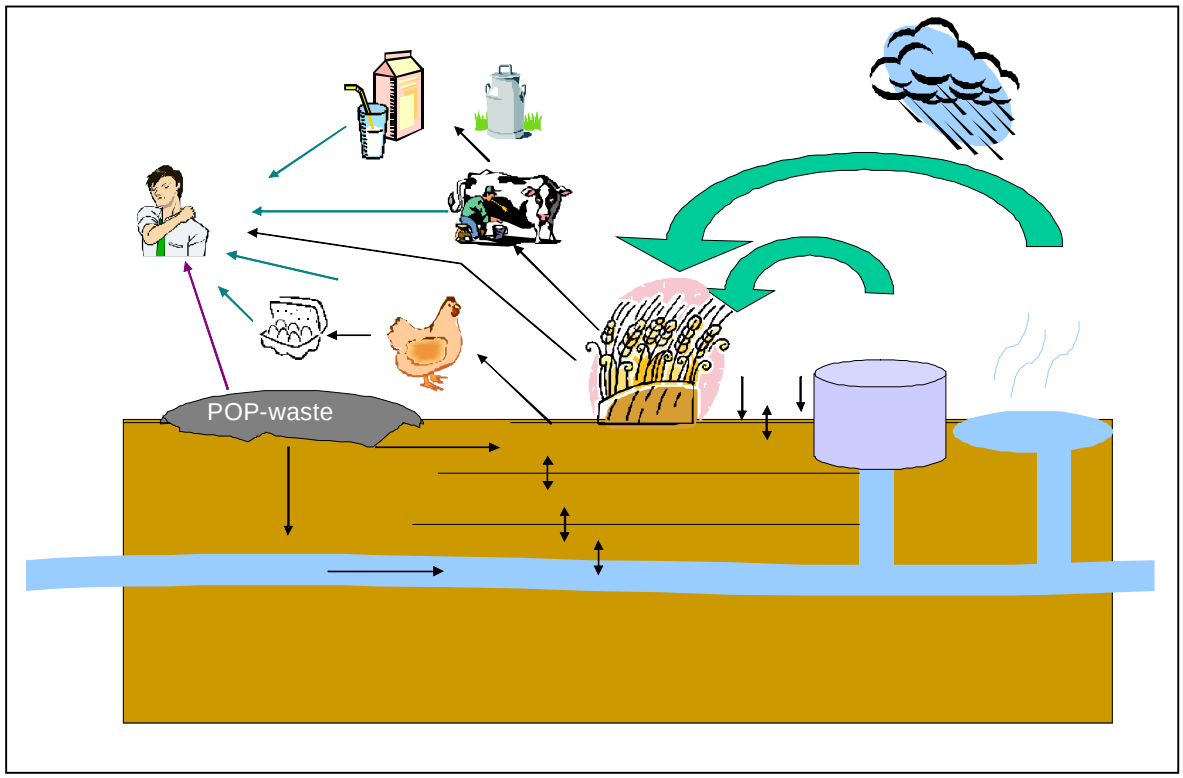
European Commission, Brussels

Study to facilitate the implementation of certain waste related provisions of the Regulation on Persistent Organic Pollutants (POPs)

REFERENCE: ENV.A.2/ETU/2004/0044

EXECUTIVE SUMMARY REPORT

August 2005



BiPRO
Beratungsgesellschaft für integrierte Problemlösungen

1 Objectives

Against the background of Regulation 2004/850/EC the intention of the project was in particular to

- compile and evaluate existing data on the occurrence and levels of POPs in different waste categories and on existing concentration limits for POPs in waste.
- elaborate and apply a methodology to propose specific low and maximum concentration limits for the 14 POPs substances and substance classes following Regulation 850/2004/EC.
- elaborate and apply methodology processes and criteria to assess the cases in which destruction or irreversible transformation do not represent the environmentally preferable option for management of waste with a POP content above the established limit values.
- propose reference measurement methods for the determination of the 14 POPs substances and substance classes in waste.

2 POP Mass Flows

The following figures provide an overview on mass flows of POPs and the importance of disposal routes:

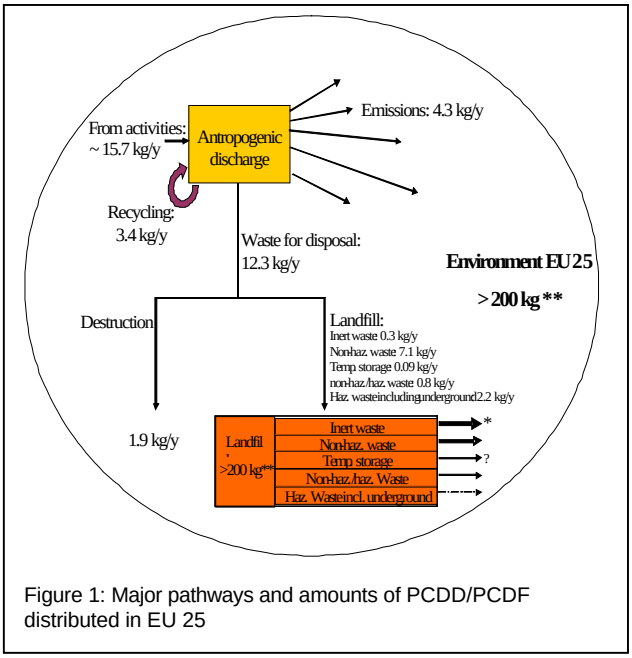


Figure 1: Major pathways and amounts of PCDD/PCDF distributed in EU 25

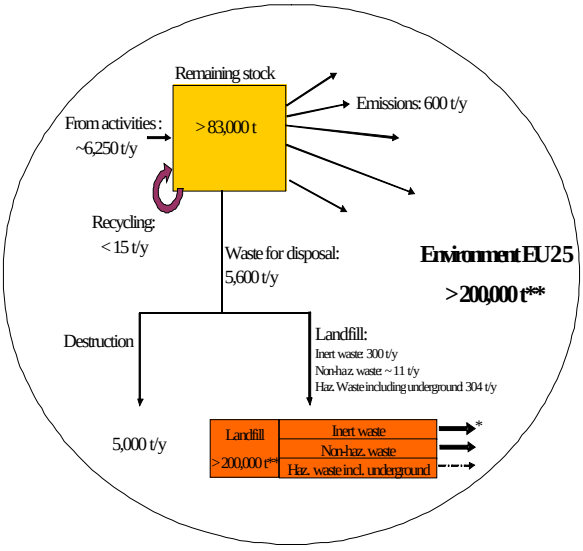


Figure 2: Major pathways and amounts of PCB distributed in EU 25

* The thickness of the arrow lines shall represent the release potential from the different landfill options
** The accumulated amounts of PCDD/PCDF in environment and landfills are estimated (note: they are equal by coincidence)

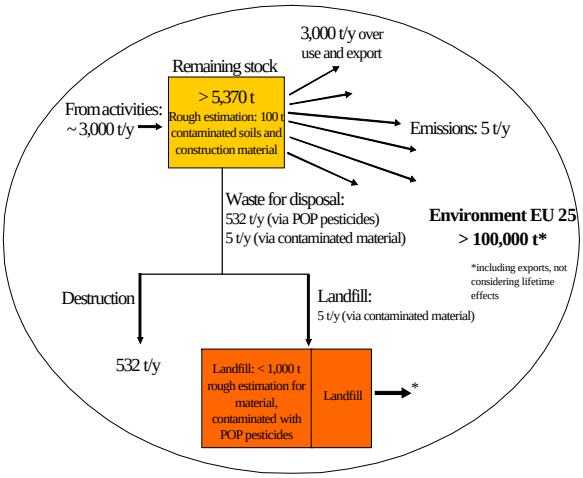


Figure 3: Major pathways and amounts of POP pesticides distributed in EU 25

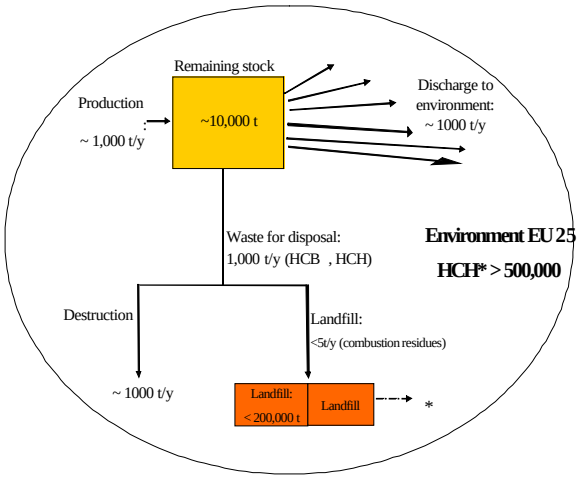


Figure 4: Major pathways and amounts of other POPs distributed in EU 25

* including exports, not considering lifetime effects

3 Limit Values

The **"low POP content limit" (LPCL)** serves to classify whether a waste must be managed in accordance with Annex V of the Regulation. POP concentrations above the LPCL require the destruction/irreversible transformation of the POP content in the waste. Individual limits may be established for different POPs.

The "**maximum POP content limit"** restricts derogations from the obligation to destroy or irreversibly transform the POPs content in waste to those waste meeting these limit values. Also the maximum POP content limit can be different for different POPs.

A methodology has been developed to identify and assess possible limit values. This methodology is using as a major element lower and upper limitation criteria:

Lower limitation criteria:

- A: Analytical potential
- B: Environmental background contamination
- C: Disposal/recovery capacities
- D: Economic feasibility

Upper limitation criteria:

- X: Z: Existing limit values already agreed by the European Union
- Y: Worst case scenario for human health risks
- Z: Precautionary principle

For the assessment of criterion A relevant measurement techniques and corresponding limits of detection and quantification for all POPs are described in the report. Beyond that it is

recommended to further develop sampling and analysis standards and update the results. Criterion Y includes various environmental aspects and criteria.

A strict application of criterion X (precautionary principle) requires the proposal of the lowest possible value as low POP content limit. Thus it works as a target function and reduces the range of possible limits to the highest "lower limitation" criterion. A less strict application allows further options for the low POP content limit.

The developed methodology provides favourable options for the low POP content limit values. Option I follows a more restrictive approach with a broader coverage of waste flows and higher economic impacts, option II includes less wastes and shows less consequences. For PCDD/PCDF two different legal approaches (A,B; see below) are followed.

It is recommended that the low POP content limit values are established within the ranges that are defined by the options.

		Option 1	Option 2
PCDD/PCDF	**A**	10 ppb*	15 ppb*
	B	1 ppb**	1 ppb**
PCBs***		30 ppm	50 ppm
POP pesticides		10 ppm	50 ppm
Other POPs		10 ppm	50 ppm

* Ban of unsolidified application to soil if PCDD/PCDF concentration of 1 ppb is exceeded (R10); solidification is fulfilled if a leachate rate of 0,01%/100 years is not exceeded

** Annex V , part 1 amended: (R4) for waste codes 100207 (-08), 100504 (-03), 100603 (-04) following Decision 2000/232

*** total PCB in terms of Σ Cong. x 5

Obviously also an appropriate combination of options is possible.

For the maximum POP content limits the evaluation of results from leaching tests and of information on permeability of sealing layers and mobility of POPs in soil resulted in the following proposal for maximum POP content limits for non hazardous and hazardous landfills, provided the provisions of the landfill directive and appropriate technical requirements (e.g. solidification by a leachate rate below 0,01%/100 years) are fulfilled:

PCDD/PCDF:	5,000 ppb	PCB:	2,000 ppm
POP pesticides:	5,000 ppm	other POPs:	5,000 ppm

Based on current knowledge the long-term safety of salt mines and deep hard rock mines is such that no reasons for restrictions for any of the pollutant classes appear indicated for these disposal routes.

4 Support for implementation

In order to facilitate the implementation of the EU POP Regulation and focus the monitoring and control of wastes on the relevant sectors, a categorisation of the waste codes listed in the European waste list[1] has been proposed in the project. This categorisation has been made in view of their potential to contain POPs in concentrations exceeding the limit values to be established under the European POP Regulation.

The grouping will categorise all waste codes in one of the following groups:

- Group A: low likelihood to exceed the low POP content limits
- Group B: high likelihood to exceed the low POP content limits
- Group C: uncertain risk

To support implementation of the developed method to define environmental preferability a reporting format is proposed as a tool for reporting from Member States to the Commission. The following matrix is suggested to be part of the reporting format. It indicates the outcome of a check on environmental preferability against a benchmark.

	Performance related to benchmark			
	credits	***weight***	***total performance***	***evidence and justification***
① POP emissions				
Air				
Leachate				
Waste				
② Other emissions				
CO_2 emission for destruction/solidification				
CO_2 emission for transport				
Other emissions (Greenhouse gases, heavy metals, acidifying gases)				
③ Risks, uncertainties				
legal compliance				
long term safety				

Table 1: Draft reporting format - Performance matrix for justification of alternative waste management operations under Annex V to the EU POP regulation

It is recommended to discuss the reporting format with Member States and include remarks and additional ideas before launching its application. However, the reporting format should in any case enable comparability of decisions and should be suitable for building up a database to enable a European wide support of authorities.

[1] Decision 2000/532/EC