TFEIP 2018 – Agriculture Expert Panel

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

Ulrike Döring (German Environment Agency, Dep. Emission situation)
Outline

1 Introduction
2 EEA Guidebook structure
3 Methodology

Introduction

Climate change increases vulnerability of planet to Persistent Organic Pollutants

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)?

HCB is characterized by its 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’!

Need for POP/HCB emission inventories!

Regulation: for the reporting of POP emission inventories

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

Reference:
http://www.toxipedia.org/display/toxipedia/Hexachlorobenzene
Introduction

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• The older pesticides that were banned before 1990 and do not contain HCB contaminants have been replaced by the HCB containing pesticides.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.
EEA Guidebook proposed methodology, 3.D.f, 3.I Agriculture other including use of pesticide

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

- \( E_{PEST} \) = Total HCB emission of active substances (in kg a\(^{-1}\)), unit conversion reported in kg,
- \( AD_{PEST} \) = Mass of individual active substances applied (kg a\(^{-1}\)),
- \( IF_{PEST\_I} \) = HCB impurity factor of individual active substances (mg kg\(^{-1}\)).

**AD: ACTIVITY DATA**

- Statictic 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

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<td>mg/kg</td>
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<td>Clopyralid*</td>
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<td>2.5</td>
<td>2.5</td>
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<td>06/64/EC, No 540/2011, No 678/2014</td>
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<td>Chlorothalonil**</td>
<td>300</td>
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<td>40</td>
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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 lower levels 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 levels of atrazine use were authorised in Europe 100 mg/kg is applied.

**** Authorised in AT, BG, CZ, DE, EE, HU, IE, IT, LV, LT, H, PL, SE, UK

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.

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