

QUESTIONNAIRE

“Study to Support the Review of Waste-related issues in Annexes IV and V of Regulation (EC) 850/2004”¹

1) Aim of the questionnaire

The following questionnaire has been prepared by BiPRO GmbH (part of Ramboll)² in close coordination with the European Commission. The questionnaire aims at gathering up-to-date information and quantitative data on Persistent Organic Pollutants (POPs) and more specifically on waste related issues of certain “new POPs”, “candidate POPs” and “already listed POPs”. The information will provide the EU Commission with the necessary scientific basis to propose amendments to the POP Regulation (EC) 850/2004 (hereafter called “POP Regulation”), due to the listing of new substances and to the review of concentration limits for substances already listed. In addition, the study shall provide guidance on how wastes containing the new POPs may be managed.

2) Background information

POPs are a group of organic compounds that possess toxic properties, persist in the environment, bioaccumulate through the food web and pose a risk to human health and the environment. POPs are transported across international boundaries far from their sources through air, water and migratory species.

The "Protocol to the regional UNECE Convention on Long-Range Transboundary Air Pollution" (CLRTAP) and the Global "Stockholm Convention" on POPs are international, legally binding instruments aiming to reduce and eliminate the production, use and releases of POPs in the territories of all participating parties. Both contain provisions on the environmentally sound management of wastes consisting of, containing or contaminated by POPs (hereafter called “POP waste”).

Although substantial progress has been achieved in limiting the use and application of POPs and reduce their emission into the environment, there are ongoing releases into the environment as well as a constant cycling of substances released in the past. For an optimised approach to elimination, all sectors in the life cycle of a product and of anthropogenic emission sources need to be considered. In this framework, proper waste management can contribute substantially to the reduction of POP releases into the environment, and a comprehensive legislation on POP waste is a necessary pre-requisite.

The Stockholm Convention was implemented into EU Community law in 2004 by the POP Regulation. It foresees an obligation to generally destroy or irreversible transform the POP content

¹ Information related to this project on behalf of the European Commission is provided on a dedicated project website at <http://pops-and-waste.bipro.de>.

² BiPRO GmbH (part of Ramboll), Munich, Germany (www.bipro.de), has been contracted by the European Commission to carry out the “Study to support the review of waste-related issues in Annexes IV and V of Regulation (EC) 850/2004”

of waste above certain concentration limits (the 'low POP content'). In addition, in exceptional cases, waste above the limits may be otherwise managed with defined operations for specified waste types if destruction or irreversible transformation do not represent the environmentally preferable option and the concentration in such wastes are below another threshold (the 'high POP content').³

In 2017, the Conference of the Parties of the Stockholm Convention (SC) decided to add three new substances to the relevant Annexes. Every time a substance is listed as a POP by the SC, the parties have to reflect the listing in domestic legislation. The EU as a party to the Convention is requested to amend the POP Regulation by May 2018 to include these 'new POPs'.

In addition, three substances are currently under review procedures and are likely to be added to the list of POPs under the SC in the next years (the so-called "candidate POPs"). For the new POPs and the candidate POPs, there is a need to improve the knowledge basis regarding quantities that were used in the past, their concentrations and sources, as well as regarding aspects related to waste management in terms of disposal and recycling paths. This information is needed to assess possible disposal options and to establish concentration limits for waste⁴. Consequently, further analysis is needed for the following substances:

- **“new POPs”**: Decabromodiphenylether (decaBDE), short-chain chlorinated paraffins (SCCPs) and Hexachlorobutadiene (HCBD)
- **“candidate POPs”**: Dicofol, Pentadecafluorooctanoic acid (PFOA, perfluorooctanoic acid) and its salts and PFOA-related compounds, Perfluorohexanoic acid (PFHxS) and its salts and PFHxS-related compounds

Furthermore, new scientific information on three substances already listed in the annexes of the SC has raised the necessity of reviewing already established concentration limits. Therefore, the following substances require renewed analysis and, potentially adjustment of the concentration limits:

- **“already listed POPs”**: Hexabromocyclododecane (HBCD), Polychlorinated Biphenyls (PCB), Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)

4) Instructions on using the questionnaire

Please note that some of the relevant questions might have already been addressed in requests for information under the SC or the Basel Convention (BC). Submissions from EU member states related to these requests for information will be reviewed and considered as appropriate for the purpose of the actual study.

The present questionnaire is provided as an MS-Word-file and it would be much appreciated to receive your responses using this electronic version. All questions are numbered and highlighted

³ Article 7 of Regulation EC (No) 850/2004

⁴ Note that for SCCPs and HCBD concentration limits are already established in the Annexes IV and V of the POP Regulation. Only for decaBDE new concentration limits need to be established.

in grey. All fields where input is desired are blue.

The questionnaire is structured in three main sections.

- **Section I – “new POPs”:** decaBDE, SCCPs and HCBd
- **Section II – “candidate POPs”:** dicofol, PFOA and PFHxS
- **Section III – “already listed POPs”:** HBCD, PCB and PCDD/PCDF

Please only fill in the sections that you consider relevant and where you can provide specific information. Please provide specific references wherever possible and do not hesitate to also send us additional background information in form of documents, reports, data sets or as links to websites.

We recommend to quickly screen all questions of a section before starting to fill in the information. If a question is unclear or if you desire to discuss a certain aspect, please do not hesitate to contact one of the following contact persons of the project team:

Contact person	E-mail address	Telephone
Mr Alexander Potrykus	apot@ramboll.com	+49 89 978970-100
Mr Milos Milunov	mo@ramboll.com	

All information provided will be used in a transparent and traceable way for the present study. Provided that your agreement is expressed below, submitted non-confidential information will be published on the dedicated project related website⁵. If you wish to submit information on a confidential basis, please indicate this in your response. Any confidential information will only be used in anonymous or aggregated form.

Please indicate in the following table whether you agree with the publication of your answers to the Questionnaires:

Section	Y/N
I.I Occurrence of “new POPs” decaBDE, SCCPs and HCBd	
I.II Recycling Operations/Waste Management Options for “new POPs”	
I.III Concentration Limits for decaBDE, SCCPs and HCBd	
II.I Occurrence of “candidate POPs” Dicofol, PFOA and PFHxS	
II.II Recycling Operations/Waste Management Options for “candidate POPs”	
II.III. Concentration Limits for dicofol, PFOA and PFHxS	

⁵ <http://pops-and-waste.bipro.de>

III	Already listed POPs	
-----	---------------------	--

Please return the completed questionnaire and any related documents to popwaste2018@ramboll.com before 29 March 2018.

In case you are rather interested to discuss with us by telephone, please let us know when we could reach you.

Name of Institution:	Norwegian Environmental Agency
Country:	NORWAY
City/ CIP Code:	_____
Street:	_____
Contact person:	_____
E-mail:	_____
Phone:	_____
Remark:	_____

Section I – “new POPs”

Decabromodiphenylether (decaBDE); short-chain chlorinated paraffins (SCCPs); Hexachlorobutadiene (HCBD)

I. Occurrence of “new POPs” decaBDE, SCCPs and HCBD (articles in use, waste, recycled articles as well as (production) processes and unintentional releases)

1. a) Please indicate whether your country /company has **stockpiles of decaBDE, SCCPs or HCBD**.

b) *If yes, please provide information on types, quantity, concentrations, etc.*

a) No stockpiles.

b)

2. Please indicate any known **occurrence and concentration of the “new POPs” decaBDE, SCCPs and HCBD in different articles in use, waste categories and recycled articles.**

decaBDE	Specification of waste/article	Concentration [mg/kg]
Articles in use	tent	4300
	Tent floor	4200
	flashlight	940
Wastes*	Waste stream: WEEE, Small domestic appliances	50
	Waste stream: WEEE, Small domestic appliances	76
	Waste stream: WEEE, Fridges	170
	Waste stream: WEEE, Small domestic appliances	610
	Waste stream: WEEE, Small domestic appliances	610
	Waste stream: WEEE; TV cases	44
	Waste stream: ELV	140
	Waste stream: WEEE, Small domestic appliances	25
	Waste stream: WEEE, Small domestic appliances	100
	Waste stream: WEEE, Small domestic appliances	99
	Waste stream: WEEE, Small domestic appliances	52
	Waste stream: WEEE, Small domestic appliances	120
	Waste stream: WEEE, Small domestic appliances	280
	Waste stream: WEEE, Small domestic appliances	150
	Waste stream: ELV	5.1
	Waste stream: ELV + WEEE (small domestic appliances)	85
	Waste stream: ELV + WEEE (small domestic appliances)	94
	Waste stream: WEEE, Small domestic appliances	130
	Waste stream: WEEE, Small domestic appliances	160
	Waste stream: WEEE (TV:s and monitors)	20

	Waste stream: WEEE (TV:s and monitors)	43
	Waste stream: WEEE (TV:s and monitors)	900
Recycled articles**	Black plant pot	430
	Garbage bag for dog	170
	Black plant pot tray	160
	Headlight part of (closing klip)	2800
	Picture frame	3000
	Headlight part of (electric cord)	170
	LED Garden light (black plastic part)	570
	LED Garden light (black plastic part)	55
	LED Garden light (black plastic part)	250
	LED Garden light (black plastic part)	170
	LED Garden light (black plastic part)	56
	LED Garden light (black plastic part)	59
SCCPs	Specification of waste/article	Concentration [mg/kg]
Articles in use	Pullover with print	2300 (MCCP 9100)
	T-shirt with print	1300 (MCCP 700)
	Sports glove	260
	Sports glove	250
	Sports textile	4000 (MCCP 6500)
	Sports yoga mats	2300 (MCCP 17000)
	Textile car	3000 (MCCP 3100)
	Textile car	860 (MCCP 1500)
	Textile car	4600 (MCCP 2200)
	Children product Pillow packaging	60000 (MCCP 27000)
	Children stroller bag plastic anti-slip mats	18000 (MCCP 130000)
	Children stroller bag packaging	40000 (MCCP 110000)
	Foam textile children car seat	4300 (MCCP 12000)
	reflective bands	6700 (MCCP 38000)
	Raincoat hat	14000 (MCCP 73000)
	USB-speaker wire	10000 (MCCP 16000)
	reflective bands	4900
	reflective bands	8700 (MCCP 7600)
	reflective bands	2500 (MCCP 40000)
	Duffy bag plastic	2800 (MCCP 18000)
	Powerbank wire	32000 (MCCP 72000)

Wastes		
Recycled articles		
HCBD	Specification of waste/article	Concentration [mg/kg]
Articles in use	All sports and textile articles tested in 2016 were <50 mg/kg	
Wastes	Waste stream: ELV + WEEE (small domestic appliances)	41
	Waste stream: ELV + WEEE (small domestic appliances)	36
	Waste stream: ELV + WEEE (small domestic appliances)	6.1
	Waste stream: ELV + WEEE (small domestic appliances)	11
	Waste stream: ELV + WEEE (small domestic appliances)	47
Recycled articles		

Remarks:

*Waste destined for recycling. <http://www.miljodirektoratet.no/no/Publikasjoner/2018/Mars-2018/Decabromodiphenyl-ether-and-other-flame-retardants-in-plastic-waste-destined-for-recycling/>

** Products are most likely made from recycled plastic since they were collected based on known characteristic of recycled plastic (cheap products, black plastic etc).

3. Please provide information on quantities of waste containing “new POPs” that are currently generated, then disposed of or recycled

“new POPs”	Specification of waste	Waste generated (in kt)	Waste disposed of (in kt)	Waste recycled (in kt)
decaBDE				
SCCPs				
HCBD				

4. Please provide information on wastes containing “new POPs” that are currently recycled (now or in the near future) and on the extent of recycling. If possible, please specify the types of new articles produced from the recycled material.

“new POPs”	Types of waste recycled	Recycling rate [%]	New articles produced from recycled material
decaBDE			

SCCPs			
HCBD			

Remarks: Please see data from our report on brominated flame retardants

<http://www.miljodirektoratet.no/no/Publikasjoner/2018/Mars-2018/Decabromodiphenyl-ether-and-other-flame-retardants-in-plastic-waste-destined-for-recycling/>

5. Please indicate up-to-date (reference) *measurement (analytical) methods* for identifying the presence and levels of the listed “new POPs” in waste.

For the brominated compounds, XRF could be used for pre-screening. Samples that contained Br concentration over 500 ppm was selected for chemical analysis.

6. Please indicate known inexpensive *screening methods* for identifying wastes containing “new POPs”

See section 5 above.

7. Please indicate any known (*production*) processes using decaBDE, SCCPs and HCBD as well as options for the environmental management of their operation and potential related *unintentional releases of these POPs* into the environment.

II. Waste Management Options/Recycling Operations for “new POPs”

- 8. Waste separation for decaBDE, SCCPs and/or HCBD containing wastes:**
- How can be **distinguished** between **contaminated and non-contaminated waste**?
 - Which **separation operations** should preferably be used **in practice to separate** contaminated from non-contaminated waste (please provide further details if available)?
 - What should be the preferred **waste management options for the contaminated waste fraction** (please provide justification and further details if available e.g. related costs)?

- a) Please see data from this report: <http://www.miljodirektoratet.no/no/Publikasjoner/2018/Mars-2018/Decabromodiphenyl-ether-and-other-flame-retardants-in-plastic-waste-destined-for-recycling/>
 b)

b)	Preferable separation operations	Relevant waste / new POP	Possible health risks for workers during separation of waste	Separation costs / ton of waste	Explanation / further information
1.					
2.					
3.					

Remarks:

c)	Preferable waste management operations	Relevant waste / new POP	Possible health risks for workers during waste management (e.g. recycling)	Management costs / ton of waste	Explanation / further information
1.					
2.					
3.					

Remarks:

III. Concentration Limits for decaBDE, SCCPs and HCBd

9. Are you aware of **any existing concentration limits for decaBDE in waste?**

2500 mg/kg hazardous waste concentration limit

10. Which **concentration limits for decaBDE in waste** according to the POP Regulation would you recommend? Please justify.

11. At which lower concentration limits for decaBDE in waste would you **expect relevant impacts** (e.g. on recycling industry)? Please justify.

12. Is there a **continued need for the derogation provided for POP-PBDEs in articles produced from recycled materials in the POPs Regulation** (i.e. level of 1,000 mg/kg or 0.1% by weight) of POP-PBDEs allowed in articles produced partially or fully from recycled materials?⁶ Please justify.

No. Due to data in our previously mentioned report on BFRs in plastic waste destined for recycling, it seems like up-to-date practices for sorting out Br containing plastics by use of XRF in combination with density separation or sensor based sorting result in low levels of POP-BDEs (and deca-BDE as well as other brominated flameretardents) in the plastics destined for recycling.

13. Is an **adjustment of existing POP limit values for SCCPs⁷ and HCBd⁸, as specified in Annex IV and V of the EU POP Regulation, and/or additional measures required** (e.g. due to any notable developments)? Please justify.

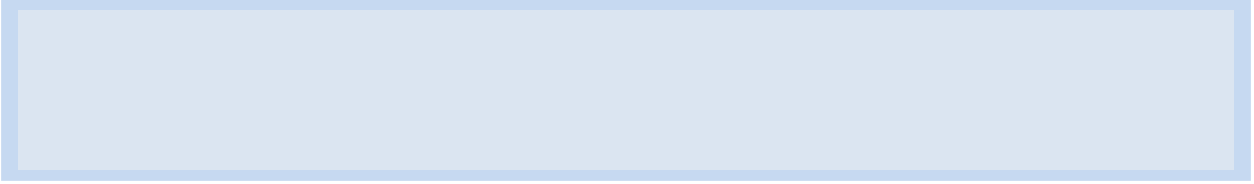
14. Please indicate if, beyond the EU POP Regulation, there are any adjustments to EU legislation needed, resulting from the listing of the “new POPs” decaBDE, SCCPs and HCBd under the Stockholm Convention.

15. Can you provide any other information or information sources relevant to Section I of this questionnaire on the “new POPs”?

⁶ See Annex I Regulation (EC) No 850/2004

⁷ Regulation (EC) 850/2004, Annex IV, concentration limit referred to in Article 7(4)(a): 10 000 mg/kg;
Maximum concentration limits of substance listed in Annex IV: 10 000 mg/kg

⁸ Regulation (EC) 850/2004, Annex IV, concentration limit referred to in Article 7(4)(a): 100 mg/kg;
Maximum concentration limits of substance listed in Annex IV: 1000 mg/kg



Section II – “candidate POPs”

Dicofol, Pentadecafluorooctanoic acid (PFOA, perfluorooctanoic acid), its salts and PFOA-related compounds, Perfluorohexanoic acid (PFHxS), its salts and PFHxS-related compounds

I. Occurrence of “candidate POPs” Dicofol, PFOA and PFHxS (articles in use, waste, recycled articles as well as production processes and unintentional releases)

16. a) Please indicate whether your country /company has *stockpiles* of “candidate POPs” listed.

b) If *yes*, please provide information on types, quantity, concentrations, etc.

a) No stockpiles.

b)

17. Please indicate any known *occurrence and concentration of the “candidate POPs”*, in different *articles in use, waste categories and recycled articles*.

a) Dicofol	Specification of waste/article	Concentration [mg/kg]
Articles in use		
Wastes		
Recycled articles		
b) PFOA, its salts and PFOA-related compounds	Specification of waste/article	Concentration [mg/kg]
Articles in use	Proofing agent	271 µg/kg
	Garden pillow	102 µg/kg (22,5 ug/m2)
Wastes		
Recycled articles		
c) PFHxS, its salts and PFHxS-related compounds	Specification of waste/article	Concentration [mg/kg]
Articles in use		
Wastes	Sludge	110 – 2700 µg/kg
	Waste water	2898 – 5689 ng/sampler
Recycled articles		

Remarks: Screening survey of hazardous substances in articles and mixtures.
<http://www.miljodirektoratet.no/Documents/publikasjoner/M957/M957.pdf>

18. Please provide information on quantities of waste containing “candidate POPs” that are currently generated, then disposed of or recycled

“candidate POPs”	Specification of waste	Waste generated (in kt)	Waste disposed of (in kt)	Waste recycled (in kt)
Dicofol				
PFOA, its salts and PFOA-related compounds				
PFHxS, its salts and PFHxS-related compounds				

19. Please provide information on wastes containing “candidate POPs” that are currently recycled (or possibly in the future) and the extent of recycling. If possible, please specify the types of new articles produced from the recycled material?

“candidate POPs”	Types of waste recycled currently (or in the future)	Recycling rate [%]	New articles produced from recycled material
Dicofol			
PFOA, its salts and PFOA-related compounds			
PFHxS, its salts and PFHxS-related compounds			

Remarks:

20. Please indicate up-to-date (reference) measurement (analytical) methods for identifying the presence and levels of the listed “candidate POPs” in waste.

21. Please indicate known inexpensive screening methods for identifying waste to be classified as POPs wastes due to their content of the listed “candidate POPs”.

22. Please indicate any known (production) processes using dicofol, PFOA and PFHxS as well as options for the environmental management of their operation and potential related unintentional releases of these POPs into the environment.

II. Waste Management Options/Recycling Operations/for “candidate POPs”

23. Waste separation for dicofol, PFOA and PFHxS containing waste:
 a) How can be **distinguished** between **contaminated and non-contaminated waste**?
 b) Which **separation operations** should preferably be used **in practice to separate** contaminated from non-contaminated waste (please provide further details if available)?
 c) What should be the preferred **waste management option for the contaminated waste fraction** (please provide justification and further details if available e.g. related costs)?

a)

b)	Preferable separation operation	Relevant waste/candidate POP	Possible health risks for workers during separation of waste	Separation costs /ton of waste	Explanation / further information
1.					
2.					
3.					

Remarks:

c)	Preferable waste management operation	Relevant waste/candidate POP	Possible health risks for workers during waste management (e.g. recycling)	Management costs / ton of waste	Explanation / further information
1.					

2.				
3.				

Remarks:

III. Concentration Limits for dicofol, PFOA and PFHxS

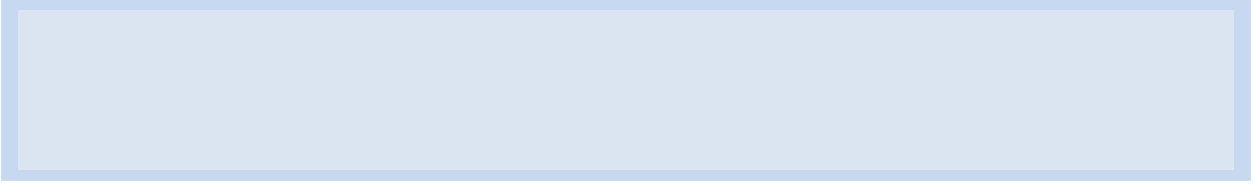
24. Are you aware of *any existing concentration limits for dicofol, PFOA and PFHxS in waste*? (please list limits individually)

25. Which *concentration limits for dicofol, PFOA and PFHxS in waste* according to the POP Regulation would you recommend? Please justify.

26. At which lower concentration limits *for dicofol, PFOA and PFHxS in waste* would you **expect relevant impacts (e.g. on recycling industry)? Please justify.**

27. Please indicate if, beyond the EU POP Regulation, there are any adjustments to EU legislation needed, resulting from the listing of the candidate POPs under the Stockholm Convention.

28. Can you provide any other information or information sources relevant to Section II of this questionnaire on the “candidate POPs”?



Section III – “already listed POPs”

Hexabromocyclododecane (HBCD), Polychlorinated Biphenyls (PCB), Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF)

29. *Are the existing concentration limits in Annex IV and V of the EU POP Regulation for HBCD, PCB and PCDD/F appropriate to ensure a sufficient level of environmental and health protection or is it necessary to adjust **them** (e.g. due to any notable developments such as new scientific data and technical progress, etc.)? Please justify.*

30. *If the existing limit values need to be adjusted, which **concentration limits for HBCD, PCB and PCDD/F in waste** would you recommend and why?*

31. *What would be the **major impacts from a possible adjustment of existing limit values of Annex IV or V of the EU POP Regulation**? Please justify.*