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Update to include Endosulfan in the Swedish National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants

Sweden 2014

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Summary

Endosulfan was included in the Stockholm Convention on Persistent Organic Pollutants in May 2011. The fifth Conference of the Parties then adopted an amendment to phase-out endosulfan globally by listing in Annex A. The provisions in the Convention related to endosulfan entered into force on 27 October 2012.

The regulatory framework and measures taken to phase-out endosulfan is described in this update of the Swedish NIP.

There has been no manufacture of endosulfan in Sweden and its use is not approved since December 1997. In the EU the use of endosulfan in plant protection products is not allowed since 2007. Since June 2012 its production, placing on the market and use has been banned in the EU. Export was banned in January 2013.

Due to the early phase-out of endosulfan it is estimated that no stockpiles or wastes of endosulfan remain in Sweden. Sweden considers that it has fulfilled its obligations under the Stockholm Convention with regard to endosulfan. Besides continued monitoring, no further national initiatives related to endosulfan are therefore considered in Sweden.

1 Introduction

The general objective of the Stockholm Convention is to protect human health and environment against persistent organic pollutants (POPs).

At the 5th meeting of the Conference of the Parties to the Stockholm Convention, held in May 2011, it was agreed to include the pesticide endosulfan on the list of persistent organic pollutants to be eliminated. Endosulfan was introduced in Annex A (Elimination) with certain specific exceptions. The amendment to include technical endosulfan and its related isomers with specific exemptions (decision SC-5/3) in Annex A entered into force on 27 October 2012. Currently 23 POPs are covered by the Stockholm Convention, see Annex 2 for an overview.

For amendments made to the Convention or its annexes, including addition of new substances, it is necessary to update/revise the National Implementation Plan (NIP) within two years from the date the amendments enter into force. This update of the Swedish NIP has been prepared by the Swedish Chemicals Agency (KemI) in cooperation with the Swedish Environmental Protection Agency (Swedish EPA) and is describing the regulatory framework and measures taken to phase-out endosulfan. In preparing the update, consultations were made with the Swedish Board of Agriculture and the National Food Agency. For all other substances in the Stockholm Convention and other sections in a NIP, we refer to the Swedish NIP from 2012, Swedish EPA Report 6498.

2 Country baseline

2.1.1 Endosulfan in Annex A

Technical endosulfan (CAS No 115-29-7), its related isomers (CAS No 959-98-8 and CAS No 33213-65-9) and endosulfan sulfate (CAS No 1031-07-8) are listed in Annex A (Elimination) with specific exemptions for Crop-pest complexes as listed in part VI of Annex A. Production is allowed to continue for parties listed in a register.

At the fifth Conference of the Parties in May 2011, it was decided to include endosulfan in Annex A as recommended by the POPs Review Committee (POPRC). Endosulfan was nominated as a POP by the European Union (EU). The amendment entered into force on 27 October 2012.

2.1.1.1 Production and use

There has been no manufacture of endosulfan in Sweden. Its production in the EU stopped in 2006/2007. Historic production in Europe amounted to 10.000 to 50.000 tonnes per year¹.

Endosulfan is an insecticide which occurs as two isomers, alpha and beta endosulfan, both of which are biologically active. It has been used globally since the 1950s to control crop pests, tsetse flies and ectoparasites of cattle. It has also been used as a wood preservative. As a broad-spectrum insecticide, endosulfan is currently used to control a wide range of pests on a variety of crops including coffee, cotton, rice, sorghum and soy.

In Sweden endosulfan was used since the 1970s but has not been approved as a plant protection product since 1995 with a complete ban of its use in December 1997. According to the Swedish pesticide register, the later uses of endosulfan were mainly in fruit farming and in green houses. During the period 1990 to 1995 the imported amount was about 2 tonnes of active substance.

2.1.2 Legislation related to endosulfan

The legal basis for not approving endosulfan as a pesticide in Sweden already in 1995 was the Act on Chemicals Products from 1985. It was in 1998 incorporated in the environmental code (SFS 1998:808).

In the EU a ban on sale of endosulfan entered into force in June 2006 and a ban on use entered into force in June 2007. This is the result of an application in 2005 for the inclusion of endosulfan in the [Council Directive 91/414/EEC](#) (replaced in 2009 by (EC) 1107/2009) concerning the placing of plant protection products on the market which was not approved (Decision 2005/864/EC).

¹ Risk profile and risk management plan by the POPRC (UNEP/POPS/POPRC.5/10/Add.2 and UNEP/POPS/POPRC.6/13/Add.1)

The Regulation on Marketing of Plant Protection Products (EC) 1107/2009 stipulates that an active substance, safener (substances that reduce the risk for phytotoxicity in the crop at use of the pesticide) or synergists may only be approved if the substance is not considered a persistent organic pollutant. Active substances meeting two of the PBT criteria shall be candidates for substitution.

It is also not allowed to place on the market or use biocides containing the substance endosulfan because it is not approved under Regulation on biocidal products (EU) No 528/2012.

As a consequence of listing endosulfan in Annex A of the Stockholm Convention in 2011, its production, placing on the market and use has been banned by adding it to the appropriate Annex of the POP Regulation (EC) No 850/2004 of the European Parliament and of the Council on persistent organic pollutants. The requisite adjustments related to endosulfan were made by means of Commission Regulation (EU) No 519/2012 of 19 June 2012 amending Regulation (EC) No 850/2004. The EU does not provide for any country-specific exemptions. Import is regarded as placing on the market in the EU and thus import of all Annex A and B chemicals is prohibited by Regulation (EC) No 850/2004 with some exceptions mainly for laboratory-scale research or as a reference standard and as unintentional trace contaminant in substances, preparations or articles. The export of endosulfan from the EU is banned since January 2013 when it was added to part 1 of the annex V in the Regulation (EC) 689/2008 on Export and import of dangerous chemicals.

The Swedish Environmental code provides for the enforcement of the POPs Regulation as well as the Regulation (EU) no 1107/2009 concerning the placing of plant protection products on the market. As all EU regulations they are directly applicable in Sweden.

Endosulfan is also classified as a priority hazardous substance under the Water Framework Directive 2000/60/EC which requires environmental quality standards to be set for concentrations in water and sediments. The WFD demands that all waters (surface waters, groundwater and coastal waters) achieve or retain good status by the end of 2015. Surface waters are to achieve or retain good chemical and ecological status, while groundwater is to achieve or retain good chemical and quantitative status. By 2020, 'priority hazardous substances' should no longer be released into waters.

Furthermore of high significance for the implementation of the requirements of the Stockholm Convention is the Regulation (EC) No 396/2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origins, as many POPs were used as pesticides. Annexes II and III to the Regulation stipulate maximum levels for endosulfan as well as aldrin, chlordane, chlordecone, DDT, dieldrin, endrin, HCB, HCH, heptachlor and toxaphene.

The maximum residue levels (MRL) of undesirable substances for animal feeds are stipulated in Directive 2002/32/EC. This directive anchors maximum levels in certain feedstuffs for endosulfan as well as the other POPs that were used as pesticides and also PCBs and PCDD/Fs. The MRL for endosulfan in feed for fish

farming was in 2012 increased within the EU from 0.005 to 0.05 mg/kg (EC 744/2012), and in Norway in 2013. (www.nifes.no/index.php?page_id=126&article_id=4248). The source to that endosulfan is found in fish feed is mainly due to the content of soy products grown in countries outside the EU. The NFA controls of Swedish farmed fish have never found any levels above 0.05 mg/kg.

2.1.3 Stockpiles, waste and contaminated sites

Due to the early phase-out of endosulfan and the capacity for incineration of hazardous waste, it is estimated that no stockpiles or wastes of endosulfan remain in Sweden. Concerning management of stockpiles, the POPs Regulation provides that all remaining stockpiles for which no use is permitted shall be managed as hazardous waste. If stockpiles are found the costs should be borne by the "polluter-pays" principles as laid down in the Waste Framework Directive.

With regard to wastes, producers and holders of waste are obliged to undertake measures to avoid contamination of waste with POP substances. Waste with POPs content higher than the above mentioned low POP content limits must generally be disposed or recovered in such a way that the POP content is destroyed or irreversibly transformed. Also if applicable those wastes, which are managed in an environmentally preferable way instead of being destroyed or irreversibly transformed have to meet upper POP concentration limits.

The POP content concentrations limits for waste containing or contaminated with endosulfan (as well as for the sum of the concentrations of tetrabromodiphenyl ether, pentabromodiphenyl ether, hexabromodiphenyl ether and heptabromodiphenyl ether, perfluorooctane sulfonic acid and its derivatives, hexachlorobutadiene, polychlorinated naphthalenes, and short-chain chlorinated paraffins) were set within the EU in June 2014 and will enter into force in the beginning of 2015.

2.1.4 Programmes for monitoring release and impacts

The Swedish EPA coordinates the Swedish contribution to a network that provides monitoring data on the long-range transmission of chemical substances including endosulfan to the European Monitoring and Evaluation Programme (EMEP, 2001). On the basis of the emissions data made available EMEP provides information on the transport and transformation of all relevant emissions in the atmosphere, as well as their concentrations and depositions. EMEP also records the transboundary transport of pollutants in 'source-receptor matrices' that show the quantities of pollutants each country imports and exports.

Endosulfan (alpha and beta) and endosulfan sulphate have been measured in *air and precipitation* under the Swedish National Monitoring Program since 2009. The

measurements are taking place at three stations; Råö, Aspvreten on the west and the east coast of Sweden and in Pallas that is situated in northern Finland. Of the POPs, endosulfan is covered along with DDT, aldrin, dieldrin, endrin, chlordane, HCHs, heptachlor, HCB and PCB (EMEP 2001).

Analysis of *surface water* for pesticides including endosulfan has been performed since 2002 under the Monitoring Program for pesticides. Occasional screening studies and national and regional monitoring of endosulfan in e.g. water and sediment has also been carried out.

The results of the monitoring programme for surface water, ground water, sediment, precipitation and air are presented in a report from 2011.

http://www.slu.se/Documents/externwebben/centrumbildningar-projekt/ckb/Publikationer/Ekohydrologi/Ekohydrologi_132.pdf. Endosulfan sulphate was the measured substance most frequently found in precipitation.

Endosulfan may be present in smaller amounts in *agricultural products and in animal feed* imported from other countries. Pesticide residues in fresh and preserved fruits and vegetables (imported as well as domestically grown) and in products of animal origin are monitored by the Swedish National food Agency (NFA).

<http://www.slv.se/sv/grupp3/Rapporter/Lakemedelsrester/>. The NFA reports annually on the level of several POPs in specific food products, as part of its responsibility for the national control programme. The results of the monitoring programme for the period 1990-2007 are presented in a report from 2008 (<http://www.imm.ki.se/Datavard/Rapporter/Endosulfan%20%C3%B6verensk.%20nr%20215%200809.pdf>).

The amount of endosulfan has decreased in crops between 1990 and 2007 leading to a decrease of the daily intake from 10 % to 1 % of the tolerable daily intake (TDI) during this time period. Endosulfan and its related isomers have from 2008 occasionally been found in fruit or vegetables in Sweden (okra, eggplant, peach, melons and apples). The levels are generally low but some samples (7 of 11 000 samples) have levels above MRL. Information about the findings, sometimes only when above MRL are reported annually.

(<http://www.slv.se/sv/grupp3/Rapporter/Bekämpningsmedel/>.)

There are established limits for endosulfan in feed and it is included in the control of pesticide residues in feed monitored by the Swedish Board of Agriculture (JV).

Deviations concerning unsafe feed, such as the presence of pesticide residues above the limit are reported within the EU via the Rapid Alert System for Food and Feed (RASFF) Only two anomalies regarding endosulfan in feed have been reported through the RASFF system and they were from 2008 and did not apply to Sweden.

3 Strategies and action plans

3.1.1 Measures to reduce or eliminate releases of endosulfan

As Party to the Stockholm Convention, Sweden is required to ban, and/or take the necessary legal and administrative steps to ban the production, use, import and export of endosulfan.

Measures to eliminate the use of endosulfan as pesticide were taken on a national basis in 1995. In the EU a ban on sale of endosulfan in plant protection products entered into force in June 2006 and a ban on use entered into force in June 2007. Legal measures within the EU regarding production, placing on the market and use came into force in July 2012. The measures are considered to be sufficiently comprehensive with provisions that are stricter than those of the Convention.

The main release pathways for endosulfan would be from past use, through long range air transport and from imported food and feed products.

The presence of endosulfan in food, groundwater, waste and the environment is currently low in Sweden and will continue to be monitored. No further initiatives related to endosulfan are planned in Sweden.

With regard to obsolete pesticides it is estimated that there are no stocks containing endosulfan. Market surveillance of food and feed remains necessary as endosulfan is still used globally in food and feed production.

3.1.2 Technical and financial assistance

There is a high ongoing production and use of endosulfan globally mainly in developing countries and countries in transition. The production of endosulfan in India, China, Israel, Brazil and the Republic of Korea has been estimated to range between 18,000 and 20,000 tonnes per year. Endosulfan is used in varying amounts in Argentina, Australia, Brazil, Canada, China, India, the USA and some other countries. Its use as a plant protection product is the most relevant emission source for endosulfan².

To support a global phase-out of POPs the articles 12 and 13 places obligations on developed country Parties to provide technical and financial assistance.

Swedish financial assistance for POP-related activities will continue to mainly be channelled through the Global Environment Facility (GEF) as it is the financial mechanism of the Stockholm Convention. In addition Sweden has contributed to the

² Risk profile and risk management plan by the POPRC (UNEP/POPS/POPRC.5/10/Add.2 and UNEP/POPS/POPRC.6/13/Add.1)

Quick Start Program to support capacity building and enabling activities, including POPs-related activities, under SAICM (Strategic Approach to International Chemicals Management).

The Swedish Chemicals Agency and the Swedish EPA have agreements with the Swedish International Development Cooperation Agency (Sida). Several capacity-building activities related to institutional capacity and chemicals legislation have been initiated based on those agreements, and have been reported separately to the Secretariat of the Convention.

Sweden prioritizes supporting coherent implementation of activities with the overall objective to develop national structures and legislation for chemicals management to reduce the overall risks associated with chemicals. Implementation of POPs related activities should as far as possible be done in connection to other related issues. The Swedish Chemicals Agency is involved in global, regional and bilateral development cooperation with the aim to contribute to providing the basis for countries to raise their capacity to reduce the risks associated with chemicals, by providing guidance on the development of legislation and sustainable institutions for chemicals control.

Annex 1. Abbreviations

EMEP	European Monitoring and Evaluation Programme
KemI	Swedish Chemicals Agency
NIP	National Implementation Plan
NFA	National Food Agency
PBT	Persistent, Bio-accumulating and Toxic substances
POPRC	Persistent Organic Pollutants Review Committee under the Stockholm Convention
POP	Persistent Organic Pollutant
RASFF	Rapid Alert System for Food and Feed
SAICM	Strategic Approach to International Chemicals Management
SC	Stockholm Convention
JV	Swedish Board of Agriculture
Swedish EPA	Swedish Environment Protection Agency
AMV	Swedish Work Environment Authority
UNEP	United Nations Environment Programme
WFD	Water Framework Directive

<i>Annex A - Elimination</i>	<i>Annex B – Restriction</i>	<i>Annex C - Unintentional production</i>
1. Aldrin 2. Chlordane 3. Dieldrin 4. Endrin 5. Heptachlor 6. Hexachlorobenzene (HCB) 7. Mirex 8. Toxaphene 9. Polychlorinated Biphenyls (PCB) 13. Chlordecone 14. Hexabromobiphenyl 15. Pentabromodiphenyl ether 16. Lindane 17. Alphahexachlorocyclohexane 18. Beta-hexachlorocyclohexane 19. Octabromodiphenyl ether 20. Pentachlorobenzene (PeCB) 22. Endosulfan 23. Hexabromocyclododecan	10. DDT 21. Perfluorooctane sulfonic acid (PFOS)	11. Polychlorinated dibenzo-p-dioxins (PCDD) 12. Polychlorinated dibenzofurans (PCDF) HCB PCB PeCB Also stockpiles and wastes

Annex 2. Overview of POPs in the SC

Substances currently under review by the POPRC

<i>Step 1. Screening criteria, Annex D</i>	<i>Step 2. Develop a risk profile Annex E</i>	<i>Step 3. Develop a risk management evaluation, Annex F</i>	<i>For consideration at COP7 2015 Including proposal for listing</i>
Dicofol	Decabromodiphenyl ether (Deca-BDE) Shortchained chlorinated paraffins (SCCP)	Pentachlorophenol (PCP)	Hexachlorobutadiene (HCBd) Polychlorinated naphthalenes (PCNs)