

| Block I General details |   |
|-------------------------|---|
| 1                       | <p><b>Location of the PCB disposal facility:</b></p> <p>Name of Facility: Ekokem Oy Ab<br/> City: Riihimäki Country: Finland<br/> <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":<br/> (i) Nature of license / authorization:<br/> (ii) Please submit the licensing history <i>(please attach to this questionnaire)</i></p> <p>Issuing authority <i>(name)</i>: Häme regional environment centre<br/> <input type="checkbox"/> National <input checked="" type="checkbox"/> Local or <input type="checkbox"/> Independent<br/> <small>areal</small></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: 2000 tons</p> <p>Method: Storehouse/Shelter</p> <p>Holding time: 0 - 180 days</p>   |
| 4                       | <p><b>Worker protection</b> <i>(Please summarize protective measures applied during treatment of PCB wastes)</i></p> <p>Nitrile rubber gloves<br/> Protective clothing/footwear<br/> Respiratory breathing equipment</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:<br/> No incidents in several years involving PCBs</p>   |

5

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?

Accurate worldwide inventories per continent/country

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)

| Concentration<br>(specify the unit)<br>unit: |     | Quantity<br>(specify the unit)<br>unit:<br>t/a |
|--|-----|--|
| min  | max |  |

Equipment containing 100 % PCB <sup>\*transformers/capacitors</sup>

Equipment containing mineral oil contaminated by PCB

Others:

2000/4000

2000/4000

Please specify any other limitation on waste accepted:  
\* Transformers/capacitors/(condensers)

A1.2

Presentation of metallic equipment/material

In what form must the metallic PCB equipment/material be presented:

Drums

Other packaging:

All ADR/IMDG accepted packing material

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<br><i>(please specify, if appropriate)</i> |      |   |
|--|---|---|------|---|
|  |   | Concentration<br><i>(specify the unit)</i><br>unit: ppm                 |      | Quantity<br><i>(specify the unit)</i><br>unit:<br>t/a |
|  |   | min   | max  |   |
|  | <input checked="" type="checkbox"/> PCB-containing materials (clothes, cables, etc.)  |   |      | 10000   |
|  | <input checked="" type="checkbox"/> PCB-contaminated residues, sludges  |   |      | 10000   |
|  | <input checked="" type="checkbox"/> PCB-contaminated soils and sediments  | 50  | 1000 | 20000   |
|  | <input checked="" type="checkbox"/> Packaged / drummed waste  |   |      | 5000  |
|  | <input type="checkbox"/> Other:   |   |      |   |
| Please specify any other limitation on waste accepted: |   |   |      |   |
| A2.2   | <b>Presentation of non-metallic equipment/material</b><br>In what form must the non-metallic PCB equipment/material be presented:<br><input checked="" type="checkbox"/> Drums<br><input checked="" type="checkbox"/> Other packaging:<br>All ADR/IMDG accepted packing material<br><input type="checkbox"/> Other constraints: |   |      |   |

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<br><i>(please specify, if appropriate)</i> |                                       |
|--|---|---|---------------------------------------|
|  |   | Concentration<br><i>(specify the unit)</i>                              | Quantity<br><i>(specify the unit)</i> |
|  |   | unit: ppm   | unit: t/a                             |
|  |   | min   | max                                   |
|  | <input checked="" type="checkbox"/> 100 % PCB oils  |   | 5000                                  |
|  | <input checked="" type="checkbox"/> Mineral oils contaminated by PCB  | 50  | 10000                                 |
|  | <input checked="" type="checkbox"/> Waste oils contaminated by PCB  | 50  | 10000                                 |
|  | <input type="checkbox"/> Other:   |   |                                       |
| Please specify any other limitation on waste accepted: |   |   |                                       |
| B2   | <b>Presentation of PCB oil and PCB waste oil</b><br>In what form must the PCB oil and PCB waste oil be presented:<br><input checked="" type="checkbox"/> Drums<br><input checked="" type="checkbox"/> Other packaging:<br>All ADR/IMDG accepted packing material, also tank containers<br><input type="checkbox"/> Other constraints: |   |                                       |
| B3   | <b>Treatment of PCB oils and PCB waste oils</b><br>Please specify the applied technology for the destruction of PCB oils and PCB waste oils in Part III   |   | High temperature incineration         |

X

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

|    |   |  |
|----|---|--|
| C1 | <p><b>Types decontaminated PCB equipment/material treated:</b></p>  | <p><b>Limitation on waste accepted</b><br/><i>(please specify, if appropriate)</i></p> <p><b>Quantity</b><br/><i>(specify the unit)</i></p> <p>unit: .....</p> |
|    | <input type="checkbox"/> Transformers   |  |
|    | <input type="checkbox"/> Capacitors   |  |
|    | <input type="checkbox"/> Materials (clothes, cables, etc.)  |  |
|    | <input type="checkbox"/> Residues, sludges  |  |
|    | <input type="checkbox"/> Soils and sediments  |  |
|    | <input type="checkbox"/> Other:   |  |
|    | <p><i>Please specify any other limitation on waste accepted:</i></p> <p>Annually we separate 100 - 2000 tons metal for reuse from the slag</p>  |  |
| C2 | <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 type="checkbox"/> Drums</p> <p><input type="checkbox"/> Other packaging:</p><br><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:

Please provide a short description of disposal site:

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)   | Transformers/Capacitors                                 |
|   | <input checked="" type="checkbox"/> A2 (Treatment of non-metallic PCB equipment/material)   | PPE's, clothing, wood, soil, drummed waste              |
|   | <input checked="" type="checkbox"/> B (Treatment of PCB oil and PCB waste oil)  | Pumpable  |
|   | <input checked="" type="checkbox"/> C (Reuse and recycling of decontaminated PCB equipment/material)  | Decontaminated metal                                    |
| 2 | <p><b>Applied technologies (Please specify the technology used for disposal):</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Pyrolysis / gasifiers</li> <li><input type="checkbox"/> Gas Phase Chemical Reduction (GPCR)</li> <li><input type="checkbox"/> Base Catalysed Decomposition (BCD)</li> <li><input type="checkbox"/> Sodium Reduction</li> <li><input type="checkbox"/> Super-Critical Water Oxidation (SCWO)</li> <li><input type="checkbox"/> Plasma Arc</li> <li><input type="checkbox"/> Molten Salt Oxidation</li> <li><input type="checkbox"/> Solvated Electron Technology</li> <li><input type="checkbox"/> Retrofilling</li> <li><input checked="" type="checkbox"/> Other: High temperature incinerator</li> </ul> <p><b>Type of technology (1-sentence description):</b><br/>                 High temperature incineration in rotary kiln</p> <p><b>Description of the technology</b> please provide additional information as appropriate (<i>summarize here and, if necessary, attach documentation</i>)</p> <p>Commissioned? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No      Year: 1987</p> <p>Can the technology be used in a mobile facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> |   |
| 3 | <p><b>State of development</b></p> <p>Does the technology exist as an industrial unit? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If "No", please indicate when it will become operational:</p> <p>If "Yes", please indicate how many units exist: 3</p> <p>In what countries: Finland</p>  |   |

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:  |      | L per tonnes of waste treated              |
| Solids:   |      | kg per tonnes of waste treated             |
| Air:      |      | m <sup>3</sup> 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)*

|   |  |
|---|--|
| 6 | <p>Efficiency <i>(please specify, if appropriate)</i></p> <p>Destruction efficiencies (DEs): 99,9999 %</p>   |
| 7 | <p><b>Monitoring &amp; Control of releases</b></p> <p>What technologies are used to monitor releases:</p> <p>Air: Continious fluegas monitoring</p> <p>Effluents: Continious drainage sampling</p> <p>Solids: Fly ash tests/slag tests</p> <p>Are all releases monitored for POPs*/PTS** before release? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If POPs*/PTS** are discovered, can the releases be returned to the process for further treatment? <input checked="" 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><i>If "Yes", please attach to this questionnaire.</i></p> <p style="text-align: right;">* POPs: Persistent Organic Pollutants<br/>** PTS: Persistent Toxic Substances</p> |
|   | <p>How are releases disposed of? <i>(please describe briefly)</i></p>  |

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**Disposal costs**

What are the *approximate* costs for applying the technology per unit<sup>‡</sup>, **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 <sup>‡</sup> | Currency |
|----|-----------------------------|----------|
| a) |                             |          |
| b) |                             |          |
| c) |                             |          |
| d) |                             |          |
| e) |                             |          |
| f) |                             |          |
| g) |                             |          |

<sup>‡</sup> Specify the unit for a) to g):

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

Capacity of existing facilities: \_\_\_\_\_ units<sup>‡</sup> 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<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?  Yes  No

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

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

<sup>‡</sup> Please specify the unit:

Block IV

Facility: Address and Service Information

1

Facility Name: Ekokem Oy Ab

Address:

City/Town: FIN-11101 Riihimäki

P.O. Box: 181

District/State:

Country: Finland

Telephone: +358 10 7551 000

Fax: +358 10 7551 300

Email: juhani.alonen@ekokem.fi aarno.kavonius@ekokem.fi

Web site: www.ekokem.fi

Person completing form

Name: Juhani Alonen

Aarno Kavonius

Position: Production manager

Director

Parent Company (if different):

Address:

City/Town:

P.O. Box:

District/State:

Country:

Telephone:

Fax:

Email:

|   |  |
|---|--|
| 2 | <p><b>Other Services offered by the company</b></p> <ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Laboratory analysis / testing</li><li><input checked="" type="checkbox"/> PCB waste packaging for shipment</li><li><input checked="" type="checkbox"/> PCB classification / labeling</li><li><input checked="" type="checkbox"/> Clean-up of PCB contaminated sites</li><li><input checked="" type="checkbox"/> PCB wastes transport</li><li><input checked="" type="checkbox"/> Other PCB-related services: Inventories</li></ul> |
| 3 | <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>   |