

Für Mensch & Umwelt

Umwelt   
Bundesamt

## TFEIP 2018 – Agriculture Expert Panel

Revision of 3.D.f for impurities in pesticides and  
biproduct

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# Outline

- 1 Introduction
- 2 EEA Guidebook structure
- 3 Methodology



Reference: <http://www.oceansatlas.org/subtopic/en/c/256/>



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## Still and further problems with POP impact due to climate change

- Extreme weather conditions can lead to flooding of agricultural land where stocks of obsolete POPs pesticides are waiting to be disposed of.
- Large stocks of obsolete pesticides are situated in areas where there are intensive cash crops and agricultural activities.
- One result of another the study :

Lack of long-term monitoring data to evaluate the impact of climate change on changing POP emissions and concentrations.

- => what is the global budget of POP (and/or HCB)?

Reference: <http://www.ecology.com/2011/01/05/climate-change-intensifies-impact-of-pops-un-study/>

➤ HCB is characterized by its a high volatility and to re-emit from soil surface if the weather conditions promote this, so called 'multi-hop chemical', or for long-range transport so called 'grasshopper effect!'



Reference:  
<http://www.toxipedia.org/display/toxipedia/Hexachlorobenzene>

➤ Need for POP/HCB emission inventories!  
➤ Regulation: for the reporting of POP emission inventories

Stockholm convention for POP & the NEC  
(2016/2284)

## HCB emissions inventory in the EU

- High uncertainty: not every sector is reported by all countries!
- No or not updated methodology to estimate HCB emissions published in the GB!
- Inconsistency of the used methodology or used EF
- For pesticide use (NFR 3.D.f): minor amount of MS reported HCB emissions with the submission 2017

## **TFEIP 2017:**

**Not considered in the GB before:  
pesticides with HCB impurity or used as a by-product**

Following active substances contained HCB as a contaminant:

atrazine, simazine, **picloram**, pentachloronitrobenzene (PCNB), **chlorothalonil**, dimethyl tetrachloroterephthalate (DCPA), tefluthrin, lindane, technical HCH, PCP and PCP-Na.

Some of these substances are still in use.

**Issue: Description of the methodology needs to be updated.**

## Update of the GB chapter

- The structure was hardly changed.
- The older pesticides that were banned before 1990 and do not contain HCB contaminants have been replaced by the HCB containing pesticides.
- Extensive literature research has been carried out and the reference list has been updated.
- Information about the HCB control regulations in place by year is included.



$$E_{PEST} = \Sigma(AD_{PEST\_I} \cdot IF_{PEST\_I})$$

$E_{PEST}$  = Total HCB emission of active substances (in kg a<sup>-1</sup>, unit conversion reported in kg),

$AD_{PEST}$  = Mass of individual active substances applied (kg a<sup>-1</sup>),

$IF_{PEST\_I}$  = HCB impurity factor of individual active substances (mg kg<sup>-1</sup>)

## AD: ACTIVITY DATA

- Statistic of pesticide sales (legal act EC regulation No 1185/2009 with list of active substances), Article 3, para 1.
- Manufacturers usually report the quantities of pesticides sold and should give the amounts of pure active substance; the amounts are generally stated in units of mass (kg)

## IF: IMPURITY FACTOR (HCB CONTENT)

National standards for HCB impurity with permissible value can differ in the MS and depends on the year.

- ✓ Information about the active substances,
- ✓ Proposed maximum HCB concentration (impurity factor) in active substances used in North America from 1990,
- ✓ Proposed maximum HCB concentration (impurity factor) in active substances used in Europe from 1990,
- ✓ uncertainty information.

EEA Guidebook proposed methodology, 3.D.f, 3.I Agriculture other including use of pesticide

Active Substances	1990 mg/kg	1995 mg/kg	2000 mg/kg	2005 mg/kg	2010 mg/kg	2015 mg/kg	Reference (for max. concentration)	Banned in EU since	EU Directives or Regulations
Atrazine	2.5	1	1	use stopped	use stopped	use stopped	A	End 2003	No 2004/248/EC
Clopyralid*	not used in EU	not used in EU	not used in EU	not used in EU	2.5	2.5	B		06/64/EC, No 540/2011 , No 678/2014
Chlorothalonil**	300	300	40	10	40	40	G, I, J		2005/53/EC and 2006/76/EC
DCPA, Dacthal, Chlorthaldimethyl*****	1000	1000	40	40	use stopped	use stopped	A, F	End 2010	2009/715/EC*****
Endosulfan	0.1	0.1	0.1	0.1	0.1	use stopped	C	End 2011	No 1107/2009
Lindane***	100	50	50	50	use stopped	use stopped	D	End 2007	No 1107/2009, EC 850/2004
Pentachloronitrobenzene (PCNB), Quintozene	500	500	500	use stopped	use stopped	use stopped	A	End 2000	No 2000/816/EC
Picloram****	50	50	50	50	50	50	H		No 540/2011, 2010/39/EU, 2008/69/EC
Propazine	1	1	1	use stopped	use stopped	use stopped	like Simazine		No 2002/2076
Simazine*****	1	1	1	use stopped	use stopped	use stopped	C	End 2004	No 2004/247/EC
Pentachlorophenol (PCP)	50	50	50	use stopped	use stopped	use stopped	E	End 2002	No 2002/2076

See reference notation under Table XX-3

\* Authorised in most of the EU-MS (see <http://ec.europa.eu/food/plant/pesticides/eu-pesticides-database>)

\*\* Some European countries use low concentrations since 2005 because the HCB impurity concentration in the actives substances is markedly lower than indicated in the regulation, these countries use 10 mg/kg

\*\*\* At the beginning of 1990 low concentrations were used in some European countries. In Europe 100 mg/kg is applied.

\*\*\*\* Authorised in AT, BG, CZ, DE, DK, ES, FR, GR, HU, IT, PL, PT, RO, SI, SK, UK

\*\*\*\*\* According Article 2(3) of 2009/715/EC (Commission Decision of 2009/715/EC (Commission Decision of 2009/715/EC))

\*\*\*\*\* 2009/715/EC (Commission Decision of 2009/715/EC) and the withdrawal of authorisations for plant protection products containing that substance) (Commission Decision of 2009/715/EC (Commission Decision of 2009/715/EC) and the withdrawal of authorisations for plant protection products containing that substance)



## EMISSION FACTOR

### Status in 2017:

Very little published information about the HCB quantities that are actually emitted during application of relevant pesticides is available .

Different assumptions regarding the percentage of the evaporation rate.

### Updated status in 2018:

Using the one-dimensional pesticide leaching model PELMO to predict the pesticide volatilisation after agricultural applications under field conditions.

=> The result of the volatilization is 1 or 100%. In this context, the use of an emission factor is negligible for the calculation of HCB emissions.

## Update of the GB chapter, what is still missing

- Information about the HCB control regulations in place by year is included in particular for North America, Canada and Europe.
- **What happened with the HCB control regulation in Eastern Europe?????**

We are looking for volunteers who could give support.....

Thank you

Ulrike

German Environment Agency, Dep. I 2.6 Emission situation