

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	Y
I.II	Recycling Operations/Waste Management Options for “new POPs”	Y
I.III	Concentration Limits for decaBDE, SCCPs and HCBd	Y
II.I	Occurrence of “candidate POPs” Dicofol, PFOA and PFHxS	Y
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	
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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:	European Automobile Manufacturers Association (ACEA)
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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) Stockpiles of DecaBDE as a substance or contained in mixtures:
The need for a continued supply / production of so called Legacy Spare Parts (LSPs) has been approved by the COP-8 by granting an exemption for very few automotive applications. In order to enable manufacturers this production, a small amount of DecaBDE stockpiles would be required at the material manufacturers. It is however not known to us the amount nor the concrete manufacturers.
- b) Stockpiles of articles containing the substance:
There are still a few spare parts on stock containing DecaBDE. The number of these parts is not exactly quantifiable but supposed to be low.

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	<p>The EU Vehicle Manufacturers and their supply chain will phase out DecaBDE by mid 2018 in all running productions and new developments.</p> <p>There is only a very limited amount of DecaBDE required for the production of legacy spare parts following the given exemptions for such applications.</p> <p>Rough assumptions on amounts were already provided to the POPRC.</p> <p>There is no usage of the other substances in automotive articles in use known to us</p>	See assumptions provided to POPRC (UNEP-POPS-POPRC.12-INF-9-Rev.1)*
Wastes	<p>The concentrations of DecaBDE in the waste streams (SR - Shredder residues) are differing, depending on origins (e.g. purely Automotive waste or mixed waste). According to studies** done by several institutions and governments all concentrations of DecaBDE in pure ASR were well below 1.000 mg/kg neglecting one outlier with more than 1.000 mg/kg</p>	0,01 - 590 in ASR
	<p>Fibres as a fraction of ASR (gained by separation via Post Shredder Technology PST), measured by ARN Tiel during 2 months in 2017</p>	0 - 48

	Plastic < 1.1 g/cm ³ (gained by separation via Post Shredder Technology PST), measured by ARN Tiel during 2 months in 2017	0 - 12
Recycled articles	There is no information available in our industry on the amount of DecaBDE in recycled articles. Vehicle components made of recycled materials however do undergo the same rules as components made of virgin materials. The self-commitment of EU vehicle manufacturers to phase out DecaBDE by mid 2018 therefore is also applicable to components made of recycled materials.	No DecaBDE contained in articles produced after mid 2018 and made of recycled materials.
SCCPs	Specification of waste/article	Concentration [mg/kg]
Articles in use		
Wastes		
Recycled articles		
HCBD	Specification of waste/article	Concentration [mg/kg]
Articles in use		
Wastes		
Recycled articles		

**** Studies cited:**

- COWI. End-of-life vehicles and environmental pollutants in material flows at shredder plants – an overview. 2013
- ELV Environmental Services Ltd (ELVES). Analysis of Automobile Shredder Residue, Clearaway, Belfast. Letter report and analytical report number 15-80068-2 from mayer environmental to ELVES, 7th December 2015
- British Metals Recycling Association (BMRA). BRFF Style Report - Metal Fragmentising Operations - Industrial

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	ASR (in average 20 % of each vehicle)	According to Eurostat the total weight of all End-of-life-vehicles in EU-28 in 2014 was 6,350 kt which results in	A maximum of 5 % of the vehicle weight is disposed of resulting in 317 kt in EU-28 in 2014	According to statistics 6.033 kt of ASR have been recycled or recovered in EU-28 in 2014

		app. 1,270 kt ASR in EU-28 in 2014		
	Dismantled plastic parts from End-of-life-vehicles (e.g. bumpers) for reuse or recycling	No data for EU-28 available. Data from German BMU showed that 1.36 kt of plastic parts were dismantled	No data for EU-28 available. Data from German BMU showed that 0.03 kt of dismantled plastic parts were disposed of	No data for EU-28 available. Data from German BMU showed that 1.3 kt of dismantled plastic parts were recycled
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	ASR (EU-28 2014)	95 % for recycling and recovery	No information available
	Dismantled plastic parts from End-of-life-vehicles (e.g. bumpers) for reuse or recycling	95,6 %	No information available
SCCPs			
HCBD			

Remarks:

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

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

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.

Automotive OEMs never produced these substances on their own nor processed them directly.

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) Complying with the already existing recycling laws in Europe and other regions in the world (ELV Directives), the automotive Industry together with its partners from the waste sector were since almost 20 years able to develop, implement and continuously optimise an efficient and well working Recycling scheme that already achieves recycling rates of 85% of the weight of the vehicle.

The broad experience gained since then clearly shows that for a complex product such as a car, there is no complete information available on the content of specific substances when a car becomes waste:

- Considering the longevity of vehicles (>15 years) means that reliable information for recent ELVs is severely limited.
- Provided a communication about detailed information on POP containing parts were theoretically possible, it would lead to a disproportionate level of data that cannot be utilized by the recycling sector in a practical manner. Due to assembly of accessory or non-original parts the material composition of a vehicle usually changes during its use phase. POP containing parts can be added to the vehicles by the vehicle owner and automotive industry has no control and no information about this activities.
- Due to complexity and differentiation of products, and the huge variety of different models and variants in the modern car-park, the provided information and material data could not be handled and managed in a practical and productive manner by dismantlers or recycling facilities.
- Comprehensive dismantling of widely-dispersed parts and components is not always technically feasible nor environmentally and economically beneficial
- Instead, the existence of well-advanced treatment and recycling processes and post-shredder separation, should be acknowledged.

ACEA is currently performing a Study with the Öko Institute which aims to provide further details, facts and figures on these statements. The Study is expected to be published by midst 2018

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. Post Shredder Technologies	Non metallic ASR (Automotive Shredder Residue)	There are no health risks, provided that the standard procedures and requirements are fulfilled.	Recycling operations are not executed by automotive OEMs but by relevant actors in the recycling sector.	
	2.				
	3.				

Remarks:

During PST the most brominated substances end up in the heavy fraction together with PVC. Via XRF the Bromine content (independent of the concrete substance) could be measured – and separated if necessary from each fraction of PST.

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. Metal Production (R4)	Fractions from ASR, e.g. the	None*	No costs	Used in a blast furnace as a

	plastics fraction (>1.1 < 1.3 g/cm ³) which contains a mixture of different plastics			substitute for coal or heavy oil. (approved methodology for feedstock recycling under Directive 2000/53/EC)
2. Cement kiln (R1)	Fractions from ASR, e.g. the plastics fraction (>1.1 < 1.3 g/cm ³) which contains a mixture of different plastics	None*	No costs	approved methodology for energy recovery under Directive 2000/53/EC)
3. Municipal waste incineration	Fractions from ASR, e.g. heavy plastics fraction (> 1.3 g/cm ³) which contains PVC and plastics with brominated flame retardents	None*		

Remarks:

*See BAT/BEP-Document for recycling and disposal of wastes containing PBDEs

III. Concentration Limits for decaBDE, SCCPs and HCBd

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

no

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

- Contamination of ASR with DecaBDE found in different studies (see question 2) is below 1,000 ppm if not mixed with other waste streams.
- LPCLV: 1,000 ppm (0.1 %) for DecaBDE in waste streams according to the limit value in products under REACH Annex XVII.

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

A LPCLV for DecaBDE < 1000ppm could require the whole ASR to be incinerated. This is in contradiction to recycling quota to be fulfilled under the EU directives 2000/53/EC and 2008/98/EC (waste hierarchy) as well as the principles of a circular economy.

Besides this, incineration capacities are not sufficiently available on a global level. More than 6 million end-of-life vehicles have been treated in Europe in 2014 with only limited possible incineration capacities in some EU countries (even more limited in developing countries)

Incineration after a manual dismantling enhances environmental impacts due to CO₂-emissions caused by necessary transportation efforts. Further details will be provided in ACEA study to be published in mid 2018

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.

13. Is an *adjustment of existing POP limit values for SCCPs⁷ and HCB⁸*, 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.

Not relevant for the Auto Industry

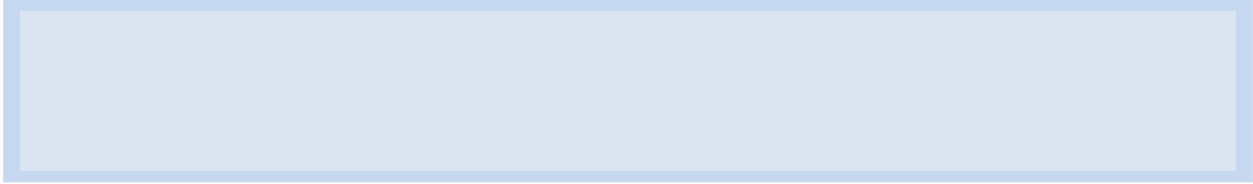
14. Please indicate if, beyond the EU POP Regulation, there are any adjustments to EU legislation needed, resulting from the listing of the “new POPs” decaBDE, SCCPs and HCB⁸ under the Stockholm Convention.

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

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



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.

c) Stockpiles of PFOA as a substance or contained in mixtures:

The only application, known to us is PFOA contained in fire fighting foams which still might be stored at fire fighter facilities. An exemption for this application under EU REACH restriction has been granted. A quantification is not possible.

d) Stockpiles of articles containing the substance:

There are still a few old spare parts on stock containing PFOA. The number of these parts is not exactly quantifiable but supposed to be low. In the majority of cases, these parts are likely to be PTFE-coated with residues of APFO (Ammonium-Salt of PFOA, which is used as Polymerisation aid in the production of PTFE)

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	<p>PFOA and its compounds have been phased out from applications under the control of the EU vehicle manufacturers since 2015. Only remaining articles in use are low amounts of spare parts on stock.</p> <p>We however see several potential challenges which were summarized in the ACEA response to the POPRC on PFOA.</p> <p>These can be briefly summarized as:</p>	

	<ul style="list-style-type: none"> No exhaustive list of substance identifiers (e.g. CAS numbers) are available Risk of components containing unintended PFOA residues especially from products sourced in China. <p>Please check our related input.</p>	
Wastes	ASR*	0,002
	ASR fines*	0,001
Recycled articles	<p>There is no information available in our industry on the amount of PFOA and its compounds in recycled articles.</p> <p>Vehicle components made of recycled materials however do not undergo different rules than components made of virgin materials.</p>	
c) PFHxS, its salts and PFHxS-related compounds	Specification of waste/article	Concentration [mg/kg]
Articles in use		
Wastes		
Recycled articles		

Remarks:

* ELV Environmental Services Ltd (ELVES). Analysis of Automobile Shredder Residue, Clearaway, Belfast. Letter report and analytical report number 15-80068-2 from mayer environmental to ELVES, 7th December 2015

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.*