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# Development of the Special waste stream plan SWSP for wastes containing POPs

**3<sup>rd</sup> Workshop**  
**23<sup>rd</sup> of February 2017**  
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# instruments and measures - regulatory

- **1. Classification of POPs waste as hazardous**
  - **Decision 2014/955 EU amending European List of Wastes**
  - **Annex, chapter „assessment and classification“**  
**Wastes containing PCDD/PCDF, DDT, chlordane, HCH including lindane, dieldrin, endrin, heptachlor, hexachlorobenzene, chlordecone, aldrin, pentachlorobenzene, mirex, toxaphene hexabromobiphenyl and/or PCB**  
**exceeding the concentration limits indicated in Annex IV to Regulation (EC) 850/2004 shall be classified as hazardous**
  - **Other POPs (PBDE, PFOA, endosulfans, hexachlorobutadiene, PCN, SCCP, HBCD, in future PCP and further new POPs)?**

# instruments and measures - regulatory

Hazardous Properties of Wastes	
HP 1	Explosive
HP 2	Oxidising
HP 3	Flammable
HP 4	Irritant – skin irritation and eye damage
HP 5	Specific Target Organ Toxicity (STOT) and Aspiration Toxicity
HP 6	Acute Toxicity
HP 7	Carcinogenic
HP 8	Corrosive
HP 9	Infectious
HP 10	Toxic for Reproduction
HP 11	Mutagenic
HP 12	Release of an acute toxic gas
HP 13	Sensitising
HP 14	Ecotoxic
HP 15	Waste capable of exhibiting a hazardous property listed above not directly displayed by the original waste

# instruments and measures - regulatory

Gefahreneigenschaft		Gefahrenklasse-, -kategorie und -hinweise nach CLP-VO			Einstufungskriterien gefährlicher Abfall
<b>HP 5</b>	STOT/Aspirationsgefahr	STOT einm. 1; H370 STOT wdh. 1; H372	STOT einm. 2; H371 STOT wdh. 2; H373	STOT einm. 3; H335 Asp. 1; H304	H370, H372 jeweils $\geq 1\%$ H371, H373 jeweils $\geq 10\%$ H335 $\geq 20\%$ $\sum$ H304 $\geq 10\%$ und kinematische Viskosität (insgesamt bei $40\text{ }^{\circ}\text{C}$ in Flüssigkeiten) $< 20,5\text{ mm}^2/\text{s}$
<b>HP 6</b>	akute Toxizität	O: Akut tox. 4; H302 D: Akut tox. 4; H312 I: Akut tox. 4; H332	Akut tox. 3; H301 Akut tox. 3; H311 Akut tox. 3; H331	Akut tox. 1 und 2; H300 Akut tox. 1 und 2; H310 Akut tox. 1 und 2; H330	Berücksichtigungsgrenzen: H302, H312, H332 = $1\%$ , sonst = $0,1\%$ je Eigenschaft $\sum$ H300 Akut tox.1 $\geq 0,1\%$ $\sum$ H300 Akut tox.2 $\geq 0,25\%$ $\sum$ H301 $\geq 5\%$ $\sum$ H302 $\geq 25\%$ $\sum$ H310 Akut tox.1 $\geq 0,25\%$ $\sum$ H310 Akut tox.2 $\geq 2,5\%$ $\sum$ H311 $\geq 15\%$ $\sum$ H312 $\geq 55\%$ $\sum$ H330 Akut tox.1 $\geq 0,1\%$ $\sum$ H330 Akut tox.2 $\geq 0,5\%$ $\sum$ H331 $\geq 3,5\%$ $\sum$ H332 $\geq 22,5\%$
<b>HP 7</b>	karzinogen	Karz. 1A und 1B; H350	Karz. 2; H351		H350 $\geq 0,1\%$ H351 $\geq 1\%$
<b>HP 10</b>	reproduktionstoxisch	Repr. 1A und 1B; H360	Repr. 2; H361		H360 $\geq 0,3\%$ H361 $\geq 3\%$
<b>HP 11</b>	mutagen	Muta. 1A und 1B; H340	Muta. 2; H341		H340 $\geq 0,1\%$ H341 $\geq 1\%$
<b>HP 14</b>	ökotoxisch	Folgende chemikalienrechtliche Gefahreneinstufungen sind in der CLP-Verordnung vorgesehen, aber noch nicht im Anhang III der Abfallrahmenrichtlinie verortet:			Bis auf weiteres gelten für die Eigenschaft HP 14 die Kriterien des Anhangs VI der Stoffrichtlinie weiter, d.h.:
		Aqu. akut 1; H400 Aqu. chron. 3; H412 Ozon 1; H420	Aqu. chron. 1; H410 Aqu. chron. 4; H413	Aqu. chron. 2; H411	$\sum$ R50, R50/53 $\geq 0,25\%$ $\sum$ R51/53 $\geq 2,5\%$ $\sum$ R52, R53, R52/53 $\geq 25\%$ $\sum$ R59 $\geq 0,1\%$ .

# instruments and measures - regulatory

## ■ C+L inventory acc. to CLP-Regulation (ECHA)

Harmonised classification - Annex VI of Regulation (EC) No 1272/2008 (CLP Regulation)

### General Information

Index Number	EC / List no.	CAS Number	International Chemical Identification
607-624-00-8	217-179-8	1763-23-1	perfluorooctane sulfonic acid heptadecafluorooctane-1-sulfonic acid

ATP Inserted / Updated: ATP01

CLP Classification (Table 3.1)

Classification		Labelling			Specific Concentration limits, M-Factors	Notes
Hazard Class and Category Code(s)	Hazard Statement Code(s)	Hazard Statement Code(s)	Supplementary Hazard Statement Code(s)	Pictograms, Signal Word Code(s)		
Acute Tox. 4 *	H302	H302		GHS09 GHS08 GHS07 Dgr		
Acute Tox. 4 *	H332	H332				
Carc. 2	H351	H351				
Lact.	H362	H362				
STOT RE 1	H372 **	H372 **				
Aquatic Chronic 2	H411	H411				
Repr. 1B	H360D ***	H360D ***				

Signal Words	Pictograms		
Danger			
	Environment	Health hazard	Exclamation mark

# instruments and measures - regulatory

POP	classification acc. Decision 2000/532/EC	classification C+L inventory	Hazard statement	Limit value acc. Annex III Directive 2008/98/EC
Aldrin, Chlordane, Dieldrin, Endrin, Heptachlor, HCB, Toxaphene, Mirex, DDT, chlordecone, HCH and Lindane, Pentachlorobenzene, Hexabromobiphenyl	50 mg/kg	Not applicable		
PCBs	50 mg/kg			
PCDD/PCDF	15 µg/kg			

POP	classification acc. Decision 2000/532/EC	classification C+L inventory	Hazard statement	Limit value acc. Annex III Directive 2008/98/EC	
PBDE (c-pentaBDE)	<b>Σ 1000</b>	Lact. STOT RE 2 Aqua Acute 1 Aqua Chron. 1	H362 H373 H400 H410	- 100 g/kg <b>2500 mg/kg</b> <b>2500 mg/kg</b>	
PBDE (c-octaBDE)		Repr. 1B	H360Df	<b>3000 mg/kg</b>	
PFOS	<b>50</b>	Acute Tox 4 Carc. 2 Lact. STOT RE 1 Aqua Chron. 2 Repr. 1B	H302, H332 H351 H362 H372 H411 H360D	250, 225 g/kg 10 g/kg - 10 g/kg 25 g/kg <b>3000 mg/kg</b>	
endosulfans		<b>50</b>	Acute Tox. 2 Acute Tox. 4 Aqua Acute 1 Aqua Chron. 1	H300, H330 H312 H400 H410	<b>1000 mg/kg</b> 550 g/kg 2500 mg/kg 2500 mg/kg
hexachlorobutadiene			<b>100</b>	None harmonised classification, only 7 various notifications	
PCN	<b>10</b>		None harmonised classification, only 1 notification		
SCCP	<b>10,000</b>	Carc. 2 Aqua Acute 1 Aqua Chron. 1	H351 H400 H410	10 g/kg <b>2500 mg/kg</b> <b>2500 mg/kg</b>	
HBCD		<b>1000</b>	Repr. 2 Lact.	H361 H362	<b>30 g/kg</b> -
PCP	<b>n.n.</b>		Acute Tox. 3 Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 2 STOT SE 3 Carc. 2 Aqua Acute 1 Aqua Chron. 1	H301, H311 H315 H319 H330 H335 H351 H400 H410	50, 150 g/kg 200 g/kg 200 g/kg 5000 mg/kg 200 g/kg 10 g/kg <b>2500 mg/kg</b> <b>2500 mg/kg</b>

Not applicable, just for information

# instruments and measures - regulatory

## ■ 2. determination of punishments

- **Regulation 850/2004 determines requirements on the disposal of POPs wastes**  
**destruction, non-destructible disposal, exceptions for PCB depending on limit values and certain kinds of wastes**
- **Determination of sentences and/or offences to punish violation of legal requirements**
- **Based on chemicals legislation combined with punishments concerning REACH, CLP and other EU-based legislation**



# instruments and measures - regulatory

- **3. waste water cleaning, sewage sludge**
  - **Limit values for fertilisers from sewage sludge**
    - 100 µg/kg PFOS
    - PBDE, HBCD, other POPs???
    - Additional soil monitoring especially on sites where sewage sludges are used
  - **Collection and treatment of leachate from landfills**
  - **Investment to waste water cleaning!!!**
    - Only 58 % degree of connection to waste water cleaning plants in total  
Only 35 % degree of connected private households
    - 3.5 to 4.3 Mio. m<sup>3</sup> (2012) waste water, 70 % industrial,  
expected increase 3-times  
only 2-3 % treated (130,000 m<sup>3</sup>)
    - Only 37 central waste water cleaning plants  
expected 1 % sewage sludge = 1,300 m<sup>3</sup> (1,700 tons, av. density 1.3 t/m<sup>3</sup>)  
realistic: minimum 60,000 t/a

# instruments and measures - regulatory

## ■ 4. EEE and WEEE

- **Implementation of RoHS-Directive 2011/65/EU**  
**limit values for PBDE and HBB (part of PBB) in EEE: 1000 mg/kg**
- **Distinguish between EEE and WEEE in case of shipments**
  - **Implementation of Minimum requirements from WEEE-Directive 2012/19/EU:**
    - **Copy of invoice/contract stating the direct re-use**
    - **Certificate of testing, proof of functionality**
    - **Holder`s declaration that the transport is waste-free**
    - **Protection against damages, sufficient packaging**
    - **Respective Correspondents` guidelines No. 1 on shipments of WEEE**

# instruments and measures - operative

- **1. governmental funded disposal**
  - **Financial support to dispose known stockpiles and uses of POPs wastes especially pesticides and PCB**
    - Fully disposal
    - Partly, e.g. packaging, central collection
    - Remediation of sites
  - **Advantages:**
    - Detection of unknown stockpiles (participation of the owner)
    - Entire and immediate solution of a certain POPs problem
    - Higher amounts cause better conditions in treatment plants
    - To be expanded to other outdated Non-POPs-pesticides

# instruments and measures - operative

- **2. strengthen detection, inspection**
  - **Identification of new POPs in articles, building inventories**
    - Develop capacity of customs offices
    - Implementation of control systems on market level to supervise legal requirements on products (restrictions: RoHS, Batteries, bans: REACH...)
  - **Test methods**
    - XRF qualitative test, available for all authorities and enterprises
    - GC-MS, HPLC-MS for quantitative analytics
  - **Avoid uncontrolled technical processes**
    - State of the art according to IPPC
    - Avoid burning dumpsites, uncontrolled incineration
  - **Recycling of wastes without distribution in cycle management**

# instruments and measures - operative

## ■ 3. establishing monitoring routines

- **unintentional release of POPs is important for the status of environment and health, hardly to be managed or avoided**
  - Soil in agriculture, forest, urban areas...
  - water of lakes and rivers, sediments from flooded areas, ground water
  - precipitation, air and dust particles
  - farm animals, game, deer, boar, venison and meat including offal, fat tissue
  - fish and seafood, poultry and eggs
  - animal feedstuff
  - Blood and breast milk
- **Long-term monitoring programs in hot-spots**
  - Flood areas of Danube and Sava
  - Industrial sites, landfills

# instruments and measures - operative

- **4. management of contaminated sites**
  - **Identification, risk analysis, planning of measures, financing**
    - Former dumpsites, illegal deposits
    - Former mining areas
    - Former industrial sites, power plants, waste management facilities
    - Hot spots from environmental impacts, e.g. floods, industrial accidents
  - **Special administration unit**
    - Flexible handling
    - Basis: legislation on soil protection

# instruments and measures - operative

- **5. clarification of waste disposal ways**
  - **Identification of POPs containing waste types**  
**check waste catalogues of potential treatment plants**
  
  - **Thermal treatment is state of the art**
    - **No waste incineration plants in Serbia**
    - **Use of waste incineration plants in Europe**
    - **Activation of cement kilns for POPs treatment (3 in Serbia)**
    - **Activation of power plants or metallurgical processes for POPs treatment**
  
  - **Landfills for hazardous wastes, especially mineralic fractions from waste treatment**
    - **Clarification for existing landfills in Serbia**
    - **Use of underground storage areas abroad**
  
  - **Temporary storage areas**

# instruments and measures – market based

## ■ 1. market based control system

- Requirements on the placing of products on the market need to be supervised
  - electric and electronic equipment and parts of them,
  - textiles, clothes, and goods with textile surfaces,
  - toys made from plastic parts or textiles
  - oils and lubricants made from refinery products gained from waste oil recovery
  - paints, lacquers and coatings, glues
  - heat insulation systems
  - ...



# **instruments and measures – information based**

- **1. increase knowledge about POPs**
  - **Public campaigns to inform producers and disposal plants**
    - **POPs in general**
    - **Characteristics and environmental behaviour**
    - **Health and environmental risks**
    - **restrictions on POPs in products and recycling**
    - **Detection (analysis and inventories)**
    - **handling (separation for destruction)**
    - **Available substitutes**

# **instruments and measures – voluntary**

## **■ 1. cooperation with industry**

- Take-back activities**
- Developing regulations and financing systems**
- International partnership**



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**many thanks for your patience and attention**

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