanied an assessment, shared with the EC Member States via the ECB. The Notification Unit at the Federal Institute for Occupational Safety and Health informs the *Länder* about the substance data and assessment results.

The agencies involved in the assessment process are the Federal Institute for Occupational Safety and Health ((Division 4 – Safety and Health regarding Chemical and Biological Agents), the Federal Institute for Risk Assessment (BfR) and the Federal Environment Agency (UBA). In certain cases, the Federal Biological Research Centre for Agriculture and Forestry (BBA) and the Federal Institute for Materials Research and Testing (BAM) also participate.

2.2.1.2 EXISTING CHEMICALS

Existing chemicals are regulated at EU level by Council Regulation (EEC) No. 793/93 of 23 March 1993 on the evaluation and control of the risks of existing substances. This Regulation is directly applicable law in the Member States.

The evaluation includes the risks to workers, consumers and the environment associated with the chemical, proposals for protective measures and where relevant references to substitute substances with information about their availability and the risks associated with them.

In Germany the responsibility for performing this work is regulated by the Administrative Regulation for Existing Commercial Chemical Substances (ChemVwV-Altstoffe) of 11 September 1997. It also specifies that the national rapporteur is the Notification Unit appointed under the Chemicals Act and the assessment units are the Federal Environment Agency, the Federal Institute for Risk Assessment and the Federal Institute for Occupational Safety and Health, each having responsibility for the specific areas of protection under their jurisdiction.

The draft risk assessments produced by the individual Member States are distributed to the European Commission and all the other Member States. In several different phases of work, the risk assessments are discussed and, if necessary, altered before being accepted by all those

participating in the procedure. Necessary measures such as classification, labelling, the establishment of limit values for the workplace, restrictions, and prohibitions must then be derived from the generally accepted risk assessments and political acceptance achieved.

2.2.2 LEGISLATION ON SPECIFIC CHEMICALS

2.2.2.1 PLANT PROTECTION PRODUCTS

Directive 91/414/EEC7 concerning the placing of plant protection products on the market creates a uniform authorisation procedure throughout the European Union and is enacted in German law by the Act on the Protection of Cultivated Plants (Plant Protection Act - PflSchG).

A distinction is made between the procedure for active substances and the procedure for the actual plant protection products.

Active substances in plant protection products are examined at EU level. In conjunction with the Member States, the EU Commission decides whether an active substance should be accepted and included in Annex I of the Directive. Inclusion in this list is a prerequisite for authorising plant protection products containing the active substance in question.

The licensing of the plant protection products is the responsibility of the Member States. In Germany, the Federal Office of Consumer Protection and Food Safety (BVL), with the agreement of the Federal Environment Agency, grants a licence to the applicant for the plant protection active substances in accordance with Article 15 of the Plant Protection Act, after consultation with the Federal Biological Research Centre for Agriculture and Forestry and the Federal Institute for Risk Assessment.

2.2.2.2 BIOCIDE PRODUCTS

Under a standardized EU procedure, a decision is taken on whether a biocide active ingredient can be included in one of the Annexes I, IA or IB of Directive 98/8/EC. Inclusion of a biocide active ingredient in one of these Annexes is a requirement that biocide products have to fulfil in order to be authorised. If a substance has POPs properties it cannot be included in these Annexes.

The national authorization authority is the Federal Institute for Occupational Safety and Health (Division 5, Chemicals, Notification and Authorization). The national expert authorities included in the procedure as authorities whose agreement must be sought are the Federal Institute for Occupational Safety and Health (responsible for the protection of workers), the Federal Environment Agency and the Federal Institute for Risk Assessment (responsible for consumer protection). The Federal Institute for Materials Research and Testing, the Federal Office for Consumer Protection and Food Safety and the Robert Koch Institute (RKI) also participate in the authorization procedure for certain types of products as agencies that have to consulted.

2.2.2.3 PERSISTENT ORGANIC POLLUTANTS (POPS)

Regulation (EC) No. 850/2004 means that the obligations under the Stockholm Convention and CLRTAP's POPs Protocol are directly applicable in Germany. A number of points in Regulation (EC) No. 850/2004 also go beyond the obligations of the two international treaties.

Under Article 15 of Regulation (EC) No. 850/2004, the national agency responsible for the administrative work is the Federal Institute for Occupational Safety and Health in Dortmund. In conjunction with the Federal Environment Agency and the agencies responsible at *Land*

level, they implement the provisions of the Regulation, particularly in the areas of legislation relating to chemicals and waste.

Apart from the system of sanctions that already exists in the Federal Republic of Germany under general legislation on chemicals,[c] contraventions of Regulation (EC) No. 850/2004 can be directly prosecuted as a criminal offence or fined as being a regulatory offence under the Ordinance for the Enforcement of Community Law Regulations Relating to Substances and Preparations (ChemStrOWiV).[8]

2.2.2.4 EXPORT/IMPORT OF HAZARDOUS SUBSTANCES, PIC CONVENTION

Council Regulation (EC) No. 304/2003[9] of 28 January 2003 concerning the export and import of certain dangerous chemicals (Export/Import Regulation) was published in the Official Journal of the EU on 6 March 2003 and came into force the following day.

With this Regulation, the Community is implementing the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC). In a number of areas the provisions of the Regulation go further than those of the Convention.

In the Federal Republic of Germany, the Federal Institute for Occupational Safety and Health is the Designated National Authority (DNA) for this procedure. It examines the documentation submitted for PIC substances, which are not subject to a trade ban, and forwards them to the European Commission, in this case the Joint Research Centre of the European Chemicals Bureau (ECB). For each first export of an Annex I substance in any calendar year, the ECB sends an export notification to the importing country.

Both the European Union and Germany are Contracting Parties to the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (PIC Convention). Germany has named the Federal Office for Consumer Protection and Food Safety as the DNA responsible to the Food and Agriculture Organisation of the United Nations (FAO) in connection with plant protection products; the Federal Institute for Occupational Safety and Health is the DNA responsible to UNEP for all other chemicals.

2.3 LEGISLATION ON WASTE AND THE DISPOSAL SITUATION

2.3.1 LEGISLATION REGULATING WASTE/HAZARDOUS WASTE

There is extensive legislation on waste disposal, differentiated by type of waste, both at European Union and national level.

The disposal of hazardous wastes is subject to particular legal requirements. Under waste law, anyone who produces waste requiring special supervision is responsible for handling and disposing of it properly.

Although waste law does not take an approach based on specific individual substances, but is based on the industries and processes in question, it is assumed that POPs wastes, as waste requiring special supervision under European law (Directive 91/689/EEC[10] on hazardous

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[c] Authorities may issue orders to rectify contraventions ascertained or prevent future contraventions against EC chemicals legislation as set out in Article 23, paragraph 1 in conjunction with Article 21, paragraph 2, sentence 1 of the Chemicals Act (ChemG) and impose sanctions under Article 26, paragraph 1 (10) (fines) and Article 27b of the Chemicals Act (confiscation of goods) in the case of non-compliance with an enforceable order issued by an authority.

waste), are disposed of accordingly. Under Community law,[11] waste legislation applies to PCBs[12] in order to ensure that contaminated wastes are removed from the recycling system which is otherwise preferred (reprocessing) and disposed of in an environmentally sound manner. In parallel to this, a policy of banning the use of other potential POP candidates is also pursued (polybrominated diphenyls and diphenyl ethers in electronic and electrical appliances).[13]

Waste requiring special supervision (hazardous wastes) is defined in Article 41, paragraph 1 of the Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal (Closed cycle Substance and Waste Management Act)[14] as waste that, due to its type, nature or volume, poses a particular risk to health, air quality or water quality. POPs fulfil these criteria. This Act imposes special requirements with regard to the supervision and disposal of wastes requiring special supervision (recovery and disposal). Their proper disposal has been regulated since 7 October 1996 by a National Ordinance on Waste Recovery and Disposal Records,[15] which essentially requires:

- Proof that the planned method of disposal is permissible (advance checks)
- Proof that disposal has actually occurred (final destination checks)

Transfrontier shipment of waste is regulated in Germany and in all other Member States by the EC's Waste Shipments Regulation (WSR),[16] which transposes into Community law the provisions of the international agreement of 22 March 1989, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.[d] The Federal Environment Agency publishes annual statistics on the import and export of wastes that are subject to notification.[e]

The Federal Republic of Germany is a Contracting Party to the Basel Convention.

2.3.2 EUROPEAN LEGISLATION ON POPS WASTES

Article 7 of Regulation (EC) No. 850/2004 states that waste containing, consisting of, or contaminated with POPs should be disposed of or recovered in such a way as to ensure that the persistent organic pollutant content is destroyed or irreversibly transformed. Pre-treatment operations are permissible. Exemption to this obligation to destroy the POP content are permissible if that content is below a certain concentration limit (low POP content). Further exemptions are also permissible in the case of those wastes for which destruction or irreversible transformation is not the environmentally preferable option. These wastes are listed in Annex V. The permissible alternative disposal methods specified for these wastes are permanent underground storage in salt mines or hard rock formations or in overground hazardous waste landfills; however, these methods are only allowed up to a maximum POP concentration. For the overground option the waste must first be solidified or stabilised. Upper and lower limit values for POP levels have not yet been stipulated. Disposal or recovery operations that may lead to recovery, recycling, reclamation or re-use of POPs are prohibited.

In parallel to the EC's POPs Regulation, PCB Directive 96/59/EC and its enactment in national law are also applicable.[17]

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[d] http://www.basel.int/about.html

[e] http://www.umweltbundesamt.de/uba-info-daten/daten/gav/sta.htm

2.3.3 ORGANISATION OF DISPOSAL

Germany has developed legislation on waste based on its own experiences and on its obligation to enact European Community law. It includes collection, storage, transport (including transfrontier shipment), recovery, disposal, record-keeping, requirements that waste treatment facilities and disposal companies are obliged to meet. The *Länder* are responsible for implementing waste legislation, in particular for supervising proper disposal.

Regional Working Group on Waste (LAGA).

LAGA's remit is to ensure that waste legislation in the Federal Republic of Germany is applied with the greatest degree of uniformity possible across the different states or *Länder*. To this end, LAGA promotes an exchange of information and experience between the federal government and the states, industrial associations and interest groups. It develops proposals and inputs ideas to promote the development of legal provisions and ensure that the interests of the states are represented when the German position is presented in international bodies. LAGA drafts guidance notes, brochures and information documents to address waste management issues. Model administrative regulations have been compiled to implement waste legislation.

In 10 German states, 13 official disposal companies for hazardous waste exist, which are appointed to organise and guarantee the disposal of hazardous waste. They meet in the Committee on Hazardous Substances (AGS), forming a nationwide network.

Most states have introduced an obligation to offer or surrender hazardous wastes for disposal; i.e. hazardous wastes that have to be disposed of must be surrendered to the official regional disposal companies (obligation to surrender) or offered (obligation to offer). Hazardous wastes surrendered are assigned by the official disposal company to a suitable waste disposal facility. In some states the obligation to offer also applies to wastes destined for recovery that require special supervision.

The overall volume of hazardous wastes imported and exported – overall meaning not just those containing POPs and including some of the wastes subject to licensing – is listed below for selected types of waste for 2004:

Type of waste	EXPORT in tonnes	IMPORT in tonnes
Waste wood that has been treated with wood preservatives	12,000	220,000
Contaminated soil	30,000	170,000
Wastes containing acids, alkaline solutions and solvents	47,000	130,000
Aluminium salt slags	8,000	130,000
Used oil	4,000	60,000
Waste containing asbestos	220	22,000
Old refrigerators containing CFCs	160	15,000
Waste containing PCBs	280	3,000
Used lead batteries	20,000	16,000

Table 1 Waste imports and exports 2004 (Source: UBA Press Information 060/2005)

Overall imports of hazardous waste totalled 1,600,000 tonnes and exports 195,000 tonnes. The Federal Republic of Germany is thus clearly a net importer.

In the case of wastes that are not subject to licensing, approximately 16,000,000 tonnes of notifiable wastes are exported for recovery purposes (Green List). This volume has remained unchanged for several years now. Imports, on the other hand, are rising and the total volume for 2004 was 11,600,000 tonnes.

3 PROGRESS ON IMPLEMENTATION OF THE PROVISIONS OF THE STOCKHOLM CONVENTION

The Stockholm Convention names a number of different obligations and measures the Contracting Parties should take to achieve the desired protection of human health and the environment against persistent organic pollutants.

3.1 Measures to prevent releases from intentional production and use (Article 3)

Article 3 of Stockholm Convention includes the following measures to reduce or eliminate releases from intentional production and use:

- Ban the production and use of Annex A chemicals
- Restrict the manufacture and use of Annex B chemicals
- Monitor the import and export of Annex A and B chemicals

3.1.1 ANNEX A CHEMICALS

Annex A of the Stockholm Convention lists those chemicals whose manufacture and use should be completely halted (eliminated). Table 2 lists the chemical substances and mixtures that are currently[f] in Annex A.

With the exception of PCBs, the Annex A chemicals listed in Table 2 are principally substances that have a broad insecticide, fungicide or acaricide effect. They thus are, or were, ingredients of plant protection products, biocidal products used to protect materials (e.g. wood), hygiene products or veterinary pharmaceuticals (ectoparasiticides). That means that their use in Germany and at European level is subject to specific legislation.

[f] The Convention (Article 21) makes provision for the Contracting Parties to update the list of substances.

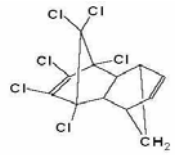
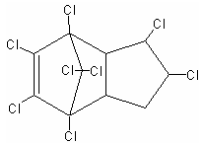
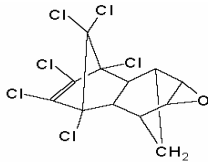
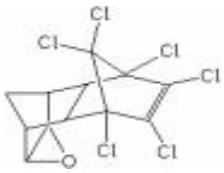
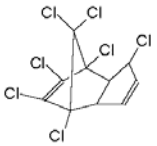
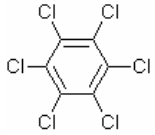
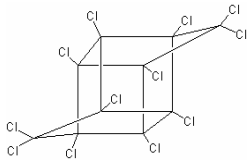
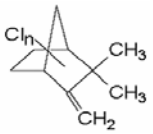
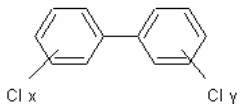
Name of substance	CAS number	Structure
Aldrin 1,2,3,4,10,10-Hexachlor-1,4,4a,5,8,8a- hexahydro-1,4-endo-5,8-exodimethano-naphthalin	309-00-2	
Chlordane 1,2,4,5,6,7,8,8-Octachlor-2,3,3a,4,7,7a- hexahodro-4,7-methano-1H-inden	57-74-9	
Dieldrin 3,4,5,6,9,9-Hexachlor-1a,2,2a,3,6,6a,7,7a- octa-hydro-2,7:3,6-dimethano-naphth-(2,3-b)- oxiren	60-57-1	
Endrin 1,2,3,4,10,10-Hexachlor-6,7-epoxy- 1,4,4a,5,6,7,8,8a-octahydro-1,4-endo-5,8-endodimethanonaphthalin	72-20-8	
Heptachlor 1,4,5,6,7,8,8-heptachlor-3a,4,7,7 a-tetrahydro-4,7-methano-1H-inden	76-44-8	
Hexachlorobenzene (HCB) 1,2,3,4,5,6-Hexachlorbenzene	118-74-1	
Mirex 1,4,5,6,7,8,8-heptachlor-3a,4,7,7 a-tetrahydro-4,7-methano-1H-inden	2385-85-5	
Toxaphene	8001-35-2	
Polychlorinated biphenyls (PCBs)	-- > 200 individual substances	

Table 2 Current list of Annex A chemicals under the Stockholm Convention

3.1.2 EUROPEAN LEGISLATION

Since Regulation (EC) No. 850/2004 of the European Parliament and of the Council came into force, the manufacture and use within the European Union of substances listed in Table 2 are prohibited. Exemptions to this ban, as detailed in Article 4, paragraph 1, are laboratory-scale quantities of the substances used for research purposes and unintentional trace contaminants. There is also additional substance-specific legislation in force at national level.

The requirement set out in Article 13 of Regulation that sanctions be taken against contraventions of the ban on the manufacture use or placing on the market of substances listed in Annex I of the Regulation has been enacted in national law by an amendment to the Ordinance for the enforcement of Community law regulations relating to substances and preparations.[18]

3.1.2.1 PLANT PROTECTION PRODUCTS

Directive 79/117/EEC of the Council already obliged Member States to prohibit the marketing and use of plant protection products containing certain active ingredients. The substances affected by this ban included the active ingredients listed in Table 2 with the exception of mirex and the addition of DDT.

With the exception of mirex, the use of these active ingredients has therefore been banned for many years in the Federal Republic of Germany under the Ordinance on Use Prohibitions for Plant Protection Products.[19] The reason that mirex is an exception is the fact that an application for authorisation of a plant protection product with this active ingredient has never been filed.

Under Directive 91/414/EEC, the assessment of the active ingredients in plant protection products is now standardised throughout the EU. As part of the Community's review of active ingredients, a decision is taken about including or exempting active ingredients from Annex I of the Directive. Fundamentally, national authorisation of a plant protection product is only possible if all its active ingredients are listed in Annex I. None of the substances in Annex A of the Stockholm Convention is re-assessed as part of the programme to review existing active ingredients, nor are they listed in Annex I of Directive 91/414/EEC. A plant protection product containing one of the active ingredients listed in Annex A of the Stockholm Convention is therefore essentially excluded from authorisation.

The provisions of Directive 79/117/EEC pertaining to persistent organic chlorinated compounds were replaced by Regulation (EC) No. 850/2004. Although these chemicals have not been manufactured in Germany for a long time now, it was not until the manufacturing ban in Article 3 of Regulation (EC) No. 850/2004 of the European Parliament and of the Council that the actual gap in the law in this respect was closed.

The Regulation implements the bans under the Stockholm Convention and the POPs Protocol.

3.1.2.2 BIOCIDE PRODUCTS

Until June 2002 there were no legal provisions in the Federal Republic of Germany regulating the marketing of biocide products. It was not until Directive 98/8/EC came into force that the basis for a standardized EU evaluation and authorisation procedure was established. Taking transitional periods into account, manufacturers had the opportunity to identify and notify the active ingredients of their biocide products as a prerequisite for continuing to use them. Apart from the fact that the above-mentioned Regulation (EC) No. 850/2004 takes legal precedence in any case, none of the substances listed in Annexes A-C of the Stockholm Convention were notified under this procedure. It can therefore be assumed that there are no biocide products containing these active ingredients on the market.

3.1.2.3 LEGISLATION ON POLYCHLORINATED BIPHENYLS

Until 1982, polychlorinated biphenyls (PCBs) were manufactured in Germany on an industrial scale. They were used as insulating fluids in transformers and capacitors, as plasticizers in products such as sealants, ceiling coverings, electrical cable insulation, as a flame retardant in wall paints, varnishes, adhesives and in hydraulic oils.

In terms of PCB legislation, Regulation (EC) No. 850/2004 takes precedence over the provisions of Directive 76/769/EEC and therefore over the Ordinance on Hazardous Materials and the Prohibition of Chemicals Ordinance. This means that new products may contain PCBs only as "unintentional trace contaminants" and may otherwise not be placed on the market.

EC: In 1985, legislation on the use of PCBs was introduced in the form of Directive 85/467/EEC[20] relating to restrictions on the marketing and use of certain dangerous substances and preparations (amending for the 6th time Directive 76/769/EC[21]).

National: The production and use of PCBs were phased out gradually:

1978	Ban on placing PCBs on the market in open systems (10th BImSchV)
1983	Production of PCBs stopped
1984	Use of PCBs in electrical equipment banned
1989	Total ban on placing PCBs on the market (PCB/PCT Prohibition Ordinance)
1993	Regulation under the Chemicals Act on bans and restrictions on placing hazardous substances, preparations and products on the market (Prohibition of Chemicals Ordinance) of 14 October 1993

Based on European Community legislation, legal provisions apply to the placing on the market, production and use of PCBs at national level through the Prohibition of Chemicals Ordinance[22] and the Ordinance on Hazardous Materials.[23] Under Article 18, paragraph 1, in conjunction with Annex IV No. 14, paragraph 1 of the Ordinance on Hazardous Materials, and Article 1, in conjunction with section 13 of the Annex (to Article 1) of the Prohibition of Chemicals Ordinance, there is a blanket ban on the use, manufacture and placing on the market of products containing preparations with more than 50 mg/kg of PCBs. In a transitional provision, under Article 22, paragraph 2 of the Ordinance on Hazardous Materials, products in which components containing PCBs are present are exempted:

- Until the products are decommissioned, at the latest, however, by 31 December 2010, provided that the component contains > 100 ml, but not more than 1000 ml of fluid containing PCBs, or
- Until the product is decommissioned, provided that the component contains < 100 ml of fluid containing PCBs.

and provided that the product was in service on 29 July 1989.

The use of capacitors with more than 1000 ml of fluid containing PCBs was banned as long ago as 1 January 1994. All other products containing PCBs (e.g. transformers) that do not come under the above-mentioned transitional provisions were allowed to be used until 31 December 1999.

3.1.3 ANNEX B SUBSTANCES

Currently the only substance listed in Annex B is DDT (Table 3).

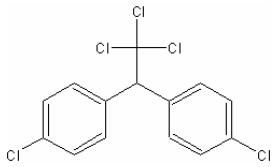
Name of substance	CAS number	Structure
DDT 1,1,1-trichlor-2,2-bis(4-chlorophenyl)ethane	50-29-3	

Table 3 Current list of Annex B chemicals under the Stockholm Convention

The production, placing on the market and use of DDT has been prohibited in Germany since 1972 under a separate law[24] for this substance. The only permissible exception is its use for the purposes of research or analysis, in which case authorisation to place it on the market must be obtained from the Federal Office of Consumer Protection and Food Safety. The provisions of the DDT Act were later incorporated into the Ordinance on Hazardous Materials and the Prohibition of Chemicals Ordinance (Article 1, paragraph 1, in conjunction with section 1 of the Annex to the Prohibition of Chemicals Ordinance and Article 18, paragraph 1, sentence 1, in conjunction with Annex IV, No. 20 of the Ordinance on Hazardous Materials).

3.1.4 LEGAL PROVISIONS FOR OTHER SUBSTANCES LISTED IN THE POPS PROTOCOL

In addition to the chemicals listed in Annex A to the Stockholm Convention, the POPs Protocol also includes two other POPs that are produced for commercial purposes. They are hexabromobiphenyl and chlordecone. The production and use of these two substances is prohibited in the Member States of the European Union under Regulation (EC) No. 850/2004.

At the first Conference of the Parties to the Stockholm Convention, the European Union proposed that both substances should be included in the Annexes to the Convention; Mexico proposed HCH (lindane).

CONCLUSION: **The obligations under Article 3 of the Convention have been fully enacted in national law in Germany. On the basis of the current list of substances in Annex A and Annex B, no further action is envisaged within the National Implementation Plan.**

3.2 REGISTER OF SPECIFIC EXEMPTIONS (Article 4)

Article 4 of the Stockholm Convention obliges Contracting Parties to notify time-limited exemptions for the production or special use of Annex A and B chemicals.
The Federal Republic of Germany has not made an application for any specific exemptions for the production or use of an Annex A or B chemical in its currently valid form under the provisions of Article 4 of the Stockholm Convention.

CONCLUSION: **The obligations under Article 4 of the Convention are without effect, since the Federal Republic of Germany has not made application for any specific exemptions.**

3.3 MEASURES TO REDUCE OR ELIMINATE RELEASES OF ANNEX C CHEMICALS (Article 5)

Article 5 of the Convention requires Parties to take measures to reduce or eliminate releases of unintentional by-products, for example by:

(d) Promoting and, in accordance with the implementation schedule of its action plan, requiring the use of best available techniques for new sources within source categories which a Party has identified as warranting such action in its action plan, with a particular initial focus on source categories identified in Part II of Annex C. In any case, the requirement to use best available techniques for new sources in the categories listed in Part II of that Annex should be phased in as soon as practicable but no later than four years after the entry into force of the Convention for that Party. For the identified categories, Parties shall promote the use of best environmental practices. When applying best available techniques and best environmental practices, Parties should take into consideration the general guidance on prevention and release reduction measures in that Annex and guidelines on best available techniques and best environmental practice to be adopted by a decision of the Conference of the Parties;

(e) Promoting the use of best available techniques and best environmental practices in accordance with the Contracting Party's action plan:

Annex C of the Stockholm Convention cites the following substances as the unintentional by-products of chemical or thermal reactions:

- Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs/PCDFs)
- Polychlorinated biphenyls (PCBs)
- Hexachlorobenzene (HCB)

The POPs Protocol and thus also Regulation (EC) No. 850/2004 also list polynuclear aromatic hydrocarbons (PAHs) as unintentional by-products that have POPs properties.

Article 5 of the Stockholm Convention lists a series of measures that the Contracting Parties should take as a minimum to reduce the total releases of each of the chemicals listed in Annex C, with the goal "*of their continuing minimization and, where feasible, ultimate elimination*."

3.3.1 THE NATIONAL ACTION PLAN

An emissions inventory for unintentionally released POPs, i.e. for polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDDs/PCDFs), hexachlorobenzene (HCB) and polychlorinated biphenyls (PCBs) is currently being developed under the Stockholm Convention. The Federal Environment Agency is working with the German states to collate the necessary data in a research project "National Implementation Plan under the Stockholm Convention on Persistent Organic Pollutants (POPs)."

The basis for this data collection is:

In Germany limit values for PCDDs/PCDFs to be complied with are set under the Federal Immission Control Act and its secondary legislation. It should be noted that problems of comparability arise because this group of substances is quantified using different toxicity equivalents. These are defined in the Stockholm Convention using the World Health Organisation's (WHO) method, which includes PCBs as having an effect similar to dioxin. Under German and Community law this is not the case to date.

Requirements relating to small-scale combustion plants and to combustion of permissible fuels are specified under the First Ordinance implementing the Federal Immission Control Act.[25]

Practically all the relevant legal provisions that stipulate precautionary requirements for atmospheric emissions from industrial installations have recently been revised and thus reflect the state of the art as laid down in Ordinances and in the Technical Instructions on Air Quality Control (TA Luft) (Administrative Regulation). Implementation for existing installations is currently in progress in line with the transitional provisions prescribed by law. Similarly work to amend water legislation is also being carried out.

The emissions inventory is the basis of the National Action Plan and we will present it in an update to the National Implementation Plan.

3.3.2 EUROPEAN LEGISLATION

The EC Directive of 24 September 1996 Concerning Integrated Pollution Prevention and Control (IPPC Directive)[26] regulates the licensing of industrial installations that are particularly relevant to the environment on the basis of a cross-media concept. Under this approach, emissions to air, water and land, along with waste management aspects, issues of waste management, resource and energy efficiency and the prevention of accidents are addressed. A key element of the Directive is the requirement that the "***B**est **A**vailable **T**echniques"* (**BAT**) be used in all new installations and, from 2007 at the latest, also in all existing installations.

For those installations covered by the IPPC Directive, this means that the requirement to use the best available emission reduction techniques for chemicals listed in Annex C of the Convention has been fulfilled.

As a result of Commission Decision 2000/479/EC[27] based on Article 15 of the IPPC Directive, a Pollutant Emission Register (EPER)[g] was established at European level for large stationary sources. It includes obligations to report annual emissions of PCDDs/PCDFs (1g TEQ/a) and HCH (50 kg/a) in water, soil and air, although only above certain specified thresholds (in brackets). When the register is upgraded to become the Pollutant Release and Transfer Register (PRTR), it will also include PCBs (100 g/a).[h]

3.3.3 NATIONAL LEGISLATION

The centrepiece of national legislation is the Federal Immission Control Act (BImSchG)[28] 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 concerned with 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.

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g http://eper.de/ http://www.eper.cec.eu.int/

h Proposal for a Regulation of the European Parliament and of the Council concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC – COM(2004)634final

3.3.3.1 EMISSIONS TO AIR

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)[29] which stipulate limit values for maximum concentrations in atmospheric emissions from certain installations:

- **First Ordinance implementing the Federal Immission Control Act**

  In Germany, furnaces 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-Scale Combustion Plant. It does not stipulate limit values for Annex C substances. However, requirements concerning the quality of fuels, along with regular monitoring of emissions with a view to optimising combustion conditions, are designed to achieve a general reduction in the emission of pollutants. It can therefore be assumed that emissions of Annex C chemicals will be reduced to a feasible minimum.

- **Fourth Ordinance implementing the Federal Immission Control Act** [30]

  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 Ordinances or the Technical Instructions on Air Quality Control.

- **Thirteenth Ordinance implementing the Federal Immission Control Act**[31]

  This Ordinance regulating large combustion plant and gas turbines (13th BImSchV) sets the limit value for PCDDs/PCDFs at 0.1 ng TEQ/m³.

- **Seventeenth Ordinance implementing the Federal Immission Control Act**[32]

  This Ordinance 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/m³. Emission limit values for incinerators burning solid municipal waste are also 0.1 ng TEQ/m³.

- **Nineteenth Ordinance implementing the Federal Immission Control Act**[33]

  This regulation prohibits the use of chlorinated and brominated compounds as fuel additives.

- **Twenty-seventh Ordinance implementing the Federal Immission Control Act**[34]

  Article 4, in conjunction with Annex 2, specifies an emission limit value for PCDDs/PCDFs of 0.1 ng TEQ/m^3 for crematoria.

In general, the requirements of the "Technical Instructions on Air Quality Control"[35] 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/m³ 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 restricted under the general requirement to reduce emissions.

Any existing installations that do not yet 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, must as a rule be retrofitted by 30 October 2007.

On the basis of data on installations entered on the European Pollutant Emission Register (EPER), installations in the iron and steel industry are currently the principal emitters of PCDDs/PCDFs (see Figure 1). These installations must also modified by 2007 to comply with the new requirements of the Technical Instructions on Air Quality Control relating to use of the best available technology.

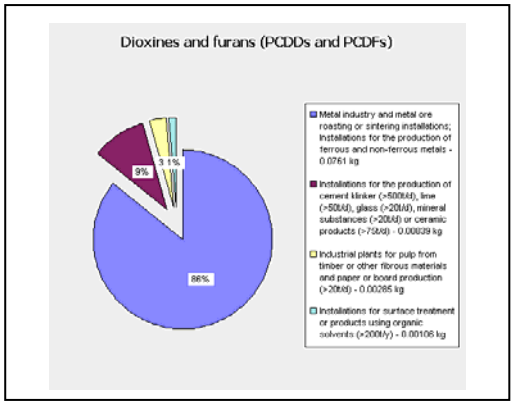

Figure 1 PCDD/PCDF emissions (air) from installations covered by the EPER (European Pollutant Emission Register) (2001), which, however, represent only a section of the relevant source categories.

Apart from the source categories named in Annex C of the Convention, the use of smoke munitions for training purposes by the military is, at least in Germany, a relevant source of POPs created unintentionally. While the formation of PCDDs/PCDFs was ascertained to be < 50 mg/a in 2003, the quantity of HCH released annually was almost 1,500 kg. The departments responsible within the Federal Ministry of Defence (BMVg) have developed an action plan for phasing out the use of smoke munitions which when fired cause PCDDs/ PCDFs and HCB to be formed (see also Chapter 4.4)

3.3.3.2 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. Work is currently in progress on corresponding amendments to water legislation is currently being revised.

Data on emissions of POPs (except PAHs) to surface water bodies from EPER installations were not reported in 2001.

3.4 MEASURES TO REDUCE OR ELIMINATE RELEASES FROM STOCKPILES AND WASTES (Article 6)

Article 6, paragraph 1 requires that *"stockpiles consisting of or containing chemicals listed either in Annex A or Annex B and wastes, including products and articles upon becoming wastes, consisting of, containing or contaminated with a chemical listed in Annex A, B or C, [be] managed in a manner protective of human health and the environment...."*

This obligation is to be implemented in particular by:

- Identifying stockpiles of POPs
- Identifying articles containing POPs
- Environmentally sound collection, storage, transport and ultimately disposal.

The central requirement is that the POP content of the wastes be destroyed or irreversibly transformed (Article 6, paragraph 1 (d ii)).

3.4.1 POPs STOCKPILES

Article 5 of Regulation (EC) 850/2004 stipulates that by 19 July 2005 (twelve months after the Regulation enters into force) Member States must report to the Commission stockpiles, consisting of or containing POPs (> 50 kg). No stockpiles of this kind were reported to the state agencies responsible, so that it is assumed that none exist (now) in Germany.

3.4.2 POPs WASTES

Currently in Germany, wastes that are known to consist of, contain or be contaminated with POPs and that exceed the lower concentration limits of 50 µg/kg for dioxins and 50 mg/kg for all other POPs, are disposed of as prescribed in Article 7, paragraphs 2 and 4b of the EC POPs Regulation. The regulations pertaining to waste requiring special supervision are also applicable.

It is expected that the provisions in the Annexes to Regulation (EC) No. 850/2004 for POPs wastes will be more far-reaching. They will regulate concentration limits and standards of efficiency of the destruction technology used. At the end of 2004, the Conference of the Parties to the Basel Convention adopted two technical guidelines – "General technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with persistent organic pollutants (POPs)" and "Technical guidelines for the environmentally sound management of wastes consisting of, containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs) or polybrominated biphenyls (PBBs)." Three more technical guidelines on specific POPs are scheduled to be adopted at the next Conference of the Parties to the Convention at the end of 2006.

3.4.3 POPs IN PRODUCTS AND ARTICLES

Article 6, paragraph 1 (a ii) of the Convention requires the Contracting Parties to develop strategies to identify products and articles in use that contain substances listed in Annexes A-C, in order to be able to dispose of them in an environmentally sound manner as soon as they become wastes. In particular, the POP contents must be "*destroyed or irreversibly transformed*."

Article 4, paragraph 1 of Regulation (EC) No. 850/2004 provides for exemptions from the general ban on manufacturing and using POPs *"whether on their own, in preparations or as constituents of articles"* (Article 3, paragraph 1) in the following cases:

1. Substances occurring as <u>unintentional</u> trace contaminants in substances, preparations and articles (paragraph 1 (b)),
2. Substances occurring as constituents of articles produced before or on the date of entry into force of this Regulation (until six months after the date of its entry into force) (paragraph 2, 1st sentence)

It remains to be clarified what should be understood by unintentional trace contaminants particularly in the case of materials destined for recovery. The concentrations must be kept as low as possible to ensure it is possible effectively to separate out the POP contaminants.

3.4.3.1 DDT IN ARTICLES

Cases of DDT contamination are to be expected in the former East Germany, in particular in timber structures in buildings, since products containing DDT[i] (*Hylotox 59*) were in widespread use indoors until 1989. In 1998, over 1,000 t/a (3.5 % DDT) of this product were still being produced.[36] The remediation target value for indoor spaces contaminated with DDT is 340 ng/m^3 air; the intervention value is 3,400 ng/m^3.

For recycling wood, the Waste Wood Ordinance[37] sets maximum levels for polychlorinated biphenyls (5 mg/kg) and pentachlorophenol (3 mg/kg), but does not set any corresponding limit value for DDT. When batches are sampled as prescribed under the Ordinance, it is assumed that other organochlorine compounds such as DDT will be included in the analysis alongside PCBs and PCP. Thus any wood that is identified as having been treated will be disposed of accordingly.

The ban on disposing of untreated biologically degradable wastes from households and commercial sources (Technical Instructions on Waste from Human Settlements) in landfills means that from 1 June 2005 the possibility of landfilling waste wood containing DDT is ruled out, as wood have to be treated before anyway.

3.4.4 PCB WASTES

Specific waste legislation already exists to regulate PCB wastes (cf. Chapter 3.4.2). Under this legislation, wastes with PCB levels in excess of 50 mg/kg – or in particular cases, such as remediation of contaminated sites or old buildings even at levels < 50 mg/kg - are classed as hazardous waste and must be disposed of using processes authorised for that purpose.

Disposal of insulating fluids containing PCBs takes place as a rule in incinerators licensed for that purpose; contaminated materials such as building rubble containing PCBs is also permanently stored in salt rock in underground landfills. The situation in Germany today is described below.

3.4.4.1 PCBS STILL IN USE IN LARGE CLOSED EQUIPMENT

Disposal of transformers containing PCBs in underground landfills began in 1983, since at the time there were no suitable pre-treatment processes available. Today, transformers containing PCBs are drained in authorised installations, decontaminated and the metals are usually recovered. Only in exceptional cases are transformers that have been pre-treated in this way deposited in an underground landfill. To date approximately 62,000 tonnes of transformers contaminated by PCBs have been deposited in landfills[j]. Due to the sharp rise in prices for secondary metals the possibility of retrieving the landfilled transformers is now being considered. At national level, disposal of PCBs from this type of use is almost complete. The Environment Ministry issued the following press release to that effect on 16 June 2004:

"Five states have already registered complete disposal. In two states, a total of six pieces of equipment are still in use with exemption permits. Only a few pieces of equipment and small amounts of liquids containing PCBs remain to be disposed of. The environmentally sound disposal of this remaining amount is guaranteed, since capacities far exceed the remaining volumes. Around 10 years ago more than 300,000 tonnes of equipment and liquids containing PCBs required disposal. More than 99% of this volume has already been disposed of. By the target year of 2010, only two transformers will still need to be disposed of."[38]

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[i] Technical DDT with approx. 70 % pp´-DDT, 20 % o,p-DDT, as well as p,p-DDE, p,p´-DDD and o,p´-DDD

[j] The transformers are drained before being landfilled. The tonnage cited therefore refers not to the PCBs, but to the drained transformers that have residual PCB contamination

Germany will thus not need the full time allowance provided for under the Stockholm Convention.

3.4.4.2 PCBs STILL IN USE IN SMALL CLOSED EQUIPMENT

For technical reasons, small capacitors are not drained before being deposited in underground landfills. In 2004 approx. 1,650 tonnes of small capacitors were disposed of in underground landfills and the quantity in 2005 will be of a similar order. About half the wastes originate abroad. In future, disposal in underground landfills will no longer be practiced.

The states give information about possibilities for environmentally sound disposal (Hamburg, for example[k]).

3.4.4.3 WASTE WOOD CONTAINING PCBs

In the past, particularly heat and sound insulation boards were treated with products containing PCBs.

Waste wood may only be used to produce chipboard or particleboard if concentrations of PCBs are less than 5 mg/kg (Annex II of the Waste Wood Ordinance). For contamination levels between 5 and 50 mg/kg the Waste Wood Ordinance allows the wood to be used to produce synthesis gas or carbon/industrial charcoal. If PCB levels are higher than 50 mg/kg, waste wood has to be disposed of in accordance with the stipulations of the PCB/PCT Waste Ordinance.

3.4.4.4 USED OIL CONTAINING PCBs

Processing of used oil containing more than 20 ppm of PCBs/PCT was already prohibited under Article 3 paragraph 1 of the Waste Oil Ordinance.[39] Regulation (EC) No. 850/2004 now permits reconditioning of oil containing PCBs only if they are present as an unintentional trace contaminant.

3.4.4.5 PCBs STILL IN USE IN "OPEN" SYSTEMS

Due to their broad use spectrum, PCBs are still found in a number of different articles. Waste legislation for these diffuse sources is designed to ensure that in cases where relevant concentrations (50 mg/kg) are exceeded, that as soon as they become wastes these products (electrical cable insulation, building materials contaminated with PCBs, etc.) are separated out and disposed of as hazardous waste. Material from electrical cable insulation or building materials contaminated with PCBs may only be recovered for use in the production of new articles if the PCB level is less than 50 ppm and if it can be guaranteed that PCBs will only be present in the new articles as “unintentional trace contaminants.”

Several agencies at *Länder* level have developed guidelines for remediation of buildings contaminated with PCBs.[40]

As a short to medium-term measure as part of the strategy to restrict the occurrence of PCDDs/PCDFs and PCBs in the environment, the Commission of the European Communities intends to identify other sources of dioxins and PCBs.[41]

[k] http://fhh.hamburg.de/stadt/Aktuell/behoerden/stadtentwicklung-umwelt/umwelt/betriebe/service/merkblatt-pcb-pdf,property=source.pdf

3.4.5 CONTAMINATED SITE/HARMFUL SOIL CONTAMINANTS

Article 6, paragraph 1 (e) obliges the Contracting Parties to "*Endeavour to develop appropriate strategies for identifying sites contaminated by chemicals listed in Annex A, B or C; if remediation of those sites is undertaken it shall be performed in an environmentally sound manner*."

In Germany, the Federal Soil Protection Act (BBodSchG)[42] provides for measures to protect or restore soil functions. The Federal Soil Protection and Contaminated Sites Ordinance (BBodSchV)[43] translates the spirit of the Act into specific requirements relating to soil protection and remediation of contaminated sites, thus ensuring that the Act is implemented in a uniform way throughout Germany. It also prescribes values for pollutant levels (action, trigger and precautionary values) and requirements to initiate investigations.

In cases where remediation is necessary, both decontamination and safeguarding measures and other measures (such as protective and restricting measures) may also be used. The Soil Protection Act gives the states the power to pass supplementary procedural regulations.

The states use regional regulations to flesh out the Federal Soil Protection Act.

The states keep registers of contaminated sites in their area of jurisdiction covering > 90% of such sites. As a rule they give information about all previous uses of the sites, the type of technology used and contamination typical of the industry in question.

It is only possible to establish to what extent POPs were handled or deposited at these sites by using secondary information such as industry catalogues and waste codes. They can make it possible to identify technological hot spots, details about products used and any relevant deposits possibly also acquire quantitative dimensions.

CONCLUSION: **The obligations pursuant to Article 6 of the Convention have been fully implemented in Germany.**

3.5 PUBLIC INFORMATION, AWARENESS, EDUCATION (Article 10)

Different actors are currently involved in providing information and education about topics connected with POPs.

To complement the information provided by the Secretariat for the Convention, the Federal Environment Agency provides information to the public through the print media, press releases or the Internet[l] about what national activities are being undertaken or planned to fulfil the obligations of the Convention.

There are plans to create a central portal at federal level where information from the states will be pooled and made accessible to the public.

In addition, individual agencies provide information on data specific to the individual state, such as the state of North Rhine-Westphalia, which has a website publishing data from its emissions register to inform the public about emissions.[m]

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l http://www.umweltbundesamt.de/uba-info-daten/daten/pops.htm

m http://www.gis.nrw.de/ims/ekatsmall/smallclient.htm

3.6 RESEARCH, DEVELOPMENT AND MONITORING (Article 11)

Article 11 of the Stockholm Convention requires the Contracting Parties to encourage and/or undertake, within their capabilities, at national and international level, appropriate research, development, and monitoring pertaining to

- Persistent organic pollutants,
- Where relevant their alternatives, and
- Candidate persistent organic pollutants

As well as sources and releases to the environment (paragraph 1 (a)), this also applies to the presence, concentrations and trends in concentrations in humans and the environment (paragraph 1 (b) and effects on human health (paragraph 1 (d)).

3.6.1 RESEARCH

3.6.1.1 ENVIRONMENTAL SPECIMEN BANK

Since the beginning of the 1980s, the Federal Environment Agency has operated the Environmental Specimen Bank (ESB) under the authority of the BMU. With its collection and long-term storage of defined environmental and human samples, this instrument aims to understand the behaviour and fate of chemicals, particularly persistent chemicals, in the environment and to record levels of these substances in human beings. [http://www.umweltprobenbank.de]

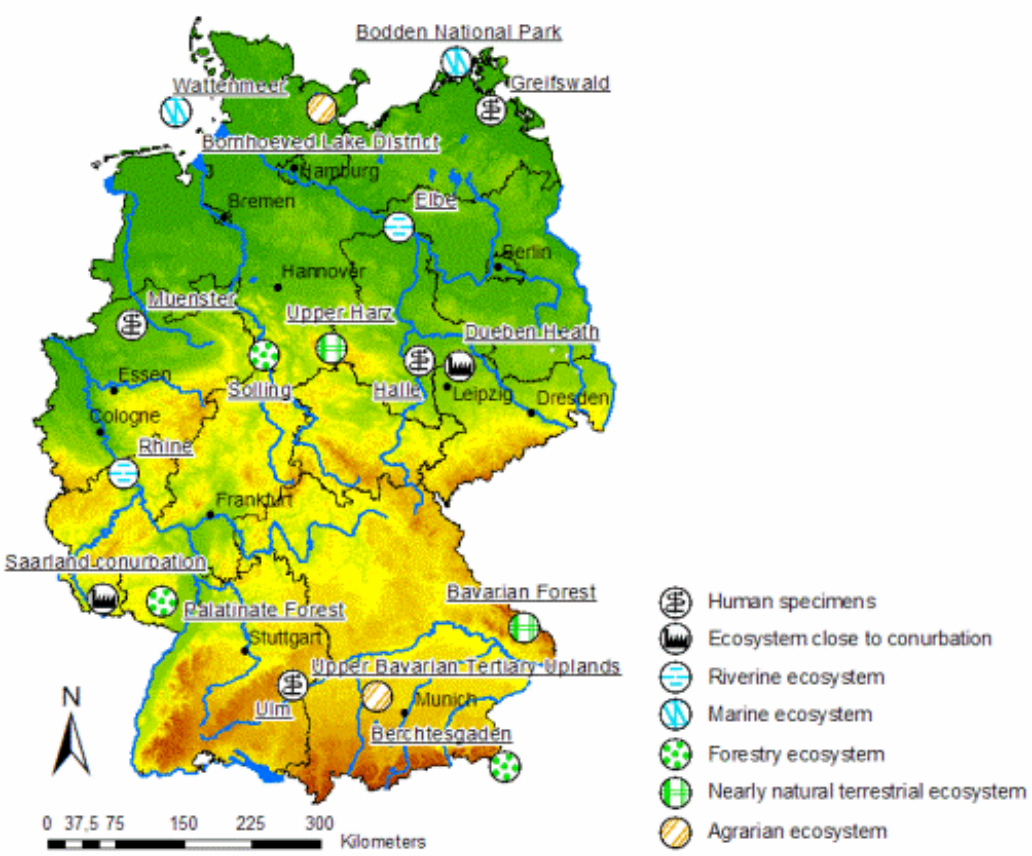

Figure 2 Sampling areas of the Environmental Specimen Bank

The ESB's monitoring programme regularly analyses six of the twelve POPs identified under the Stockholm Convention (aldrin, dieldrin, heptachlor, HCB, PCBs, DDT), as well as chlorinated hydrocarbons (HCH, OCS, PCP, pentachlorobenzene) and polycyclic aromatic hydrocarbons (17 individual PAHs). Archived material has also been retrospectively examined for the presence of dioxins/furans/dioxin-like PCBs, POPs candidates (including organotin compounds, polybrominated diphenyl ethers, perfluorinated organic compounds).

Of the POPs listed under the Stockholm Convention that have been examined, the following - in descending order – are relevant in Germany: PCBs, DDT, dioxins and HCB.

Heptachlor and its breakdown product trans-heptachlor epoxide are no longer detectable in the environmental samples taken from terrestrial fresh water and marine ecosystems, whereas analyses are still showing cis-heptachlor epoxide in low concentrations in higher trophic levels of aquatic biota.

Since the studies began, aldrin has not been detected in any of the environmental samples. Dieldrin, which is both a breakdown product of aldrin and was also directly used as a pesticide, can now be detected in terrestrial and fresh water ecosystems in isolated cases only. In marine ecosystems, dieldrin concentrations have stagnated at a very low level.

Even 15 years after German unification, the measuring results of the Environmental Specimen Bank still reflect the original difference in the emissions situation in former West and East Germany. In the West PCBs are the predominant group in all the types of ecosystem sampled, forming in terms of quantity the largest group of all chlorinated hydrocarbons, while in the environmental samples taken from former East Germany, the CHC spectrum of the DDT metabolites DDD and DDE are top of the list.

Retrospective examinations of archived specimens show that the blood samples taken at the beginning of the 1980s from young subjects who were not exposed to any specific pollution had much higher concentrations of POPs than current specimens. Between 1977 and 1999 levels of HCB in the blood dropped by 98%, levels of p,p'-DDE by 95%, levels of β-HCH by 94%, levels of PCBs (sum of the three congeners B138, B153 and B180) by 87% and of dioxins/furans by 77%.

Fundamentally different trends in levels over time emerged for potential POPs candidates such as polybrominated diphenyl ethers (PBDE) and perfluorinated organic compounds (PFOS and PFOA): an approx. 40% rise in PBDE concentrations (sum of 8 congeners) in archived human blood between 1985 and 1999 and relatively constant PFOS and PFOA concentrations between 1990 and 2001.

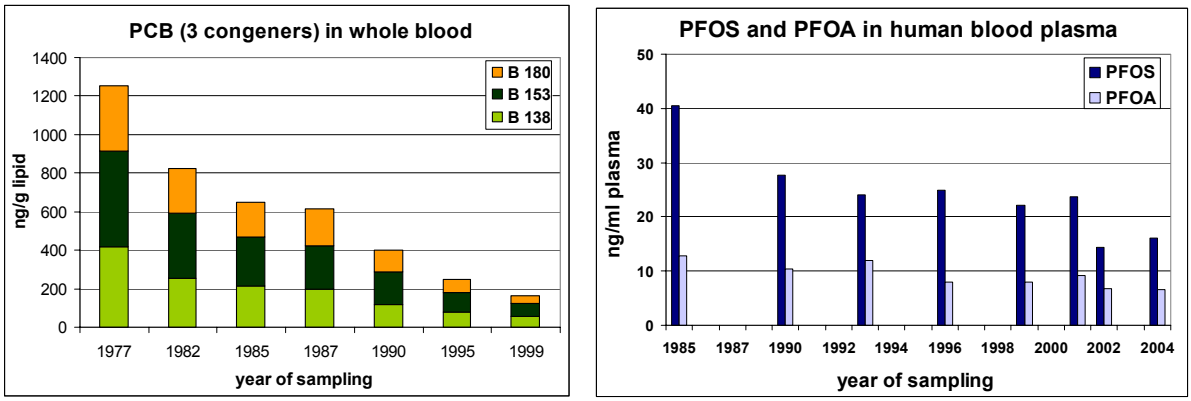

Figure 3 Studies of PCBs in human blood (1977 – 1999) and perfluorooctane sulfonate (PFOS) and perfluorooctanate (PFOA) in blood plasma (1985 – 2004). The figure presents ng/g fat during the years of sampling

The levels of regulated POPs in the atmosphere – revealed by analyses of conifer shoots carried out by the Environmental Specimen Bank – have dropped significantly in the last two decades. In urban sampling areas, concentrations of dioxins/furans and PCBs dropped by approx. 75% between 1985 and 1997. However, between 1997 and 2004 concentrations remained unchanged.

Aquatic samples at ESB do not show a similar continual and significant reduction in POPs. The eggs of herring gulls, which breed on islands in the Wadden Sea and in the West Pomeranian Boddenlandschaft, are still extremely contaminated with PCBs, DDT and dioxins/furans. In the observation period between 1988 and 2004, highly fluctuating concentrations were sometimes found, which do not permit secure statements to be made about trends in pollution levels over time.

It is in rivers that levels of POPs are critical. For example, since the mid-1990s, fish from the Rhine have been found to have constantly rising levels of PCBs and HCB. Similarly, dioxin/furan levels in fish showed a constant and significant decrease at very few sampling locations; almost all the samples here exceed the limit value proposed by the EU for dioxins/furans/dioxin-like PCBs.

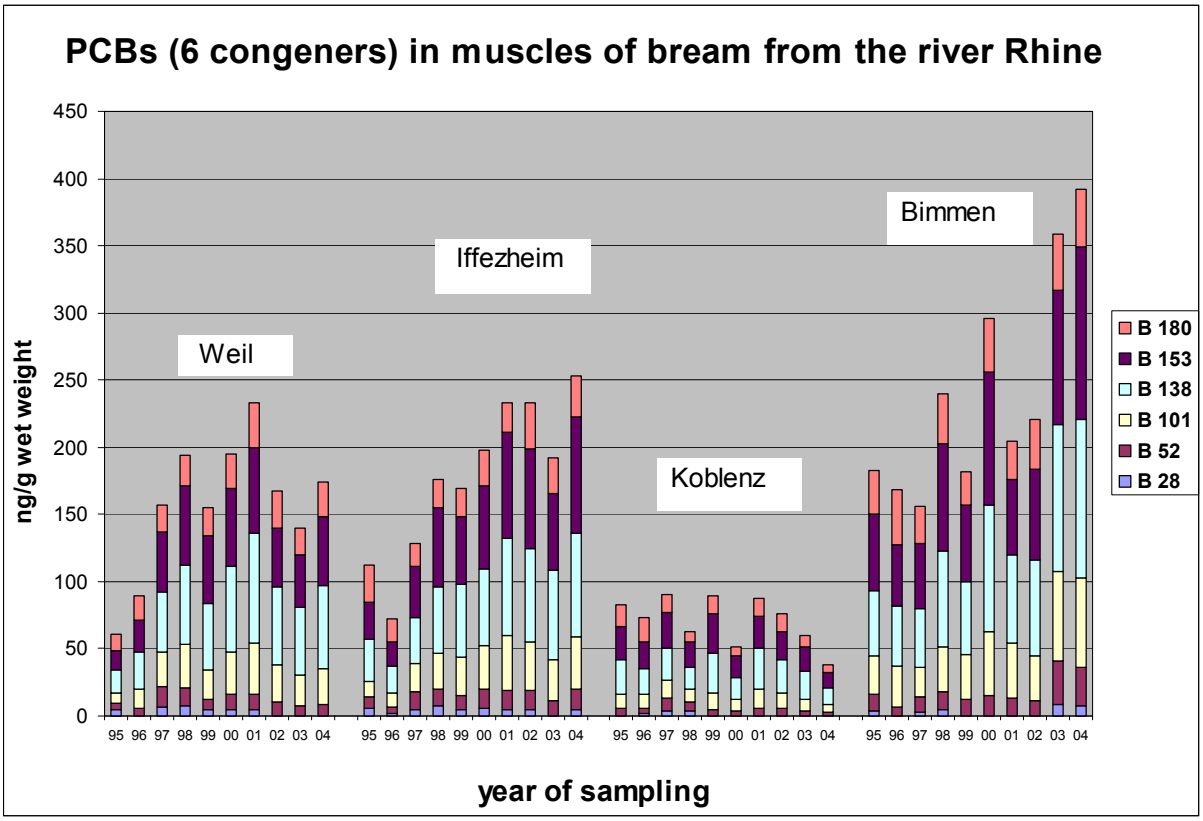

Figure 4 Investigations of PCB concentrations in the muscles of bream taken from four sampling sites in the Rhine between 1995 and 2004.

3.6.1.2 PROGRAMMES OF STUDIES AT *LÄNDER LEVEL*

As part of their implementation activities, agencies of the individual states of the Federal Republic of Germany also carry out programmes of studies that are useful in observing the state of the environment. There are numerous examples of these, not all of them fully known at central government level, yet they represent a well-developed nationwide level of know-how. The results of the programmes of studies are used as the basis for designing and organising regional measures.

Examples of this are research projects on POPs undertaken by the Bavarian Health and Food Safety Authority on:

- *Analysis of food duplicate and human blood samples for indicator and dioxin-like PCBs*.

  The aim is to estimate the external exposure of the Bavarian population through food and to estimate internal levels, focusing particularly on children.

- *Analysis of breast milk samples for indicator and dioxin-like PCBs* (and PCDDs/PCDFs not on the POPs lists).

  The aim is to continue to track indicator PCBs and extend the study to dioxin-like PCBs.

Since 1992/93, as part of a project run by the departments of public health involved in a sentinel surveillance scheme, the state of Baden-Württemberg has been conducting regular investigations of pooled blood samples of year-4 schoolchildren to ascertain PCDD/PCDF concentrations. These investigations were expanded in 1998/99 to include tests to ascertain levels of coplanar PCBs.

As part of its environmental research programme, the state of Baden-Württemberg has funded about 100 research and development projects in the field of POPs since the beginning of the

1980s. The studies are concerned with recording and characterising the input, the behaviour of POPs, including their effects in environmental media and organisms, and with the options for remediation of contamination that has occurred and reduction at source in the technical field. Internet access to findings since the 1990s is available at www.bwplus.fzk.de and www.xfaweb.baden-württemberg.de/fofaweb.

3.6.1.3 IDENTIFICATION OF SUBSTANCES WITH POPS PROPERTIES

Existing methods for prospective estimation of the potential of semi-volatile organic compounds for long-range transport still entail a high degree of uncertainty. One important research activity is therefore the development of instruments for identifying substances that have the properties defined in Annex D of the Stockholm Convention and analysing whether they have POP properties.

For this purpose, funds from the research budget of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety were used to finance the development and evaluation of mathematical models for the prognosis of long-range airborne transport of substances[n] and the development of methods for experimentally ascertaining the photodegradation of semi-volatile organic compounds in the atmosphere.[o]

3.6.1.4 HUMAN HEALTH

The Federal Environment Agency coordinates the German contribution to the global *"Fourth WHO-coordinated survey of human milk for persistent organic pollutants."*[p] Building on measurements of concentrations of PCDDs/PCDFs and PCBs in breast milk samples collected during surveys carried out from 1987 to 2003, a further campaign is to be launched to acquire the data needed to predict trends over time for these substances. The samples needed will be collected by the University Clinic in Münster. The findings will also make a contribution to the evaluation of the effectiveness of the Stockholm Convention required by Article 16 of Convention to be carried out for the first time in 2008.

Unlike previous surveys, this programme of studies, commissioned by GEMS/Food, will not be confined to PCDDs/PCDFs and PCBs exclusively, but will be expanded to take in all the substances listed in the Annexes to the Stockholm Convention. There is also the option to measure PBDE.

3.6.1.5 ENVIRONMENT

The Federal Environment Agency (department II 5.5) and agencies at *Länder* level in Germany (Bavarian Ministry for the Environment, Public Health and Consumer Protection) are participating with analytic services in the *Monitoring Network in the Alpine Region for*

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[n] A. Beyer, M. Mathies:
Criteria for atmospheric long-range transport potential and persistence of pesticides and industrial chemicals, UBA Research Report 299 65 402, July 2001

OECD/UNEP Workshop on Application of Multimedia Models in Assessing Chemicals for Persistence and Potential for Long Range Transport, held in Zurich on 30-31 August 2005

[o] E. Ruehl
Aufbau eines Messverfahrens zum photo-oxidativen Abbau von semivolatilen Pflanzenschutzmitteln und POPs an levatierten Einzelpartikeln, UBA Research Report 200 67 406/02, August 2002

C. Zetzsch et al.
Entwicklung eines Persistenz-Meßverfahrens für troposphärischen Abbau von mittelflüchtigen Pflanzenschutzmitteln durch OH-Radikale, UBA Research Report 201 67 424/02, February 2005

[p] http://www.who.int/foodsafety/chem/pops/en/

Persistent Organic Pollutants (MONARPOP)[q], a joint project being conducted by Austria, Switzerland, Italy and Germany to determine the presence of POPs and substances with POP-like properties in Alpine ecosystems.

The Bavarian Ministry for the Environment, Public Health and Consumer Protection also finances studies on the deposition of persistent organic pollutants in the mountain range along the border between Bavaria and South Bohemia.

3.6.2 MONITORING

Germany has no specific measuring programmes to carry out systematic time-based and geographical monitoring of substances listed in the Stockholm Convention.

However, environmental concentrations of a number of POPs are determined in the context of obligations arising from other legislation.

3.6.2.1 ATMOSPHERE

The Federal Environment Agency and *Länder* agencies operate an air quality monitoring network to study air pollutants that have been transported a great distance to areas of Germany that are relatively unpolluted. Part of this monitoring network's remit is to identify selected POPs at two coastal stations and one inland station as part of the German contribution to EMEP and to the HELCOM and OSPARCOM marine protection programmes.

Phase	**Zingst** **54°26'19" N** **12°43'25" O** **1 m NN**	**Westerland** **54°55'36 N** **08°18'33 O** **12 m NN**	**Schauinsland** **47°54'51" N** **47°54'51" O** **1205 NN**	**Kehl** **38°34'60" N** **07°49'0"** **139 NN**
In precipitation	From 1995: monthly samples	From 1996: monthly samples	Planned from 2006: monthly samples	1999-2004: monthly samples
Gaseous and particle-bound	Planned from 2006: monthly samples	Planned from 2006: monthly samples	Planned from 2006: monthly samples	

Table 4 Measuring stations in UBA's air quality monitoring network

The following chemicals were found in precipitation:

PAHs		**DDT and its metabolites**	**Other chlorinated pesticides**	**PCBs**
Phenanthrene	Benzo(a)pyrene	o,p'-DDT	Aldrin	PCB 28
Anthracene	Benzo(b)fluoranthene	p,p'-DDT	Dieldrin	PCB 52
Fluoranthene	Benzo(k)fluoranthene	o,p'-DDE	Endrin	PCB 101
Pyrene	Dibenz(a,h)anthracene	p,p'-DDE	a-HCH	PCB 118
Benzo(a)anthracene	Benzo(ghi)perylene	o,p'-DDD	g-HCH	PCB 138
Chrysene	Indeno(1,2,3-cd)pyrene	p,p'-DDD	Heptachlor	PCB 153
			HCB	PCB 180

Table 5 POPs recorded in UBA's air quality monitoring network

[q] http://www.monarpop.at/

3.6.2.2 WATER BODIES

All large surface water bodies are tested for pollutants – including POPs. Tests are carried out in the water and/or particulate phase. Some monitoring programmes are accompanied by bio-monitoring programmes (accumulation monitoring on fish and bivalves, effect monitoring using biomarkers). The monitoring programmes are constantly updated and focus increasingly on the substances named in the Water Framework Directive (substances that describe the ecological and chemical status of the water bodies). Of the chemicals listed in the Stockholm Convention or the POPs Protocol, the list of priority substances (Annex X to WFD/chemical status) names HCB and PAHs. In terms of chemicals with POP-like properties, the list includes PBDE, SCCP, PCP, HCH and hexachlorobutadiene. POPs and POP-like substances such as PCBs, aldrin and endrin must be taken into consideration in evaluating the ecological status.

At present tests for certain pollutants are carried out as required by Directive 76/464/EEC. Furthermore, specific substances are tested as part of measuring obligations prescribed by international river basin commissions (e.g. IKSD, IKSE, IKSO and ICPR). The substances are selected by committees made up of representatives of the bordering states and the findings published. The measuring programmes are constantly updated and focus increasingly on the priority substances under the Water Framework Directive.

The 2005 measuring programme of the International Commission for the Protection of the Elbe (IKSE),[r] for example measures HCB, HCH (alpha, beta, gamma isomers), DDT/DDE/DDD, PCBs and PAK at different sampling locations in the Elbe.

Measurements of pollutant levels are also carried out for the Rhine (ICPR)[s] and separate analyses are made for the particulate phase and aqueous phase.

3.6.2.2.1 Riverine systems

Concentrations of pollutants in surface water bodies – including a number of substances of the Stockholm Convention – are measured in Germany in the context of various obligations and monitoring programmes and are available to the public on the Internet [http://www.umweltbundesamt.de/hid/index.htm].

In future, data will have to be provided for substances listed in Annex X of the EU's Water Framework Directive (WFD).[44] That currently includes:[45]

Substance	CAS number	Status
Brominated diphenyl ethers		Candidate under the Convention POPs under the Protocol (PentaBDPE)
C_{10}-C_{13} Chloroalkane	287-476-5	Candidate under the Protocol (SCCP)
Hexachlorobenzene	204-273-9	POPs under the Convention POPs under the Protocol
Hexachlorobutadiene	201-765-5	Candidate under the Protocol
Hexachlorocyclohexane	210-158-9	Candidate under the Convention POPs under the Protocol
PAHs - Benzo(a)pyrene	200-028-5	POPs under the Protocol

[r] http://www.ikse.de/
[s] http://www.iksr.org/

- Benzo(b)fluoranthene - Benzo(ghi)perylene - Benzo(k)fluoranthene - Indeno[1,2,3-cd]pyrene	205-911-9 205-883-8 205-916-6 205-893-2	

Table 6 Priority substances under Annex X of the Water Framework Directive

3.6.2.2.2 Marine and coastal waters

The Marine Environmental Data Base (MUDAB)[46] is a joint project run by the Federal Maritime and Hydrographic Agency (BSH) in Hamburg and the Federal Environment Agency. The database is installed in the DOD (German Oceanographic Data Centre). It is the central database in the monitoring programme for the marine environment of the North Sea and Baltic jointly run by the federal and state governments (BLMP).[47] The members of the BLMP working group are

- The Federal Ministry of Food, Agriculture and Consumer Protection,
- The Federal Ministry of Transport, Building and Urban Affairs,
- The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety,
- The Federal Ministry of Education and Research,
- Hamburg's Department of the Environment,
- Mecklenburg-West Pomerania's Environment Ministry
- Lower Saxony's Environment Ministry,
- Schleswig-Holstein's Ministry for the Environment, Nature and Forests.

Technical agencies and institutions, currently conducting studies im BLMP

- Federal Research Centre for Fisheries (BFA-Fi),
- The Federal Maritime and Hydrographic Agency(BSH),
- The Federal Institute of Hydrology (BfG),
- The Federal Environment Agency,
- The Federal Agency for Nature Conservation (BfN),
- The Biological Institute on Helgoland (BAH) at the Alfred Wegener Institute,,
- Mecklenburg-West Pomerania's Office of the Environment, Nature Protection and Geology (LUNG),
- Mecklenburg-West Pomerania's Agriculture and Forestry Research Institute (LFA),
- Lower Saxony's Department of Water Management, Coastal and Nature Protection (NLWKN),
- Schleswig-Holstein's Office of Nature and the Environment (LANU),
- Warnemünde Institute for Research on the Baltic at the University of Rostock (IOW).

As part of the BMLP's extensive monitoring programmes, organic trace substances in the water, sediment and biota of the North Sea[48] and Baltic[49] are studied. HCH (sometimes as individual isomers) HCB, PCBs and DDT were found in the spectrum of the POPs studied in the water. The same substances are also monitored in the sediment in the North Sea. In isolated cases, tests for POPs candidates such as chlorinated naphthalene or endosulfan are also carried out.

It is currently under discussion, however, whether the portfolio of substances studied in future monitoring work should be compared with the priority substances of the Water Framework Directive.

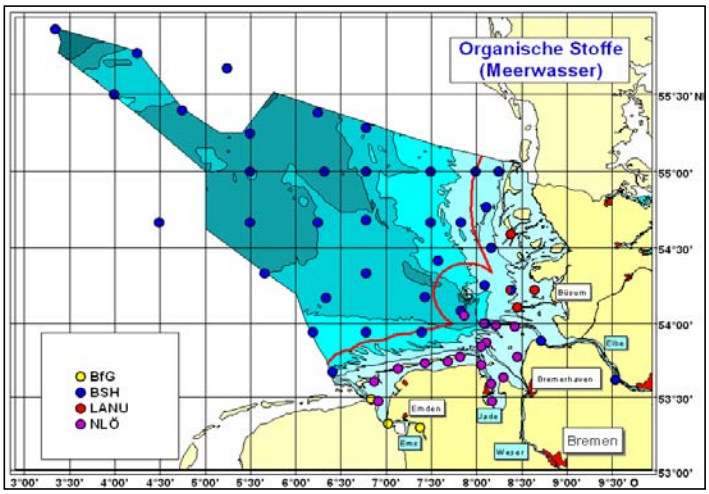

Figure 5 BLMP sampling locations in the North Sea of organic substances in sea water

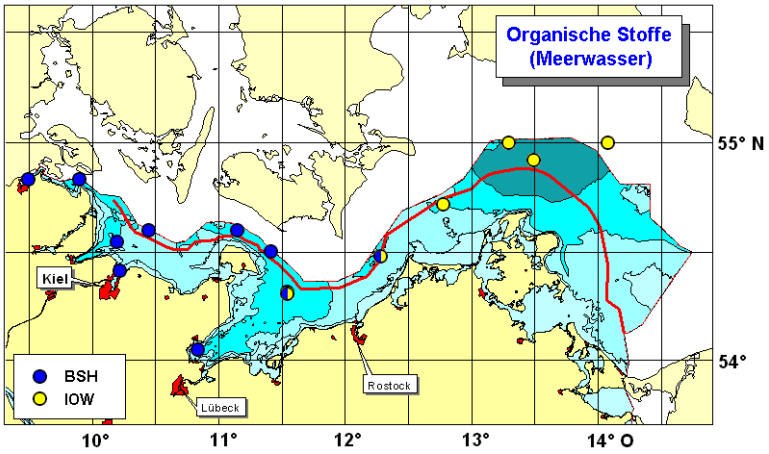

Figure 6 BLMP sampling locations in the Baltic of Organic substances in sea water

The BLMP works with other national and international institutions and programmes, such as the river monitoring programmes

- ARGE Elbe,
- ARGE Weser,
- Trilateral Wadden Sea monitoring and assessment programme (TMAP) based in Tönning and Wilhelmshaven

Germany has no specific monitoring programmes for persistent organic pollutants. As a rule, the substances studied as part of environmental monitoring activities follow the stipulations of European legislation (priority substances under the WFD) or other international monitoring programmes (HELCOM, OSPAR).

The substances monitored in the programmes also include individual substances listed in the Annexes to the Stockholm Convention and/or the CLRTAP's POPs Protocol.

3.6.2.3 SOIL

As part of an agreement between the federal government and the states, a concept has been developed for a collaborative project between environmental and forestry departments to

survey background levels of POPs in forest soils. A soil status survey for forests is being conducted.

Long-term soil observation sites, at which POPs and other soil contaminants are sampled, have been set up in all the German states. The aim is to use these monitoring sites to identify any long-term changes in the soil, evaluate cause and effect and make prognoses. Pollution by anthropogenic substances and their accumulation is a major source of changes to the materials in the soil. However, POPs have not been systematically included in the studies in all the German states. The sampling intensity and cycles also vary. The different states are also investigating and ascertaining background levels of POPs with differing degrees of intensity as part of the soil status survey.

The state of Saxony-Anhalt can be cited as an example, with 63 monitoring sitesas of 1 January 2004 and 69 monitoring sites as of 1 January 2005. Thus the state has finished setting up the long-term soil observation sites and established a balanced programme for observing soil. An extensive study is carried out when the sites are first set up; it is then repeated when triggered by a particular event (e.g. flooding) or, under normal circumstances, after five years.

A paper that has been agreed in LABO (SAG paper) on the parameters for studies of long-term soil observation sites contains mandatory and optional parameters. The technical agencies at *Land* level that are involved in the soil observation system have decided that only the mandatory parameters will be studied in Saxony-Anhalt, with the addition of dioxins (optional parameter).

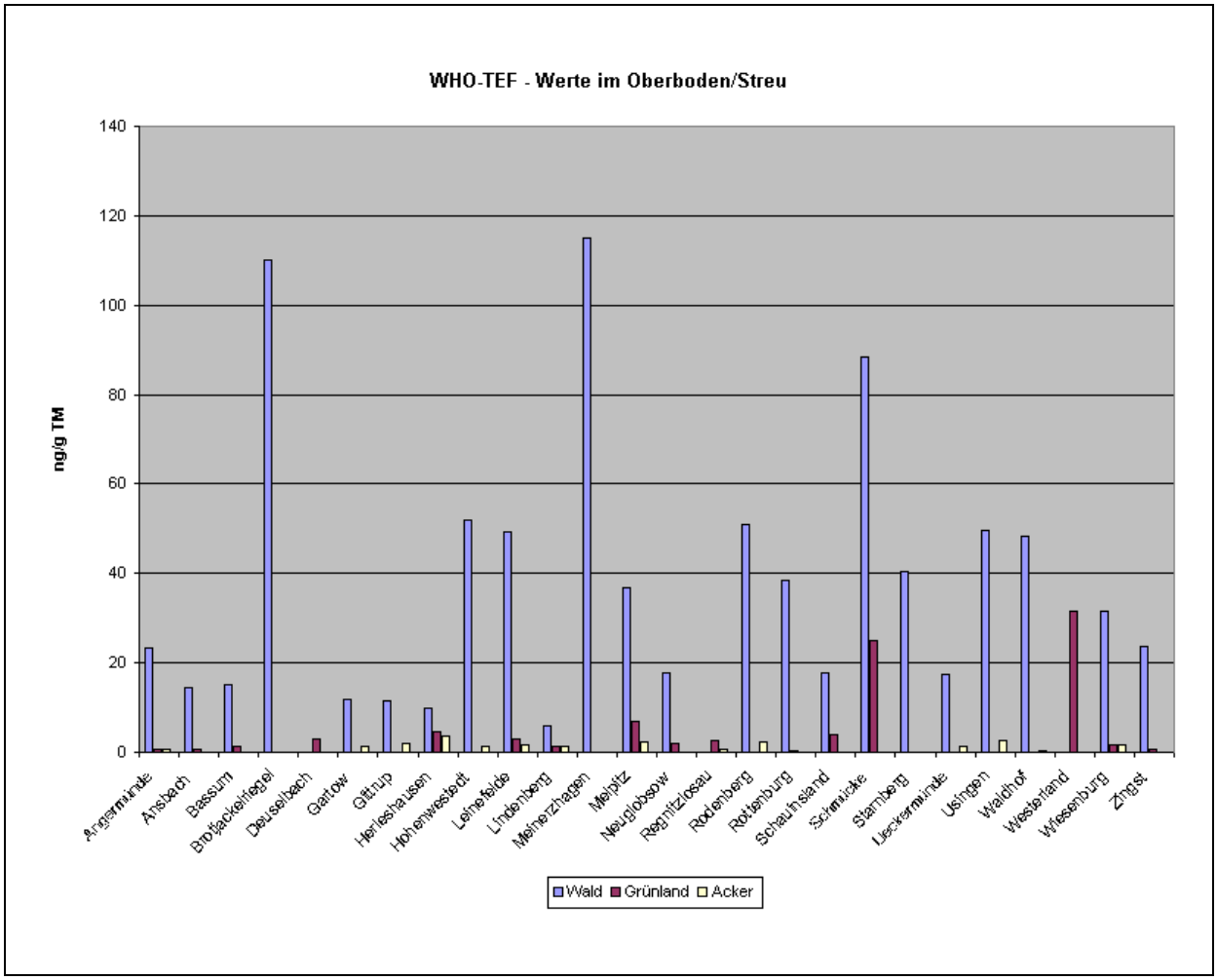

Figure 7 PCDD/PCDF levels in topsoil at the measuring stations in UBA's pollution control network (WHO TEF – values in top soil/litter layer)

(Only the most contaminated horizon of each concentration profile is shown; translation: Wald = Forest, Grünland = Grassland, Acker = Arable land)

3.6.2.4 SEWAGE SLUDGE

Under Article 3, paragraph 6 of the Sewage Sludge Ordinance (AbfKlärV),[50] sewage sludge may only be deposited or applied on land used agriculturally or horticulturally if samples of the sewage sludge are tested for PCB and PCDD/PCDF levels before the sludge is applied for the first time and then at maximum intervals of two years.

Under Article 4, paragraph 10 of the Sewage Sludge Ordinance, sewage sludge may not be applied to land if levels exceed at least one of the following values:

- PCBs: (28, 52, 101, 138, 153,180) 0.2 mg/kg each
- PCDDs/PCDFs: 100 ng TEQ/kg

In 2004, 2.1 million tonnes (TS) of sewage sludge were produced in Germany, of which about 32 % (0.67 million tonnes) were recycled. Table 7 lists the average levels of selected PCB components and the annual accumulated quantities. It is assumed that there was no input to the environment from sludges that were landfilled or incinerated.

	PCB 28	PCB 52	PCB 101	PCB 138	PCB 153	PCB 180
ø µg/kg TS	6.9	8.4	17.7	17.6	18.6	12.8
kg/a	4.43	4.84	11.37	11.39	12.02	8.28

Table 7 Average PCB levels of sewage sludge recycled in Germany in 2004 and input to the environment as a result of its application to agricultural land (Source: UBA)

Average PCDD/PCDF levels were estimated to be 8.35 ng/kg TS and annual inputs to soil from sewage sludge at 5.367 mg TEQ/kg.

PCDD/PCDF and PCB levels in sewage sludge have remained constant in recent years. Thus no significant reduction potential can be identified. The only way to reduce the input of PCDDs/PCDFs and PCBs to the environment from sewage sludge would be to treat the sludge thermally. In some states, the use of sewage sludge on soil is already declining. Baden-Württemberg, for example, was able to increase the proportion of sewage sludge undergoing thermal treatment by 33 % to 68 % within 3 years.

3.6.3 DIOXIN DATABASE AT FEDERAL AND STATE LEVEL

The federal and *Länder* authorities in Germany carry out a number of different monitoring programmes to assess the levels of organochlorine compounds in the environment – including humans. These programmes have different objectives and different framework conditions. In 1991, a Joint Working Group on Dioxins with representatives from federal and state authorities was established as a result of a decision by the 37th Conference of the Environment Ministers. Its remit was to improve the central documentation and evaluation of findings from programmes of studies initiated by federal and state authorities. This was achieved by setting up a centralised database system at the Federal Environment Agency, with the participation of what was then the Federal Institute for Consumer Health Protection and Veterinary Medicine (today, the Federal Institute for Risk Assessment).

The Dioxin Database's remit is to acquire and collate measuring data acquired in Germany on the relevant compounds and to analyse the data pool in terms of levels of pollution in different environmental compartments, statements about trends – both geographical and over time, statements on movement between compartments etc. This evaluation can ultimately be used

as the basis for proposals on how to derive limit and guide values, to ascertain the need for further data and to fulfil national and international obligations in terms of documenting the status of the environment.

The Dioxin Database operated jointly by the central and *Länder* authorities is a positive example of federal/state-level collaboration. It is a cross-media instrument in which data collected in Germany from the environment and from food and human data are documented along with the metadata needed to evaluate them.

In order to be able to interpret the data from these heterogeneous monitoring programmes and see them in relationship, it is necessary not just to store the actual measured values but also to record extensive contextual information such as sampling location, sampling method, analysis method, lab data etc. By capturing raw data along with additional information, flexible calculations can be performed on the data and it can be compared with other data collected or calculated using different methods (e.g. different number and/or weighting of congeners).

The database currently contains exposure data from about 220 compartment-specific monitoring programmes comprising over 12,000 individual samples for the various environmental compartments - soil, water, air, biota (plant, animal) – for waste, recoverables, final residual materials, preparations and articles, house dust and dust from attics, for food and animal feed and human samples (tissue, body fluids). It also contains comprehensive information on sampling, analysis methods and descriptions of sampling locations.

The federal and *Länder* authorities are jointly responsible for maintenance of the datasets. The exchange of data is based on an administrative agreement between the central government and the states on exchange of data on the environment, in the version of March 1996, including Annex II.3, entitled: “Exchange of data on polyhalogenated dibenzo-p-dioxins and dibenzofurans and organochlorine substances.”

In order to simplify the exchange of data and ensure that the agencies supplying the data have easy and guaranteed access to the data they supply, the Federal Environment Agency has initiated a project[t] in conjunction with Bavaria. Its aim is that different user groups (the public, agencies supplying data, specialist users) should have access to the Dioxin Database through web technologies. This approach is based on open-standard XML technology. This web-based application has been available since August 2005[u].

[t] http://www.deborate.de/dioxine/

[u] http://www.pop-dioxindb.de/

4 NATIONAL PRIORITIES

In the Federal Republic of Germany a good proportion of the key requirements of the Stockholm Convention have already been largely fulfilled, mainly through European Community law and partly through national law. This applies to core requirements, such as:

- Bans on manufacture and use of substances listed in Annexes A and B (Germany has not made use of any of the specific exemption provisions)
- Reduction in emissions of POPs, e.g. through the IPPC Directive's mandatory requirement that best available techniques be used
- Ban on halogenated fuel additives
- Environmentally sound disposal of wastes containing POPs

Furthermore, the Federal Republic of Germany already has established administrative structures that are used within their specific jurisdiction to cover the provisions of the Stockholm Convention that apply to substances and waste, in particular through the fact that the Federal Institute for Occupational Safety and Health and the Federal Environment Agency have been designated as Competent Authorities. The provisions of the Stockholm Convention acquire direct legal effect in the Member States through Community law in the form of Regulation (EC) No. 850/2004. The Stockholm Convention thus does not necessitate adaptation of legislation or administrative structures.

The political lead agency responsible in Germany for updating the content of the Stockholm Convention is the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU). In consultation with other departments and the individual states, national priorities are set and their implementation coordinated.

Realistically, the time frame for the planning phase cannot go beyond 2010. The plan is to continually modify the National Implementation Plan as a flexible response to new or different political, social, financial and scientific developments and adapt the contents of the Plan accordingly.

4.1 FINANCIAL RESOURCES

The provision of financial resources for the general obligations pursuant to the status of being a Contracting Party to the Convention and in individual cases the voluntary provision of further resources to fund special programmes and activities is covered by the budget of the BMU. The latter are subject to political priority-setting and are in direct competition with other conventions and other measures to increase international chemicals safety. No concrete financing plans are currently possible beyond Germany's mandatory financial contributions.

As a Member State of the European Union, Germany will take its guidance in many areas in implementing the Stockholm Convention from the provisions of Regulation (EC) No. 850/2004. Due to the division of responsibility between federal and state governments, effective structures for communication and action are essential. To this end, a working group was set up, designed to enable members to discuss practical issues and coordinate implementation of legal provisions in their particular state. The first informal meeting of the group took place on 11 November 2004 in Bonn. Annex A gives an overview of the division of responsibilities between the federal and state administrations; Annex B lists the contact points appointed by the states to deal with questions relating to implementation of the content of the Stockholm Convention.

Time frame: 2005 – 2010

Responsible Agencies: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
Agencies of the states
Federal Environment Agency
Federal Institute for Occupational Safety and Health (as "Competent Authority" under Article 15 of Regulation (EC) No. 850/2004)

4.2 SUBSTANCES LISTED IN ANNEXES A-C

In a declaration at the first Conference of the Parties to the Convention in Punta del Este, the head of the German Delegation emphasised that his country viewed the inclusion of additional chemicals with POPs properties as one of the priorities for the further development of the content of the Convention.

4.2.1 IDENTIFICATION OF POPS

As a member of the European Union, the Federal Republic of Germany is involved in a number of different forums developing the new chemicals policy (REACH). Under the new REACH system, substances with persistent, bio-accumulative and toxic properties (PBT) or very persistent and very bio-accumulative properties (vPvB) will be systematically identified and subjected to an authorisation procedure. These substances head up the list of suspect chemicals with POPs properties needing to be regulated.

Time frame: 2005 - 2010

4.2.2 RETROSPECTIVE TRENDS – GEOGRAPHICAL AND OVER TIME

The operation of a comprehensive Environmental Specimen Bank means that important contributions to concentration trends over time of POPs not yet under discussion can be retrospectively followed. In this way, conclusive evidence can be acquired on whether accumulation of substances has taken place in human tissue or body fluids, or in the environment and biota.

Time frame: 2005 - 2010

4.2.3 HARMONISING METHODS FOR CALCULATING TEQS FOR DIOXINS AND FURANS

An important step towards harmonisation involves adopting as standard the calculation method for toxicity equivalents for PCDDs/PCDFs used by the WHO. Most of the legislation in force is based on the NATO/CCMS method (I-TEQ), in other words dioxin-like co-planar PCBs are not included in the measurement or calculation. This not only means that, in the case of aggregated TEQ values, two systems exist side by side that cannot be compared, but that when I-TEQ is used the toxicological potential is permanently underestimated.

The different toxicity equivalents used by WHO and NATO/CCMS (ITE) cause major deviations primarily in the case of 1,2,3,7,8-p(enta)CDD (1.0 instead of 0.5). ODDDs/OCDFs receive an evaluation that is lower by a factor of 10.

There are now sufficient measurements of emissions from waste incineration plants that give evidence that there is only a minimal increase in concentrations compared to ITE, calculated using the WHO method. If the WHO toxicity equivalents for PCBs are included, the total concentrations calculated are increased by a maximum of 10%, which can be accepted in view

of the fact that emissions from waste incineration plants are low anyway by comparison with the limit value of 0.1 ng/m.³

Switching to the WHO calculation method for PCDDs/PCDFs would be acceptable in terms of effects in the case of waste incineration plants; it would nevertheless be an inconsistency. However, if additional PCBs are included it might also be necessary to reconsider the limit values that are currently applicable due to the fact that the systems are not comparable. This would be true for all areas and media of the environment where limit values apply.

Time frame: 2005 - .....

4.3 BEST AVAILABLE TECHNIQUES (BAT/BEP)

Germany's work in the BAT/BEP working group should ensure that its expertise in diverse areas of environmental technology can continue to feed into the ongoing development of the guidelines on best available techniques.

Time frame: 2005 – 2006

4.4 REDUCTION OF EMISSIONS OF ANNEX C CHEMICALS

The relevant departments within the Federal Ministry of Defence (BMVg) have developed an action plan for phasing out the use of smoke munitions, which cause PCDDs/PCDFs and HCB to be formed when they are fired. For munitions shot from tank howitzers, substitute materials are already available that from 2011will completely replace the old smoke munitions. In the case of mortar munitions, phase-out is only possible in the medium term, since the introduction of substitute munitions is not scheduled to start until 2008. Nevertheless, the goal of continuous reduction in consumption figures has been set, with a reduction of 1/3 in 2006, followed by continuing reduction until complete replacement is achieved once substitute materials have been received.For the majority of the existing stockpiles, disposal as prescribed by Regulation (EC) No. 850/2004 is planned.

Time frame: 2005 – 2014

4.5 NATIONAL ACTION PLAN ON ANNEX C CHEMICALS

The research project to compile a national emissions register of chemicals listed on Annex C of the Convention (cf. Chapter 3.3.1) will continue until 31 July 2006. On completion, the findings will be presented to the national interest groups (in particular the authorities at *Länder* level) and development options will be discussed with them. The outcome will form the basis for the first update of the National Implementation Plan.

4.6 RESEARCH AND DEVELOPMENT

Besides PCDDs/PCDFs, Annex C of the Stockholm Convention also names PCBs and HCB as unintentionally produced POPs. PCDDs/PCDFs were measured at least at selected installations in various source categories. They are being used in the Secretariat's "toolkit" to assess potential sources. Comparable evidence of a qualitative and quantitative nature has still to be found for HCB and PCBs. The requirements of the Convention, particularly with regard to the national emissions inventories, are therefore not currently possible to implement.

A research project has therefore been planned to examine whether the empirical values for PCDDs/PCDFs could be used to deduce industry-specific information for PCBs and HCB.

Time frame: 2006 – 2008

4.7 POPS WASTES

4.7.1 POLYCHLORINATED BIPHENYLS

Tests on electrical cable insulation made of recycled plastic have shown that PCB concentrations in the materials are not dropping to the extent hoped for. Ways of separating out plastics contaminated with PCBs on the basis of the current limit value of 50 ppm has thus been shown to be not sufficiently effective. Germany will therefore advocate that this limit value be lowered.

In a national working group made up of representatives from federal and state agencies "BLAC-AK – technical issues and implementation" a PCB concentration of 5 ppm was discussed as a limit value "unintentional" trace contaminants. The current proposal recommends that this value should not be exceeded in electronic/electrical cable insulation waste. Otherwise the waste would have to be separated out and irreversibly destroyed.

Time frame: 2005 - .....

4.8 PUBLIC INFORMATION

Both the Environment Ministry and the Federal Environment Agency publish information on the Internet for interested members of the public about new resolutions and developments under the POPs Protocol and the Stockholm Convention.

4.8.1 FUTURE DEVELOPMENTS FOR THE DIOXIN DATABASE

A central area here is the establishment of a web-based database, in which concentrations of dioxins and furans measured in different environmental media, including human samples, will be published.

Currently, the Bavarian Ministry for the Environment, Health and Consumer Protection and the Federal Office of Consumer Protection and Food Safety are working together to facilitate Internet access to data on dioxins and PCBs in food, animal feed and human samples.

In parallel to that a research project financed by the BMU is looking at whether other POPs data from monitoring programmes in Germany can be centrally collected in the database that has so far been confined to data on PCDDs/PCDFs.

Time frame: 2005 - 2007

Responsible Agencies: Federal Environment Agency
Federal Institute for Risk Assessment
Federal Institute for Consumer Protection and Food Safety
Agencies of the states

4.9 MONITORING

Environmental monitoring

Existing monitoring of airborne transport of POPs through measurements of concentrations in precipitation at selected locations is being continued. To expand the existing scope of the measurements there are plans from 2006 to ascertain concentrations of substances directly in the gaseous phase and absorbed on particles (cf. chapter 3.6.1.3).

The environmental monitoring programmes in the individual states, such as Baden-Württemberg's programme of examining blood samples of year-4 schoolchildren are ongoing.

Time frame: 2006 - .....

Responsible Agencies: Federal Environment Agency's monitoring network
The states for state-specific programmes

Biomonitoring

National contributions to the 4th WHO survey to measure concentrations of POPs in breast milk (cf. Chapter 3.6.1.4).

Time frame: 2006 - 2008

Responsible Agencies: Federal Environment Agency
CVUA (State Institute for Chemical and Veterinary Analysis of Food), Freiburg

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2 *Regulation (EC) No. 850/2004 of the European Parliament and of the Council of 29 April 2004 on Persistent Organic Pollutants and amending Directive 79/117/EEC, (Official Journal No. L 229 p. 5-22 http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/l_229/l_22920040629en00050022.pdf*

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http://www.bmu.de/files/english/chemical_safety/general_information/application/pdf/broschuere_nationale_profile_en.pdf

4 *Gesetz zum Schutz vor gefährlichen Stoffen (Chemikaliengesetz – ChemG) in the version promulgated on 20 June 2002 (Federal Law Gazette I p. 2090), last amended by Article 10 of ÄndG. of 13 May 2004 (Federal Law Gazette I p. 934).*

5 *Verordnung zum Schutz vor Gefahrstoffen (Gefahrstoffverordnung – GefStoffV) of 23 December 2004 (Federal Law Gazette I p. 3758) amended by Article 2 of the Neunte ÄndVO of 23 December 2004 (Federal Law Gazette I p. 3855).*

6 *Verordnung über Verbote und Beschränkungen des Inverkehrbringens gefährlicher Stoffe, Zubereitungen und Erzeugnisse nach dem Chemikaliengesetz (Chemikalien-Verbotsverordnung – ChemVerbotsV) in the version promulgated on 13 June 2003 (Federal Law Gazette I p. 867) last amended by Article 4 of the Bürokratieabbau- und DeregulierungsG of 21 June 2005 (Federal Law Gazette I p. 1666).*

7 *Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market. (Official Journal L 230 pp. 1- 32)*
http://europa.eu.int/eur-lex/lex/lexuriserv/site/en/consleg/1991/L/01991L0414-20051201-en.pdf

8 *Verordnung zur Durchsetzung gemeinschaftsrechtlicher Verordnungen über Stoffe und Zubereitungen (Chemikalien Straf- und Bußgeldverordnung – ChemStrOWiV) in the version promulgated on 27 October 2005 (Federal Law Gazette I p. 3111)*

9 *Regulation (EC) 304/2003 of the European Parliament and of the Council of 28 January 2003 concerning the export and import of dangerous chemicals (Official Journal L 63 p. 1- 26*
http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_063/l_06320030306en00010026.pdf

10 *Council Directive 91/689/EEC of 12 December 1991 on hazardous waste*
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11 *Council Directive 96/59/EC of 16 September 1996 on the disposal of polychlorinated biphenyls and polychlorinated terphenyls (PCB/PCT)*
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12 *Verordnung über die Entsorgung polychlorierter Biphenyle, polychlorierter Terphenyle und halogenierter Monomethyldiphenylmethane (PCBAbfallV) of 26 June 2000 (Federal Law Gazette I 932)*
Cf. endnote 14

13 *Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (Official Journal L 37 pp. 19 – 23)*

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15 *Verordnung über Verwertungs- und Beseitigungsnachweise (Nachweisverordnung – NachwV) of 10 September 1996 (Federal Law Gazette I p. 1382), revised version as promulgated on 17 June 2002 (Federal Law Gazette I p. 2374)*

16 *Council Regulation (EEC) No 259/93 of 1 February 1993 on the supervision and control of waste within, into and out of the European Community*
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Cf. endnote 9

18 *Second Ordinance amending the Chemikalien Straf- und Bußgeldverordnung of 30 September 2005 (Federal Law Gazette I p. 2924)*

19 *Verordnung über Anwendungsverbote für Pflanzenschutzmittel (Pflanzenschutz-Anwendungsverordnung) of 10 November 1992 (Federal Law Gazette I p.1887), last amended by the Ordinance of 23 July 2003 (Federal Law Gazette I p. 1533)*

20 *Council Directive 85/467/EEC of 1 October 1985 amending for the sixth time (PCBs/PCTs) Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (Official Journal L 269 p. 56)*

21 *Council Directive 76/769/EEC of 27 July 1976 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (Official Journal L 262 p. 201)*

22 *Verordnung über Verbote und Beschränkungen des Inverkehrbringens gefährlicher Stoffe, Zubereitungen und Erzeugnisse nach dem Chemikaliengesetz (Chemikalien-Verbotsverordnung-ChemVerbotsV) in the version promulgated on 13 June 2003 (Federal Law Gazette I p. 867), last amended by the Act of 21 June 2005 (Federal Law Gazette I p. 1666)*

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24 *Gesetz über den Verkehr mit DDT (DDT-Gesetz) of 7 August 1972 (BGBI. I p. 1385), repealed by Article 7, paragraph 2 of the Act of 25 July 1994 (Federal Law Gazette I p. 1689)*

25 *Erste Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes (Artikel 1 der Verordnung zur Neufassung der Ersten und Änderung der Vierten Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes) of 15 July 1988 (Verordnung über kleine und mittlere Feuerungsanlagen – 1. BImSchV) in the version promulgated on 14 March 1997 (Federal Law Gazette I p. 490), last amended by Article 4 of the Ordinance of 14 August 2003 (Federal Law Gazette I p. 1614)*

26 *Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control*
(Official Journal L 257 pp. 26-40)

27 *Commission Decision 2000/479/EC of 17 July 2000 on the implementation of a European pollutant emission register (EPER) according to Article 15 of Council Directive 96/61/EC concerning integrated pollution prevention and control*
(Official Journal L 192 pp. 36-43)

28 *Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnliche Vorgänge (Bundes-Immissionsschutzgesetz- BImSchG) in the version promulgated on 26 September 2002 (Federal Law Gazette I, p. 3830), last amended by the Act of 25 June 2005 (Federal Law Gazette I p. 1865)*

29 *Erste Allgemeine Verwaltungsvorschrift zum Bundes-Immissionsschutzgesetz (Technische Anleitung zur Reinhaltung der Luft - TA Luft) of 24 July 2002*
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Bitte Fundstelle überprüfen

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ANNEX A DIVISION OF RESPONSIBILITIES BETWEEN FEDERAL AND *LÄNDER* LEVEL

Industrial chemicals/ plant protection products	Addressees	Date	850/2004	The Stockholm Convention	CLRTAP's POPs Protocol
Stockpiles of POPs	Agencies of the states (chemicals, waste, agriculture/ forestry)	From 20.05.2005 (3-yearly intervals)	Reporting stockpiles of Annex I and II chemicals (> 50 kg) (Article 5, paragraph 2) in conjunction with Article 12, paragraph 3a) - Common formats are being developed for this purpose (Article 12, paragraph 4)	Identify stockpiles, "*to the extent practicable*", (Article 6, paragraph 1)	---
				Development of strategies to identify products and articles containing chemicals listed in Annex A, B or C (Article 6, paragraph 1)	Development of strategies to identify products and articles containing Annex I, II or III substances (Article 3, paragraph 3)
Ban on the manufacture and use of POPs	Agencies of the states Chemicals Industry (associations)	From 20.05.2005 Annual	Annual transmission of data on actual or estimated total volume of all Annex I and II substances (Article 12, paragraph 2) manufactured and placed on the market	Prohibit [...] the production and use of chemicals listed in Annex A (Article 3, paragraph 1a)	Eliminate the production and use of substances listed in Annex I (Article 3, paragraph 1)
Import/export of POPs	Fed. Institute for Occupational Safety & Health and Fed. Office of Consumer Protection and Food Safety as the DNA, Agencies of the states - Chemicals - Wastes Industry		---	- For the purpose of environmentally sound disposal (Article 3, paragraph 2 b i) - To a Party that is permitted to use that chemical (Article 3, paragraph 2 b ii)	

	(associations)				
Waste	**Addressees**	**Date**	**850/2004**	**Convention**	**Protocol**
Wastes containing or consisting of POPs [09.03]	Agencies of the states responsible for waste	from 2006	Article 7, paragraph 4 (b) iii Informing the Commission of exemptions granted under Annex V, part 2	Requirement stipulating environmentally sound disposal (following guidelines of the Basel Convention)	Requirement stipulating environmentally sound disposal
Contaminated land	**Addressees**	**Date**	**850/2004**	**Convention**	**Protocol**
Altlasten [09.04]	Responsible agencies of the states		----	Article 6 paragraph 1 (e) Endeavour to develop strategies for identifying sites contaminated by POPs	-----
Emission data	**Addressees**	**Date**	**850/2004**	**Convention**	**Protocol**
Release inventories for POPs [10.03] [10.04]	Agencies of the states May 2006	May 2006	Release inventories for the following chemicals - PCDDs/PCDFs - PCBs - HCB - PAHs in the following media - Air - Water bodies - Soil	Article 5 a) i): Development and maintenance of source inventories for emissions of - PCDDs/PCDFs - PCBs - HCB from the following source categories: - Annex C Part II of the Convention - Annex C Part III	Article 3, paragraph 8 : Development and maintenance of emissions inventories for - PCDDs/PCDFs - HCB - PAHs
Monitoring	**Addressees**	**Date**	**850/2004**	**Convention**	**Protocol**
Anthropogenic impact on the soil [06.02] Environmental quality (air) [10.06]	Agencies of the states Agencies of the states Annex II 2 of federal/state agreement (Oct. 1994)	May 2006		*Endeavour to develop strategies for identifying sites contaminated by POPs* - Article 6 paragraph 1 (e)	Article 8 Encouragement of monitoring [...] related to a) Emissions, [...] deposition.. b) Pollutant pathways and inventories in representative ecosystems Article 9, paragraph 1 b) .. information on levels of emissions of POPs

Dioxins and PCBs in the environment	Agencies of the states Annex II 3 of federal/state agreement (March 1996)		*The COM and Member States establish in close cooperation appropriate programmes and mechanisms, consistent with the state of the art, for the regular provision of comparable monitoring data on the presence of dioxins, furans and PCBs a in the environment.* (Article 9)		

Note on colum 1: [...] = Category as established in Annex I of the federal/state administrative agreement on the exchange of environmental data.

ANNEX B CONTACT POINTS FOR THE NATIONAL IMPLEMENTATION PLAN AT *LÄNDER* LEVEL

State	Name	Institution	Tel./Fax	E-mail	Address
Baden-Württemberg	Walter Adebahr	Umweltministerium	0711 126 2944 0711 126 2972	walter.adebahr@um.bwl.de	Kernerplatz 9 70029 Stuttgart
Bavaria	Dr. Peter Wolfgardt Dr. Michael Winklmair	Ministerium für Umwelt, Gesundheit und Verbraucherschutz	089 9214 487 089 9214 2451 089 9214 2519 089 9214 2451	peter.wolfgardt@stmugv.bayern.de michael.winklmair@stmugv.bayern.de	Rosenkavalierplatz 2 81925 München
Berlin					
Brandenburg	Ute Schreiber	Ministerium für Ländliche Entwicklung, Umwelt und Verbraucherschutz	0331 866 7952	Ute.schreiber@mluv.brandenburg.de	Lindenstraße 34a 14467 Potsdam
Bremen	Ralf Wehrse	Senator für Bau, Umwelt und Verkehr	0421 361 9565	ralf.wehrse@umwelt.bremen.de	Ansgaritorstr. 2, 28195 Bremen
Hamburg	Dr. Bettina Schröder	Behörde für Wissenschaft und Gesundheit	040 42837 3213 040 42837 3370	bettina.schroeder@bwg.hamburg.de	Billstr. 80 20539 Hamburg
Hesse					
Mecklenburg -Vorpommern					
Lower Saxony	Uwe Schrader	Umweltministerium	0511 120 3487 0511 120 993487	Uwe.Schrader@MU.Niedersachsen.de	Archivstr. 2 30169 Hannover
North Rhine-Westphalia	Dr. Dorothee Hippe	MUNLV	0211 4566 728 0211 4566 432	Dorothee.Hippe@munlv.nrw.de	Schwannstraße 3 40476 Düsseldorf
Rhineland-Palatinate	Dr. Harry Keidel	Ministerium für Umwelt und Forsten	06131 16 4430 06131 16 4644	harry.keidel@muf.rlp.de	Kaiser-Fridrich-Str. 1 55116 Mainz
Saarland	Heiko Rokoschoski	Ministerium für Umwelt	0681 501 4285 0681 501 4795	h.rokoschoski@umwelt.saarland.de	Keplerstraße 18 66117 Saarbrücken
Saxony	Ines Linnemann	Sächsisches	0351/564 2098	ines.linnemann@smul.sachsen.de	Wilhelm-Buck-Str. 2,

State	Name	Institution	Tel./Fax	E-mail	Address
		Staatsministerium für Umwelt und Landwirtschaft	0351/564 2069		01097 Dresden
Saxony-Anhalt	Joachim Hoeltkemeier	Ministerium für Landwirtschaft und Umwelt	0391 5671523 0391 567 1527	hoeltkemeier@mlu.lsa-net.de	Olvenstedter Str. 4 39108 Magdeburg
Schleswig-Holstein		Thüringer Ministerium für Landwirtschaft, Naturschutz und Umwelt (TMLNU) Data reporting obligations: Thüringer Landesanstalt für Umwelt und Geologie (TLUG)	03 61/37 99 401 03 61/37 99 950	poststelle@tmlnu.thueringen.de	Beethovenstraße 3 99096 Erfurt Göschwitzer Str. 41 07745 Jena
Thüringia		Landesanstalt für Umwelt und Geologie	03641 684 0 03641 684 22	tlug.post@tlugjena.thueringen.de	Prüssingstr. 25 07745 Jena
National Focal Point	Dr. Klaus-G. Steinhäuser	Federal Environment Agency	0340 2103 3000 0340 2104 3000	Klaus-G.Steinhaeuser@uba.de	

ANNEX C GLOSSARY

Technical terms and abbreviations

BAT/BEP	Best Available Techniques/Best Environmental Practice
BLMP (Bund-Länder-Messprogramm)	Federal/regional monitoring programme for the marine environment of the North Sea and Baltic
CFCs	Chlorofluorocarbons
CLRTAP	Convention on Long Range Transboundary Air Pollution also known as: the Geneva Convention (of the UNECE)
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethene
DDT	Dichlorodiphenyltrichlorethane
DNA	Designated National Authority
EPER	European Pollutant Emission Register
GEMS / Food	Global Environmental Monitoring System / Food Contamination Monitoring and Assessment Programme
HCB	Hexachlorobenzene
HCH	Hexachlorocyclohexane, the γ-isomer is also known as lindane
Land (plural *Länder*)	States in the German federal system
OCS	Octachlorostyrene
PAHs	Polynuclear aromatic hydrocarbons, polycyclic aromatic hydrocarbons
PBDEs	Polybrominated diphenyl ethers
PCBs	Polychlorinated biphenyls
PCDDs	Polychlorinated dibenzo-p-dioxins
PCDFs	Polychlorinated dibenzofurans
PCP	Pentachlorophenol
PCTs	Polychlorinated terphenyls
PeBDE	Pentabromodiphenyl ether
PentaBDE	Pentabromodiphenyl ether
POPs	Persistent organic pollutants
ppm	parts per million
PRTR	Pollutant Release and Transfer Register
SCCP	Short-Chain Chlorinated Paraffins
TEQ	Toxicity equivalents

Primary and secondary legislation

AbfKlärV	Klärschlammverordnung	Sewage Sludge Ordinance
BBodSchG	Bundes-Bodenschutzgesetz	Federal Soil Protection Act
BGBl.	Bundesgesetzblatt	Federal Law Gazette
BImSchG	Bundes-Immissionsschutzgesetz	Federal Immission Control Act Act on the Prevention of Harmful Effects on the Environment caused by Air Pollution, Noise, Vibration and Similar Phenomena
BImSchV	Bundes-Immissionsschutzverordnung	Ordinance implementing the Federal Immission Control Ac
ChemG	Chemikaliengesetz	Chemicals Act
ChemStrOWiV	Chemikalien Straf- und Bußgeldverordnung	Ordinance for the Enforcement of Community Law Regulations Relating to Substances and Preparations
ChemVerbotsV	Verordnung über Verbote und Beschränkungen des Inverkehrbringens gefährlicher Stoffe, Zubereitungen und Erzeugnisse nach dem Chemikaliengesetz (Chemikalienverbotsverordnung)	Prohibition of Chemicals Ordinance
GefStoffV	Verordnung zum Schutz vor Gefahrstoffen (Gefahrstoffverordnung)	Ordinance on Hazardous Materials
IPPC Directive		Directive Concerning Integrated Pollution Prevention and Control
KrW-/AbfG	Kreislaufwirtschafts- und Abfallgesetz	Act for Promoting Closed Substance Cycle Waste Management and Ensuring Environmentally Compatible Waste Disposal (Closed cycle Substance and Waste Management Act)
WFD		Directive of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy - Water Framework Directive
WSR	Abfallverbringungsverordnung	Waste Shipments Regulation The Regulation was repealed with effect from 1 January 2002

Official agencies and institutions

BAM	Bundesanstalt für Materialforschung und -prüfung	Federal Institute for Materials Research and Testing
BAuA	Bundesanstalt für Arbeitsschutz und Arbeitsmedizin	Federal Institute for Occupational Safety and Health
	Bayerisches Landesamt für Gesundheit and Lebensmittelsicherheit	Bavarian Health and Food Safety Authority
BAH	Biologische Anstalt Helgoland im Alfred-Wegener Institut	The Biological Institute on Helgoland at the Alfred Wegener Institute
BBA	Biologische Bundesanstalt für Land- und Forstwirtschaft	Federal Biological Research Centre for Agriculture and Forestry
BfN	Bundesamt für Naturschutz	The Federal Agency for Nature Conservation
BSH	Bundesamt für Seeschifffahrt und Hydrographie	The Federal Maritime and Hydrographic Agency
BfG	Bundesanstalt für Gewässerkunde	The Federal Institute of Hydrology
BFA-Fi	Bundesforschungsanstalt für Fischerei	Federal Research Centre for Fisheries
BMBF	Bundesministerium für Bildung und Forschung	The Federal Ministry of Education and Research
BMELV	Bundesministerium für Verbraucherschutz, Ernährung und Landwirtschaft	The Federal Ministry of Food, Agriculture and Consumer Protection
BMVBS	Bundesministerium für Verkehr, Bau- und Stadtentwicklung	The Federal Ministry of Transport, Building and Urban Affairs
BfR	Bundesinstitut für Risikobewertung	Federal Institute for Risk Assessment
BMU	Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
BMVg	Bundesministerium für Verteidigung	Federal Ministry of Defence
BVL	Bundesamt für Verbraucherschutz und Lebensmittelsicherheit	Federal Office of Consumer Protection and Food Safety
ECB		European Chemicals Bureau of the Commission
FAO		Food and Agriculture Organisation of the United Nations
IOW	Institut für Ostseeforschung Warnemünde an der Universität Rostock	Warnemünde Institute for Research on the Baltic at the University of Rostock
LABO	Bund-Länder Arbeitsgemeinschaft Bodenschutz	Regional Committee on Soil Protection
LAGA	Länderarbeitsgemeinschaft für Abfall	Regional Working Group on Waste
LANU	Landesamt für Natur und Umwelt des Landes Schleswig-Holstein	Schleswig-Holstein's Office of Nature and the Environment
LUNG	Landesamt für Umwelt, Naturschutz und Geologie, Mecklenburg-Vorpommern	Mecklenburg-West Pomerania's Office of the Environment, Nature Protection and Geology
LFA	Landesforschungsanstalt für Landwirtschaft und Fischerei, Mecklenburg-Vorpommern	Mecklenburg-West Pomerania’s Agriculture and Forestry Research Institute

Official agencies and institutions

NATO - CCMS		North Atlantic Treaty Organization - Committee on the Challenge to Modern Society
MLUR-SH	Ministerium für Umwelt, Natur und Forsten des Landes Schleswig-Holstein	Schleswig-Holstein's Ministry for the Environment, Nature and Forests
NLWKN	Niedersächsische Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz	Lower Saxony's Department of Water Management, Coastal and Nature Protection
BSU	Behörde für Stadtentwicklung und Umwelt der Freien und Hansestadt Hamburg	Hamburg's Department of the Environment
UM-MV	Umweltministerium des Landes Mecklenburg-Vorpommern	Mecklenburg-West Pomerania's Environment Ministry
MU-NS	Umweltministerium des Landes Niedersachsen	Lower Saxony's Environment Ministry
UBA	Umweltbundesamt	Federal Environment Agency
UN-ECE		United Nations - Economic Commission for Europe
UNEP		United Nations Environment Programme
WHO		World Health Organization

ANNEX D CHEMICAL IDENTITIES

Some POPs are not individual chemicals, but usually complex mixtures of substances. For that reason, only individual compounds are usually analysed and their concentrations added together. In the case of PCDDs/PCDFs, factors (TEQ) are used to take the differences in toxicity into account.

PCBs	Polychlorinated biphenyls	
CB 28	2,4,4'-Trichlorobiphenyl	PCB concentrations are usually expressed as the sum of these selected congeners(PCB_7)
CB 52	2,2',5,5'-Tetrachlorobiphenyl	
CB 101	2,2',4,5,5'-Pentachlorobiphenyl	
CB 118	2,2',4,4´5-Pentachlorobiphenyl	
CB 138	2,2',3,4,5,5'-Hexachlorobiphenyl	
CB 153	2,2',4,4',5,5'-Hexachlorobiphenyl	
CB 180	2,2',3,4,4',5,5'-Heptachlorobiphenyl	

PCDDs	I-TEQ	WHO-TEQ
2,3,7,8-TCDD	1	1
2,3,7,8-TCDD	1	1
1,2,3,7,8-PeCDD	0.5	1
1,2,3,4,7,8-HxCDD	0.1	0.1
1,2,3,6,7,8-HxCDD	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01
OCDD	0.001	0.0001

PCDFs	I-TEQ	WHO TEQ
2,3,7,8-TCDF	0.1	0.1
2,3,7,8-TCDF	0.1	0.1
1,2,3,7,8-PeCDF	0.05	0.05
2,3,4,7,8-PeCDF	0.5	0.5
1,2,3,4,7,8-HxCDF	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01
OCDF	0.001	0.0001

International toxic equivalence factors used by NATO-CCMS[v] (I-TEF, 1988) and the World Health Organisation[w] (WHO-TEF, 1998)

PAHs	Polynuclear aromatic hydrocarbons/polyaromatic hydrocarbons	
	Benzo(a)pyrene	Benzo(k)fluoranthene
	Benzo(b)fluoranthene	Indeno(1,2,3cd)pyrene

[v] North Atlantic Treaty Organization, Committee on Challenges of modern Society (NATO/CCMS) International toxicity equivalency factor (TEF) method of risk assessment for completely mixtures of dioxins and related compounds. Pilot study on international information exchange on dioxins and related compounds, report no. 176, 1988

[w] Van den Berg et al.: Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife Environmental Health Perspectives Vol. 106, No 12, 1998