

Block I General details	
1	<p>Location of the PCB disposal facility:</p> <p>Name of Facility: BAYER INDUSTRY SERVICES GmbH + Co OHG City: 51363 Leverkusen Country: Germany <i>(Provide address information in Block IV)</i></p>
2	<p>Licence / authorization:</p> <p>Is this facility licensed or authorized to handle PCBs? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If "Yes": (i) Nature of license / authorization: (ii) Please submit the licensing history <i>(please attach to this questionnaire)</i></p> <p>Issuing authority (name): <input type="checkbox"/> National <input checked="" type="checkbox"/> Local or <input type="checkbox"/> Independent Bezirksregierung Köln</p>
3	<p>Please provide information on storage at the facility including:</p> <p>Capacity for the various PCB waste and equipment types: 18.000 t/a</p> <p>Method: Incineration by high temperature</p> <p>Holding time:</p>
4	<p>Worker protection <i>(Please summarize protective measures applied during treatment of PCB wastes)</i> Protection clothes (glasses, shoes, gloves, masks, helmet)</p> <p>Does the facility have an accident book? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Most frequent cause(s) of incidents involving PCBs:</p>

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Opinion box - PCB Management issues *(Please describe briefly)*

What are your major concerns?

Can you identify research and development needs in PCB management that would be beneficial for your region and waste managers worldwide?

Block II Types of PCB wastes

Part A: Treatment of PCB containing equipment/material

Part A1: Metallic Parts

A1.1	Types of metallic PCB equipment/material treated:	Limitation on waste accepted (please specify, if appropriate)		Quantity (specify the unit) unit: t/a
		Concentration (specify the unit) unit: min	max	
	<input type="checkbox"/> Equipment containing 100 % PCB	0	100%	2500
	<input type="checkbox"/> Equipment containing mineral oil contaminated by PCB	0	100%	2500
	<input type="checkbox"/> Others:			
<p>Please specify any other limitation on waste accepted: Size: crushed, < 80 mm cm</p>				

A1.2	<p>Presentation of metallic equipment/material</p> <p>In what form must the metallic PCB equipment/material be presented:</p> <p><input checked="" type="checkbox"/> Drums</p> <p><input type="checkbox"/> Other packaging: <i>bulk waste,</i></p> <p><input checked="" type="checkbox"/> Other constraints: <i>bulk</i></p>
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A1.3

Treatment of metallic PCB equipment/material

Immediate destruction of metallic equipment/material containing PCB? Yes No

If 'Yes', please specify the applied technology in Part III

Extraction of PCB? Yes No

If 'Yes':

- please specify the applied technology in Part III
- Is the decontaminated metallic equipment/material subjected to reuse/recycling? Yes No

If 'Yes', please specify in **Block II Part C** (Reuse and recycling)

Part A: Treatment of PCB containing equipment/material

Part A2: Non-metallic Parts

A2.1	Types of non-metallic PCB equipment/material treated:	Limitation on waste accepted (please specify, if appropriate)		
		Concentration (specify the unit) unit:		Quantity (specify the unit) unit:
		min	max	± %
	<input type="checkbox"/> PCB-containing materials (clothes, cables, etc.)	0	100%	15.000
	<input type="checkbox"/> PCB-contaminated residues, sludges	0	100%	15.000
	<input type="checkbox"/> PCB-contaminated soils and sediments	0	100%	15.000
	<input type="checkbox"/> Packaged / drummed waste	0	100%	15.000
	<input type="checkbox"/> Other:	0	100%	15.000
<p>Please specify any other limitation on waste accepted: For bulk waste > 21°C and flashpoint and no free liquids</p>				
A2.2	<p>Presentation of non-metallic equipment/material</p> <p>In what form must the non-metallic PCB equipment/material be presented:</p> <p><input checked="" type="checkbox"/> Drums</p> <p><input checked="" type="checkbox"/> Other packaging: bulk, bales, liquids in tanks</p> <p><input type="checkbox"/> Other constraints: drums < 120 l, max 80kg / drums</p>			

A2.3

Treatment of non-metallic PCB equipment/material

Immediate destruction of non-metallic equipment/material containing PCB? Yes No

If 'Yes', please specify the applied technology in Part III

Extraction of PCB? Yes No

If 'Yes':

- please specify the applied technology in Part III
- Is the decontaminated non-metallic equipment/material subjected to reuse/recycling? Yes No

If 'Yes', please specify in **Block II Part C** (Reuse and Recycling)

Part B: Treatment of PCB oils and PCB waste oils

<p>B1</p>	<p>Types of PCB oils and PCB waste oils treated:</p> <p><input type="checkbox"/> 100 % PCB oils</p> <p><input type="checkbox"/> Mineral oils contaminated by PCB</p> <p><input type="checkbox"/> Waste oils contaminated by PCB</p> <p><input type="checkbox"/> Other:</p> <p><i>Please specify any other limitation on waste accepted:</i></p>	<p>Limitation on waste accepted <i>(please specify, if appropriate)</i></p>		
		<p>Concentration <i>(specify the unit)</i></p> <p>unit:</p>	<p>Quantity <i>(specify the unit)</i></p> <p>unit: <i>ty</i></p>	
		<p>min</p>	<p>max</p>	
		<p>0</p>	<p>100%</p>	<p>15,000</p>
		<p>0</p>	<p>100%</p>	<p>15,000</p>
		<p>0</p>	<p>100%</p>	<p>15,000</p>
		<p>0</p>	<p>100%</p>	<p>15,000</p>
<p>B2</p>	<p>Presentation of PCB oil and PCB waste oil</p> <p>In what form must the PCB oil and PCB waste oil be presented:</p> <p><input checked="" type="checkbox"/> Drums</p> <p><input checked="" type="checkbox"/> Other packaging: <i>Bulk (tanks), ISO container, JRC'S</i></p> <p><input checked="" type="checkbox"/> Other constraints: <i>Drums: 0.7 GJ drums, < 80kg, < 120 l</i></p>			
<p>B3</p>	<p>Treatment of PCB oils and PCB waste oils</p> <p>Please specify the applied technology for the destruction of PCB oils and PCB waste oils in Part III</p>			

Part C: Reuse & Recycling of decontaminated PCB equipment/material

C1	Types decontaminated PCB equipment/material treated:	Limitation on waste accepted <i>(please specify, if appropriate)</i>
		Quantity <i>(specify the unit)</i>
		unit:
	<input type="checkbox"/> Transformers	No
	<input checked="" type="checkbox"/> Capacitors	Only small one (< 10cm)
	<input checked="" type="checkbox"/> Materials (clothes, cables, etc.)	15-000 t/y
	<input type="checkbox"/> Residues, sludges	15-000 t/y
	<input type="checkbox"/> Soils and sediments	15-000 t/y
<input type="checkbox"/> Other:		
<i>Please specify any other limitation on waste accepted:</i>		
C2	Presentation of decontaminated PCB equipment/material In what form must the decontaminated PCB equipment/material be presented: <input checked="" type="checkbox"/> Drums <input checked="" type="checkbox"/> Other packaging: <i>Bulk</i> <input type="checkbox"/> Other constraints:	

C3

Treatment of decontaminated PCB equipment/material

Reuse and Recycling of decontaminated PCB equipment/material? Yes No

If 'Yes', please specify the applied technology in Part III

Is the decontaminated PCB equipment/material disposed of? Yes No

If 'Yes', please specify: *Incineration*

Transport to the disposal site? Yes No

If 'Yes':

International transport

National transport

Location of disposal site:

D-51368 Leverkusen

D- Dormagen

Please provide a short description of disposal site:

S. annex

Block III Detailed information on applied technologies

1	The following description refers to Block II, Part:	Type of PCB waste or decontaminated equipment/material:
	<input checked="" type="checkbox"/> A1 (Treatment of metallic PCB equipment/material)	
	<input checked="" type="checkbox"/> A2 (Treatment of non-metallic PCB equipment/material)	
	<input checked="" type="checkbox"/> B (Treatment of PCB oil and PCB waste oil)	
	<input checked="" type="checkbox"/> C (Reuse and recycling of decontaminated PCB equipment/material)	

2 **Applied technologies** (Please specify the technology used for disposal):

- Pyrolysis / gasifiers
- Gas Phase Chemical Reduction (GPCR)
- Base Catalysed Decomposition (BCD)
- Sodium Reduction
- Super-Critical Water Oxidation (SCWO)
- Plasma Arc
- Molten Salt Oxidation
- Solvated Electron Technology
- Retrofilling
- Other: *Incineration by high temperature (> 1000 °C)*

Type of technology (1-sentence description):
Rotary kiln with afterburn chamber

Description of the technology please provide additional information as appropriate (summarize here and, if necessary, attach documentation) *S. annex*

Commissioned? Yes No Year: _____

Can the technology be used in a mobile facility? Yes No

3 **State of development**

Does the technology exist as an industrial unit? Yes No

If "No", please indicate when it will become operational;

If "Yes", please indicate how many units exist: *3 plants 4 Rotary kilns*

In what countries: *Germany*

4

Pretreatment:

Does the technology require any pretreatment procedures? Yes No

If "Yes", please specify required pretreatment procedures:

- Thermal Desorption
 Dilution
 Low Temperature Rinsing
 Electro-osmosis
 Draining/Solvent washing
 Dismantling/Shredding
 Other:

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Byproducts

What byproducts does the technology produce? (please specify below)

Byproduct	Kind	Amount
Liquids:	Washwater, steam	L per tonnes of waste treated
Solids:	Slag	kg per tonnes of waste treated
Air:	Flue gas	m ³ per tonnes of waste treated

Does the technology allow all byproducts to be monitored for POPs*/PTS** before release? Yes No

If POPs*/PTS** are discovered, can the byproducts be returned to the process for further treatment? Yes No

Are any of the byproducts classified as other sorts of hazardous wastes? Yes No

If "Yes" please specify:

What volumes of such byproducts are generated by handling a unit volume of PCB wastes:

Can third party monitoring data be provided? Yes No

If "Yes", please attach to this questionnaire.

* POPs: Persistent Organic Pollutants
 ** PTS: Persistent Toxic Substances

How are byproducts disposed of? (please describe briefly)

Washwater: Treatment in the water cleaning-plant, after cleaning discharge

Slag: land filling

Flue gas: after cleaning → air

Steam: energy recycling

6	<p>Efficiency (please specify, if appropriate)</p> <p>Destruction efficiencies (DEs): 98,7%</p>
7	<p>Monitoring & Control of releases</p> <p>What technologies are used to monitor releases:</p> <p>Air: special air analyses</p> <p>Effluents: special water analyses</p> <p>Solids: special analyse for landfilling</p> <p>Are all releases monitored for POPs*/PTS** before release? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If POPs*/PTS** are discovered, can the releases be returned to the process for further treatment? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Are any of the releases classified as hazardous wastes? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If "Yes" please specify:</p> <p>What technologies are used/ required to monitor and treat any such releases prior to release:</p> <p>What volumes of such releases are generated by handling a unit volume of PCB wastes:</p> <p>Is third party monitoring data available? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If "Yes", please attach to this questionnaire.</p> <p style="text-align: right;">* POPs: Persistent Organic Pollutants ** PTS: Persistent Toxic Substances</p>
	<p>How are releases disposed of? (please describe briefly)</p> <p>⇒ see point 5 · further see annex</p>

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Disposal costs

What are the *approximate* costs for applying the technology per unit[‡], **including** costs for all technical pretreatment steps and **excluding** all costs **not** related to the technical application of the technology (transport costs, costs for disposal of decontaminated transformers/capacitors/materials, etc.)?

Please specify type of treated/disposed PCB equipment/material/oil below:

	Costs per unit [‡]	Currency
a) Bulk equipments, etc PCB oil, dependent from PCB contamination	50-500 €/t ca.	
b) PCB material / waste packed in drums	750 €/t ca.	
c) PCB bulk waste	500 €/t ca.	
d)		
e)		
f)		
g)		

[‡] Specify the unit for a) to g):

€/t

All prices ~~under reserve~~ provided that we have analysed, waste - description etc.

9

Treatment capacities and scaling (tonnes per year for main waste & equipment types)

Capacity of existing facilities: 170.000 t/y units[‡] per year

Can the technology be adapted to higher or lower capacities? Yes No

If "Yes":

- (i) What is the capacity of the smallest commercially viable facility: units[‡] per year
- (ii) What is the capacity of the largest commercially viable facility: units[‡] per year

Does the adaptation will cause additional costs? Yes No

If "Yes" specify the increase in costs for the adaptation (%) of the initial costs:

- (i) For smaller plants: %
- For larger plants: %

[‡] Please specify the unit:

Block IV

Facility: Address and Service Information

1

Facility Name: BAYER INDUSTRY SERVICES GmbH & Co OHG

Address: D- 51368 Leverkusen

City/Town:

P.O. Box:

District/State: Nordrhein- Westfalen

Country: Germany

Telephone: +49 214 30 30460

Fax: + 49 214 30 ~~33716~~ 71637

Email: daniela.bogatzky.db@bayerindustry.de

Web site:

Person completing form Daniela Bogatzky

Name:

Position: Marketing manager

Parent Company (if different): BAYER AG

Address: Same as our

City/Town:

P.O. Box:

District/State:

Country:

Telephone:

Fax:

Email:

2	<p>Other Services offered by the company</p> <ul style="list-style-type: none"><input checked="" type="checkbox"/> Laboratory analysis / testing<input type="checkbox"/> PCB waste packaging for shipment<input type="checkbox"/> PCB classification / labeling<input type="checkbox"/> Clean-up of PCB contaminated sites<input checked="" type="checkbox"/> PCB wastes transport<input type="checkbox"/> Other PCB-related services:
3	<p>Further information</p> <p>Identify any company information (brochures, notes etc...) provided separately and if you wish provide additional comments on your services in not more than 50 words:</p>