Form for submission of information specified in Annex E of the Stockholm Convention pursuant to Article 8 of the Convention

Introductory information	
Name of the submitting Party/observer	**Switzerland**
Contact details (name, telephone, e-mail) of the submitting Party/observer	Georg Karlaganis Federal Office for the Environment 3003 Bern, Switzerland +41 31 3226955, georg.karlaganis@bafu.admin.ch or +41 31 3231768, bettina.hitzfeld@bafu.admin.ch
Chemical name (as used by the POPs Review Committee)	**Endosulfan**
Date of submission	09 January 2009

(a) Sources, including as appropriate (provide summary information and relevant references)	
(i) Production data:	No production in Switzerland
Quantity	
Location	
Other	
(ii) Uses	Endosulfan is registered in Switzerland as a plant protection product (insecticide) for control of various sucking insects. As of 31.12.2008, 10 products were known to be present on the Swiss market. In May 2007, Endosulfan was listed in Annex 8 of the Swiss Ordinance on Plant Protection Products. This means that the active ingredient Endosulfan is under review and that companies wanting to support the substance must notify this to the Federal Office for Agriculture.
(iii) Releases:	
Discharges	
Losses	
Emissions	
Other	

(b) Hazard assessment for endpoints of concern, including consideration of toxicological interactions involving multiple chemicals (provide summary information and relevant references)

(c) Environmental fate (provide summary information and relevant references)	
Chemical/physical properties	
Persistence	
How are chemical/physical properties and persistence linked to environmental transport, transfer within and between environmental compartments, degradation and transformation to other chemicals?	**See separately attached document:** Overall Persistence, Long-range Transport Potential and Global Distribution of Endosulfan and its Transformation Products Linus Becker, Urs Schenker, Martin Scheringer Swiss Federal Institute of Technology, ETH Zürich, Switzerland, January 2009 scheringer@chem.ethz.ch Summary Overall persistence (P_{OV}) and long-range transport potential (LRTP) of α- and β-endosulfan and two of their transformation products, endosulfan sulfate and endosulfan diol, are estimated with two multimedia box models, the OECD P_{OV} and LRTP Screening Tool and the global, latitudinally resolved model CliMoChem. The OECD Tool yields P_{OV} and LRTP for each compound separately, whereas the CliMoChem model calculates the environmental distribution of the parent compounds and the formation and distribution of the transformation products simultaneously. Results from the CliMoChem model show that P_{OV} and LRTP of the endosulfan substance family are similar to those of acknowledged Persistent Organic Pollutants, such as aldrin, DDT, and heptachlor. The results also show that P_{OV} and LRTP of the entire substance family, i.e. including the transformation products, are significantly higher than those of the parent compounds alone.

Overall Persistence, Long-range Transport Potential and Global Distribution of Endosulfan and its Transformation Products

Linus Becker, Urs Schenker, Martin Scheringer

Swiss Federal Institute of Technology, ETH Zürich, Switzerland, January 2009
scheringer@chem.ethz.ch

Summary

Overall persistence (P_{OV}) and long-range transport potential (LRTP) of α- and β-endosulfan and two of their transformation products, endosulfan sulfate and endosulfan diol, are estimated with two multimedia box models, the OECD P_{OV} and LRTP Screening Tool and the global, latitudinally resolved model CliMoChem. The OECD Tool yields P_{OV} and LRTP for each compound separately, whereas the CliMoChem model calculates the environmental distribution of the parent compounds and the formation and distribution of the transformation products simultaneously. Results from the CliMoChem model show that P_{OV} and LRTP of the endosulfan substance family are similar to those of acknowledged Persistent Organic Pollutants, such as aldrin, DDT, and heptachlor. The results also show that P_{OV} and LRTP of the entire substance family, i.e. including the transformation products, are significantly higher than those of the parent compounds alone.

1 Introduction

In a first step, we use the OECD P_{OV} and LRTP Screening Tool (Wegmann et al. 2009) to estimate the P_{OV} and LRTP of α- and β-endosulfan and two of its transformation products, endosulfan sulfate and endosulfan diol. The OECD Tool is a generic multimedia box model that yields estimates of P_{OV} and LRTP for screening purposes. In the context of endosulfan, a drawback of the OECD Tool is that it cannot cover parent compounds and transformation products in parallel, i.e. the dynamic formation of the transformation products out of the parent compound during the parent compound's environmental transport is neglected. Therefore, we also use the more complex global environmental fate model *CliMoChem* (Scheringer et al. 2000, see Figure 1) and calculate the phase partitioning and long-range transport of α- and β-endosulfan along with its conversion into endosulfan sulfate and endosulfan diol. In the CliMoChem model, we use 10 latitudinal zones and a single pulse release of the parent compound (α- and β-endosulfan in a ratio of 7:3) to the air of the tropical region directly north of the equator (0–18 °N) and calculate the overall environmental persistence (P_{OV}) of the parent compound and also that of the parent compound and the transformation products in combination (*joint persistence*, see Fenner et al. (2000), Schenker et al. (2007)). In addition, the model yields the spatial range as a metric of LRTP that is given in percent of the pole-to-pole distance, see section 2.4.a below.

Bio-concentration or bio-accumulation factor, based on measured values (unless monitoring data are judged to meet this need)	

(d) Monitoring data (provide summary information and relevant references)

- Endosulfan (α-, β- and –sulfate) is included in the routine monitoring campaign of groundwater. It has not been found above limits of dection (0.05 µg/l and 0.02 µg/l resp.) in recent campaigns (**1.** Bundesamt für Umwelt, Wald und Landschaft/ Bundesamt für Wasser und Geologie (Hrsg) 2004: NAQUA-Grundwasserqualität in der Schweiz 2002/2003. Bern. 204 S. **2.** Bundesamt für Umwelt (Hrsg): NAQUA-Grundwasserqualität in der Schweiz. 2009 not yet published)
- A monitoring campaign of metals and organic micropollutants in Lake Geneva found no endosulfan (α-, β- and –sulfate) concentrations in lake sediments above limits of quantification (20 µg/kg) (P. Edder, D. Ortelli, A. Klein, S. Ramseier: Metals and organic micropollutants in Geneva lake waters and sediments. Rapp. Comm. Int. prot. Eaux Lèman contre pollut., Campagne 2007, 2008, 57-84.

(e) Exposure in local areas (provide summary information and relevant references)	
General	
As a result of long-range environmental transport	
Information regarding bio-availability	

(f) National and international risk evaluations, assessments or profiles and labelling information and hazard classifications, as available (provide summary information and relevant references)

Hazard classification and labelling of endosulfan products remaining on the Swiss market can be viewed under (French): http://www.psa.blw.admin.ch/index_fr_5_3_155.html:

(g) Status of the chemical under international conventions