

Block I      General details	
1	<p><b>Location of the PCB disposal facility:</b></p> <p>Name of Facility: AVR Nutsbedrijf Gevaarlijk Afval B.V.  City: Rotterdam Country: the Netherlands  <i>(Provide address information in Block IV)</i></p>
2	<p><b>Licence / authorization:</b></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 licence / authorization: 340618/53  (ii) Please submit the licensing history <i>(please attach to this questionnaire)</i></p> <p>Issuing authority <i>(name)</i>: DCMR Milieudienst Rijnmond</p> <p><input checked="" type="checkbox"/> National <input type="checkbox"/> Local or <input type="checkbox"/> Independent</p>
3	<p><b>Please provide information on storage at the facility including:</b></p> <p>Capacity for the various PCB waste and equipment types:  No exact amount. Space for max. 2200 pallet-locations.  Method:  Storage according CPR-15-2: Dutch legislation for storage of hazardous goods &gt; 10 tonnes.  Holding time: Not applicable. No maximum term. For imported waste: Max. 180 days after acceptance according to EEC Council Regulation 259/93.</p>
4	<p><b>Worker protection</b> <i>(Please summarize protective measures applied during treatment of PCB wastes)</i></p> <p>Disposable coveralls, gloves, boots and full face mask with standard ABEKP3-filter. All equipment is resistant to PCB-Oil spillage.</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:  No incidents occurred sofar.</p>

5

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

What are your major concerns?

- 1) The percentage of Chlorine in the PCB-Oil. Based on the percentage of Chlorine the amount of PCBs to be incinerated per hour can be decided.
- 2) The toxicity of PCBs.

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

A PCB-Inventory by a consortium of several Dutch (amongst AVR) companies and a Costa Rican company supported by the Dutch Government with the goal for collection of all 12 POPs amongst PCB with the Dutch infrastructure for collection, transport and registration of hazardous waste as example. More and detailed information can be obtained at request.

**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 <i>(please specify, if appropriate)</i>		
		Concentration <i>(specify the unit)</i> unit: ppm		Quantity <i>(specify the unit)</i> unit:
		min	Max	
	√ Equipment containing 100 % PCB	n.a	n.a	n.a.
	√ Equipment containing mineral oil contaminated by PCB	n.a	n.a	n.a.
	Others:			
Please specify any other limitation on waste accepted:				
A1.2	<b>Presentation of metallic equipment/material</b> In what form must the metallic PCB equipment/material be presented: √ Drums √ Other packaging: To be discussed: every package which is approved acc. IMDG-Code Legislation <input type="checkbox"/> Other constraints:			

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 <i>(please specify, if appropriate)</i>		
		Concentration <i>(specify the unit)</i> unit: %		Quantity <i>(specify the unit)</i> unit: 200 l. drums
		Min	Max	
	<input checked="" type="checkbox"/> PCB-containing materials (clothes, cables, etc.)		3	n.a.
	<input checked="" type="checkbox"/> PCB-contaminated residues, sludges		3	n.a.
	<input checked="" type="checkbox"/> PCB-contaminated soils and sediments		3	n.a.
	<input checked="" type="checkbox"/> Packaged / drummed waste		3	n.a.
	<input type="checkbox"/> Other:			
<p><i>Please specify any other limitation on waste accepted:</i></p>				
A2.2	<p><b>Presentation of non-metallic equipment/material</b></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: To be discussed: every package which is approved acc. IMDG-Code Legislation</p> <p><input type="checkbox"/> Other constraints:</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

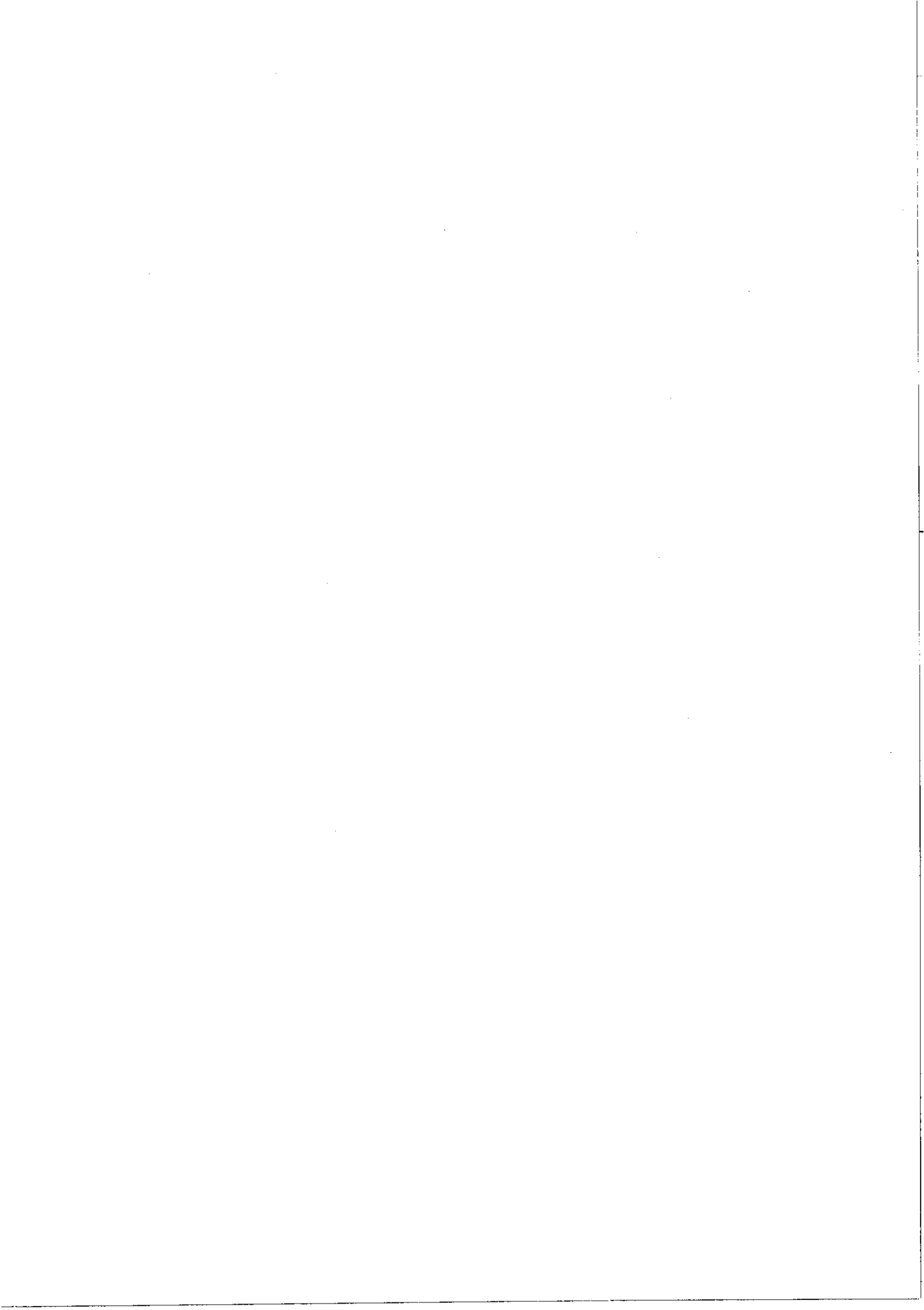
If 'Yes':

- 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**

B1	Types of PCB oils and PCB waste oils treated:	Limitation on waste accepted (please specify, if appropriate)		
		Concentration (specify the unit) unit: %		Quantity (specify the unit) unit:
		Min	max	
	<input checked="" type="checkbox"/> 100 % PCB oils	n.a.	n.a.	n.a.
	<input checked="" type="checkbox"/> Mineral oils contaminated by PCB	n.a.	n.a.	n.a.
	<input checked="" type="checkbox"/> Waste oils contaminated by PCB	n.a.	n.a.	n.a.
	<input type="checkbox"/> Other:			
<p><i>Please specify any other limitation on waste accepted: The maximum amount to be incinerated is 60 kg/ hr of 100%PCB containing liquid.</i></p>				
B2	<p><b>Presentation of PCB oils and PCB waste oils</b></p> <p>In what form must the PCB oils and PCB waste oils be presented:</p> <p><input checked="" type="checkbox"/> Drums</p> <p><input checked="" type="checkbox"/> Other packaging: To be discussed: every package which is approved acc. IMDG-Code Legislation</p> <p><input type="checkbox"/> Other constraints:</p>			
B3	<p><b>Treatment of PCB oils and PCB waste oils</b></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**

<p><b>C1</b></p>	<p><b>Types decontaminated PCB equipment/material treated:</b></p>	<p><b>Limitation on waste accepted</b> <i>(please specify, if appropriate)</i></p> <p><b>Quantity</b> <i>(specify the unit)</i></p> <p>unit:</p>
	<p><input checked="" type="checkbox"/> Transformers</p>	
	<p><input checked="" type="checkbox"/> Capacitors</p>	
	<p><input checked="" type="checkbox"/> Materials (clothes, cables, etc.)</p>	
	<p><input checked="" type="checkbox"/> Residues, sludges</p>	
	<p><input checked="" type="checkbox"/> Soils and sediments</p>	
	<p><input checked="" type="checkbox"/> Other: Liquids (Oil)</p>	
	<p><i>Please specify any other limitation on waste accepted:</i></p>	
<p><b>C2</b></p>	<p><b>Presentation of decontaminated PCB equipment/material</b></p> <p>In what form must the decontaminated PCB equipment/material be presented:</p> <p><input checked="" type="checkbox"/> Drums</p> <p><input checked="" type="checkbox"/> Other packaging: : To be discussed: every package which is approved acc. IMDG-Code Legislation</p> <p><input type="checkbox"/> Other constraints:</p>	

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:

Transport to the disposal site? Yes  No

If 'Yes':

International transport

National transport

Location of disposal site: High temp. Incineration, Indaver, Antwerp

Please provide a short description of disposal site:

High temperature incineration of rest-materials such as contaminated rags, gloves, overalls  
etc.etc.



**Block III Detailed information on applied technologies**

1	The following description refers to Block II, Part:	Type of PCB waste or decontaminated equipment/material:
	√ A1 (Treatment of metallic PCB equipment/material)	See A1.1, A.1.2, A1.3
	√ A2 (Treatment of non-metallic PCB equipment/material)	See A2.1
	√ B (Treatment of PCB oil and PCB waste oil)	See B1, B2, B3
	√ C (Reuse and recycling of decontaminated PCB equipment/material)	See C1, C2, C3 In cooperation with Sita

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: High Temperature Incineration

**Type of technology (1-sentence description):**  
*Incineration*

**Description of the technology** please provide additional information as appropriate (summarize here and, if necessary, attach documentation)  
*Minimum temperature 1200°C, 2-5 sec. residence time, atmosphere with at least 6% surplus of oxygen and a turbulence of the gas stream equivalent to at least 65000Re).*

**Commissioned?** √ Yes  No      Year: 1975

**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: In what countries: *1 unit in 1 country*

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:

5	<b>Byproducts</b> What byproducts does the technology produce? <i>(please specify below) See comments below</i>		
	Byproduct	Kind	Amount
	Liquids:		L per tonnes of waste treated
	Solids:		kg per tonnes of waste treated
	Air:		m <sup>3</sup> per tonnes of waste treated
<p>Does the technology allow all byproducts to be monitored for POPs*/PTS** before release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If POPs*/PTS** are discovered, can the byproducts be returned to the process for further treatment? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Are any of the byproducts classified as other sorts of hazardous wastes? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If "Yes" please specify:</p> <p>What volumes of such byproducts are generated by handling a unit volume of PCB wastes:</p> <p>Can third party monitoring data be provided? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><i>If "Yes", please attach to this questionnaire.</i> * POPs: Persistent Organic Pollutants          ** PTS: Persistent Toxic Substances</p>			
<p>How are byproducts disposed of? <i>(please describe briefly)</i></p> <p>All byproducts will be incinerated at high temperature. No byproducts are being emitted. All byproducts are being processed in our facility by several technical means.</p>			
6	<b>Efficiency</b> <i>(please specify, if appropriate)</i>  Destruction efficiencies (DEs): 99,9999 %		

7

**Monitoring & Control of releases**

What technologies are used to monitor releases:

Air: discontinued, by means of GCMS, ICP en IC

Effluents: by way of GCMS, ICP, titrimetrie

Solids: GCMS, ICP and IC

Are all releases monitored for POPs/PTS before release?  Yes  No

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

Are any of the releases classified as hazardous wastes?  Yes  No

If "Yes" please specify:

What technologies are used/ required to monitor and treat any such releases prior to release: See above

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

Is third party monitoring data available?  Yes  No

\* POPs: Persistent Organic Pollutants

\*\* PTS: Persistent Toxic Substances

How are releases disposed of? *(please describe briefly)*

High temp incineration. All possible contaminations will be collected (separate sewage system) and being incinerated.

8

**Disposal costs**

What are the *approximate* costs for applying the technology per unit<sup>‡</sup>, **including** costs for all technical pretreatment steps, **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<sup>‡</sup>

Currency

	a) disposal, excl. PCB-surcharges (based upon ppms)	825	€
	b)		
	c)		
	d)		
	e)		
	f)		
	g)		
	‡ Specify the unit for a) to g):		
9	<b>Treatment capacities and scaling</b> ( <i>tonnes per year for main waste &amp; equipment types</i> )  Capacity of existing facilities: 50.000 tonnes per year Can the technology be adapted to higher or lower capacities? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  If "Yes": (i) What is the capacity of the smallest commercially viable facility:       units <sup>‡</sup> per year (ii) What is the capacity of the largest commercially viable facility:       units <sup>‡</sup> per year  Does the adaptation will cause additional costs? <input type="checkbox"/> Yes <input type="checkbox"/> 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: AVR Nutsbedrijf Gevaarlijk Afval B.V.

Address: Professor Gerbrandyweg 10, Postal Code: 3197 KK

City/Town: Rotterdam

P.O. Box: 59144, Postal Code: 3008 PC, Rotterdam

District/State:

Country: the Netherlands

Telephone: 0181-273 270

Fax: 0181-273 271

Email: [marco.kortland@avr.nl](mailto:marco.kortland@avr.nl)Web site: [www.avr.nl](http://www.avr.nl)

Person completing form

Name: Mr. Marco Kortland

Position: Manager Projects

Parent Company (*if different*)

Address:

City/Town:

P.O. Box:

District/State:

Country:

Telephone:

Fax:

Email:

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