MISSION REPORT

PCBs Inventory

Egypt
14-17 December 2013

EcoTERRA e-mail: ecoterra@otenet.gr
Index

1. Project Background...........................................................................................................3
2. Mission Purpose..................................................................................................................4
3. Audit schedule...................................................................................................................4
   3.1 Site visit for Egyptian Iron and Steel Co, TIBBIN, CAIRO...........................................4
   3.2 Site Visits in Alexandria .................................................................................................9
      3.2.1 Abbis interim storage area (scrap yard), Alexandria..............................................9
      3.2.2 Karmouze Service Workshop Transformers Unit, Alexandria.............................11
      3.2.3 Egyptian Copper Works Company in Alexandria..................................................13
      3.2.4 Spinning and Weaving factory, Sabahi-Alexandria................................................14
      3.2.5 RAKTA PAPER Co, Alexandria ............................................................................16
   3.3 EEAA's Alexandria RBO ..............................................................................................21
      3.3.1 Analysis ..................................................................................................................23
   3.4 Results of samples from EGYPT ....................................................................................24
4. Conclusion and Recommendations......................................................................................27
1. Project Background

The Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (Med Partnership) is a collective effort of leading organizations and countries sharing the Mediterranean Sea towards the protection of the marine and coastal environment of the Mediterranean. The Med Partnership is being led by UNEP/MAP and the World Bank and is financially supported by the Global Environment Facility (GEF), and other donors, including the EU and all participating countries.

The Med Partnership works through two lines of actions: technical and policy support led by UNEP/MAP (Regional Project) and project financing led by the World Bank (Investment Fund/Sustainable MED).

CP/RAC and MED POL is currently implementing component 2.3: Environmentally Sound Management of equipment, stocks and wastes containing or contaminated by PCBs in national electricity companies of the Mediterranean countries Albania, Bosnia & Herzegovina, Egypt and Turkey.
2. Mission Purpose

- To introduce the environmentally sound management of PCBs to local experts, Egyptian Environmental Affairs Agency (EEAA) - Ministry of State For Environmental Affairs of Egypt, power plants, laboratories, companies, mills, copper and steel producing industries.
- To assist in effective way the inventory of PCBs in Egypt.
- To identify PCB from six facilities of Egypt.
- To train local experts the sampling and analysis of PCBs by using the semi-mobile analyser L2000 DX.

3. Audit schedule

3.1 Site visit for Egyptian Iron and Steel Co, TIBBIN, CAIRO

| Date/Time: | 14 December 2013 |
| Location: | TIBBIN, CAIRO |
| Contact person: | Ms Eng / AMAL |
| GENERAL Manager for electrical network: | Abdel Samie Ebrahim |
| E-mail: | |
| Tel: | 002 01000857449 |
| General manager: | Ms. MONA GERGES |
| E-mail: | |
| Tel: | 002 01270049465 |

Auditors: Mr Panos Ioakimidis, International PCB Expert
Dr Elham Refaat, Project Manager - General Environmental development Department

Tel 002 01 009183010
Email emorefaat@yahoo.com

Dr. Eng / Manal Samy Farag - Environmental Researcher in the General Environmental Development Department --- Deputy Project manager
Tel 002 01 005504944
e- Mail m5samyrFarag@gmail.com
Eng. Yasser Badr - Hazardous waste Director
Tel 010 25242253
Email eng.yasserbadr@yahoo.com
Chem. Mohamed Khalifa – Hazardous Substances Director
Tel 011 20676767
Khalifa10720@yahoo.com
The iron and steel Co produces almost 3,300,000 tons of raw iron which is the biggest Co in Egypt. The facility is located (about 35 km) south CAIRO. The technology and all related machines were provided from USSR. The manager informed us that they already know that their transformers contains as dielectric Softol and submitted to EEAA a list with their out order transformers. The facility manager declared their williness, to take sample from their equipment and had driven us to audited four places in the facility. In the First area there were stored 34 small auxiliary transformers, in the second area there were three (called Gamalon storage area front), in the third area there were two (called 13DS) and in the fourth area there were two (called Gamalon storage area rear).

The Iron and steel Co manager informed us that they possess more transformers out of order and they will check their depot of contaminated equipments and will send to EEAA a revised list.

Explanation was given to all engineers and technicians on how they can control PCB cross contamination in all their equipment and take measures to protect themselves.

**Picture 1: Entrance of Iron and Steel Co in TIBBIN, CAIRO**

**1st visit place of this facility**
The team audited 34 small out of use auxiliary transformers made from a USSRCo called РНСФОРМАТОР. The technical information’s of those 34 transformers are:
- Manufacturer: ТРАНСФОРМАТОР, Russian
- Serial number: -
- Date of manufacturing: 1974 (assumed form nameplate from other similar transformer)
- Power: - KVA,
- Total weight: 220kg,
- Dielectric oil weight: 630kg,
- Cooling system, trade name of dielectric oil: N/A

From this transformer was taken a sample with ID: TIB 01

Those 34 transformers dimensions are as follows:
- High 0.95 m.
- Width 0.80 m.
- Length 1.10 m.
Second audited place of this facility (called Gamalon storage area front)
The second audited place was in an open (not covered) storage area, at which stored three similar transformers, without nameplate. The three transformers dimensions are as follows:

- High 3.5 m.
- Width 2 m.
- Length 3m.

**First Transformer**
- Manufacturer: ТРАНСФОРМАТОР, Russian
- Serial number:
- Date of manufacturing: 1974 (assumed form nameplate from other similar transformer)
- Power: 1125 KVA,
- Total weight: 8250 kg,
- Dielectric oil weight: 3100 kg,
- Cooling system, trade name of dielectric oil: From this transformer was taken a sample with ID: TIB 02

**Second Transformer**
- Manufacturer: ТРАНСФОРМАТОР, Russian
- Serial number:
- Date of manufacturing: N/A
- Power: 1125 KVA,
- Total weight: 8250 kg,
- Dielectric oil weight: 3100 kg,
- Cooling system, trade name of dielectric oil: Sample was not taken from this transformer as assumed that it contains the same dielectric oil as sample ID: TIB 02.

**Third Transformer**
- Manufacturer: ТРАНСФОРМАТОР, Russian
- Serial number:
- Date of manufacturing: 1974 (assumed form nameplate from other similar transformer)
- Power: 1125 KVA,
- Total weight: 8250 kg,
- Dielectric oil weight: 3100 kg,
• Cooling system, trade name of dielectric oil:
Sample was not taken from this transformer as assumed that it contains the same dielectric oil as sample ID: TIB 02.

Picture 5: 1st Transformer

Picture 6: Sampling Team

Third audited place of this facility (called 13DS)
The Third audited place was a covered storage area in which were stored two similar transformers, with nameplate. Those plates provided us the data for all other transformers, with the same dimensions of the previous and next areas in this facility. Those two transformers dimensions are as follows:

• High 3,5 m.
• Width 2 m.
• Length 3 m.

First Transformer
• Manufacturer: ТРАНСФОРМАТОР, Russian
• Serial number:
• Date of manufacturing: 1974 (assumed form nameplate from other similar transformer)
• Power: 1125 KVA,
• Total weight: 8250 kg,
• Dielectric oil weight: 3100 kg,
• Cooling system, trade name of dielectric oil:

From this transformer was not taken a sample assumed that contains the same dielectric oil as sample with ID: TIB 02

Second Transformer
• Manufacturer: ТРАНСФОРМАТОР, Russian
• Serial number:
• Date of manufacturing: 1974 (assumed form nameplate of other similar transformer)
• Power: 1125 KVA,
• Total weight: 8250 kg,
• Dielectric oil weight: 3100 kg,
• Cooling system, trade name of dielectric oil:

Sample was not taken from this transformer as assumed that it contains the same dielectric oil as sample with ID: TIB 02
Forth audited place in this facility (called Gamalon storage area rear)
The third audited place was in an open (not covered) storage area, at which stored two transformers without nameplates. Those transformers have different dimensions.

First Transformer
- Manufacturer: ТРАНСФОРМАТОР, USSR
- Serial number:
- Date of manufacturing: 1974 (assumed form nameplate from other similar transformer)
- Power: 1125 KVA,
- Total weight: 8250 kg,
- Dielectric oil weight: 3100 kg,
- Cooling system, trade name of dielectric oil:
A sample was taken from this transformer with ID: TIB 02
This transformer has had the same dimensions as the transformers of previous place:
- High 3.5 m.
- Width 2 m.
- Length 3 m.
Second transformer
- Manufacturer: ТРАНСФОРМАТОР, USSR
- Serial number:
- Date of manufacturing: 1974 (assumed from nameplate from other similar transformer)
- Power: 600 KVA, (no plate the KW is estimated)
- Total weight: 5000 kg (no plate the weight is estimated)
- Dielectric oil weight: 1600 kg, (no plate the weight is estimated)
- Cooling system, trade name of dielectric oil:

From this transformer was taken a sample with ID: TIB 03
This smaller transformer has had dimensions as:
- High 2,5 m.
- Width 1,8 m.
- Length 2,5m.

3.2 Site Visits in Alexandria
3.2.1 Abbis interim storage area (scrap yard), Alexandria

<table>
<thead>
<tr>
<th>Date/Time:</th>
<th>15 December 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Eastern part of Alexandria</td>
</tr>
<tr>
<td>Contact person:</td>
<td>Eng / Hamdy</td>
</tr>
<tr>
<td>E-mail:</td>
<td></td>
</tr>
<tr>
<td>Tel:</td>
<td>002 01226513090</td>
</tr>
</tbody>
</table>

Auditors: Mr Panos Ioakimidis, International PCB Expert
Dr Elham Refaat , Project Manager - General Environmental development Department
Dr. Eng / Manal Samy Farag - Environmental Researcher in the General Environmental Development Department --- Deputy Project manager

Eng. Yasser Badr - Hazardous waste Director
The area of Abbis storage place covers 20,000 m², and is located 18-20 km from harbor of Eastern Alexandria. Since 2001, this facility has been used to store interim power transformers and during the audit were stored eight transformers. Two of those transformers, are classified as scrap, and the remaining six as repairable.

Oil samples were taken from the scrap transformers no 5 & 6 transformers and the samples was ID ABBIS 05 & ABBIS 06 and from no 3, 4, 7 & 8 repairable transformers with sample ID: ABBIS 03, ABBIS 04, ABBIS 07 & ABBIS 08.

Explanation’s to all engineers and technicians on how they can control PCBs cross contamination in all their equipment and take measures to protect themselves.
3.2.2 Karmouze Service Workshop Transformers Unit, Alexandria

Date/Time: 15 December 2013
Location: Western Alexandria
Contact person: Eng / Mohamed Abdalla hassan is the General director of service workshop transformer unit of karmouze
E-mail: Tel: 002 - 01223263292

Auditors: Mr Panos Ioakimidis, International PCB Expert
Dr Elham Refaat, Project Manager - General Environmental development Department
Dr .Eng / Manal Samy Farag - Environmental Researcher in the General Environmental Development Department --- Deputy Project manager
Eng. Yasser Badr - Hazardous waste Director
Chem. Mohamed Khalifa – Hazardous Substances Director
Chem / George Zarif, Water-Lab ALEX RBO's EEAA
Agricultural Engineer / Mona Mohsen, Inspection Department ALEX RBO's EEAA
Mr Ahmed Moumen, EIA Department ALEX RBO's EEAA

The facility of Karmouze is located few kilometers south of downtown and receives distributions transformers from the region of all Alexandria in order to repair if possible. The facility repairs and checks distribution transformers and operates three units to treat dielectric oil from electrical appliances. The team audited the transformers storage area, oil storage drums area and the oil treatment units of this facility.

From the transformers storage area the team took five samples and from drum storage area three 3 samples. The samples of transformers have had the ID: KAR 01, KAR 02, KAR 03, KAR 04, KAR 05, and of drums KAR 6, KAR 7 & KAR 8.

Explanation's to all engineers and technicians on how they can control PCBs cross contamination in all their equipment and take measures to protect themselves.

Picture 16: Entrance of Service transformers unit

Picture 17: Group Photography
### 3.2.3 Egyptian Copper Works Company in Alexandria

**Date/Time:** 16 December 2013  
**Location:** North East of Alexandria  
**Contact person:** Mohamed Mohamed Moussa, Responsible person for the transformers in Egyptian Copper Works Company in Alexandria  
**E-mail:**  
**Tel:** 002 01006529689

| Auditors: | Mr Panos Ioakimidis, International PCB Expert  
|           | Dr Elham Refaat, Project Manager - General Environmental development Department  
|           | Dr. Eng / Manal Samy Farag - Environmental Researcher in the General Environmental Development Department --- Deputy Project manager  
|           | Eng. Yasser Badr - Hazardous waste Director  
|           | Chem. Mohamed Khalifa – Hazardous Substances Director  
|           | Chem / George Zarif, Water-Lab ALEX RBO's EEAA  
|           | Agricultural Engineer / Mona Mohsen Inspection Department ALEX RBO's EEAA  
|           | Mr / Ahmed Moumen, EIA Department ALEX RBO's EEAA |

The area of the Copper facility is located east of Alexandria and at the time of audit, the site was demolished. The manager shows the team a warehouse place in which stored four distributions transformers since 12 years ago, the 4 were manufactured in Poland. All transformers were manufactured from the same company and the team decided to take samples from three of them.

- **Manufacturer:** ZAKLAD, POLAND  
- **Serial number:**  
- **Date of manufacturing:** 1972  
- **Power:** 1850 KVA,  
- **Total weight:** 4000 kg, (data from the name plate)  
- **Dielectric oil weight:** 2200 kg,  
- **Cooling system, trade name of dielectric oil:**

The ID of taken samples was COPPER 1, COPPER 2 & COPPER 3. The transformers have had dimensions as:

- **High:** 2,3. m.  
- **Width:** 1,5 m.  
- **Length:** 2,0m.  

Explanation’s to all engineers and technicians on how they can control PCBs cross contamination in all their equipment and take measures to protect themselves.
3.2.4 Spinning and Weaving factory, Sabahi-Alexandria

Date/Time: 16 December 2013
Location: Alexandria
Contact person: Eng Ahmed Khedr
E-mail: 
Tel: 002 01224380473
Fax 002 03 501307

Auditors: Mr Panos Ioakimidis, International PCB Expert
Dr Elham Refaat, Project Manager - General Environmental development Department
Dr.Eng / Manal Samy Farag - Environmental Researcher in the
The area of spinning and weaving factory is located east of Alexandria and at the time of audit, the site was being demolished. The manager shows the team the closed warehouse, where they store temporary seven distributions transformers, since 5-6 years ago, manufactured in East Germany. All transformers were manufactured from the same company and the team decided to take samples from three of them.

First group of five transformers:
- Manufacturer: VEB TRANSFORMATIONEN ROETGEN WERKE, EAST GERMANY
- Serial number:
- Date of manufacturing: 1977
- Power: 1600 KVA,
- Total weight 5600 kg,
- Dielectric oil weight: 1200 kg,
- Cooling system, trade name of dielectric oil:

The team took samples from two transformers with the ID: SAB 01 & SAB 02.

The transformers have had dimensions as:
- High 2,3. m.
- Width 1,5 m.
- Length 2,0m.

Second group of two transformers:
- Manufacturer: VEB TRANSFORMATIONEN ROETGEN WERKE, EAST GERMANY
- Serial number:
- Date of manufacturing: 1977
- Power: 400 KVA,
- Total weight 2895 kg,
- Dielectric oil weight: 525 kg,
- Cooling system, trade name of dielectric oil:

The team took sample from one transformer with the ID: SAB 03.

The transformer has had dimensions as:
- High 1,8. m.
- Width 1,2 m.
- Length 1,60m.

Explanation's to all engineers and technicians on how they can control PCBs cross contamination in all their equipment and take measures to protect themselves.
3.2.5 RAKTA PAPER Co, Alexandria

**Date/Time:** 16 December 2013  
**Location:** Alexandria  
**Contact person:** chemist / Ahmed Abdenabi  
**E-mail:**  
**Tel:** 002 01 280682803  
**FAX** 002 03 5615866

**Auditors:** Mr Panos Ioakimidis, International PCB Expert  
Dr Elham Refaat, Project Manager – General Environmental Development Department  
Dr.Eng / Manal Samy Farag - Environmental Researcher in the
RAKTA is an Egyptian joint stock company specialized in the production of cardboard, belonging to the chemical industries holding and established in 1950.

Year before the bleaching unit of the factory was shut down and the manager shows the team four substations where there were eight transformers.

In the first substation were two transformers with following data:

- Manufacturer: ALLIS CHALME, USA
- Serial number:-
- Date of manufacturing: 1972
- Power: 1000 KVA,
- Total weight 4354 kg,
- Dielectric oil weight: 1542 kg,
- Cooling system, trade name of dielectric oil:

Samples were taken from both transformers with the ID: RAKTA 01 & RAKTA 02.

Both transformers have had dimensions as:

- High 2,20. m.
- Width 1,5 m.
- Length 1,80m.
In the second substation where two transformers with following data:
- Manufacturer: SIEMENS SUCKERTWERKE AG GERMANY,
- Serial number:-
- Date of manufacturing: 1972
- Power: 1000 KVA,
- Total weight 3300 kg,
- Dielectric oil weight: 800 kg,
- Cooling system, trade name of dielectric oil:

Samples were taken from both transformers, with the ID: RAKTA 03 & RAKTA 04.
Both transformers have had dimensions as:
- High 2,00. m.
- Width 1,5 m.
- Length 1,80 m.
In the third substation were two transformers with following data:

- Manufacturer: TRAFO UNION, EAST GERMANY
- Serial number:
- Date of manufacturing: 1972
- Power: 1000 KVA,
- Total weight: 3250 kg,
- Dielectric oil weight: 720 kg,
- Cooling system, trade name of dielectric oil:

The team took sample from both transformers with the ID: RAKTA 05 & RAKTA 06. Both transformers have had dimensions as:

- High: 2,10 m.
- Width: 1,5 m.
- Length: 1,80 m.
In the fourth substation where two transformers with following data:
- Manufacturer: TRAFO UNION, EAST GERMANY
- Serial number:
- Date of manufacturing: 1972
- Power: 1000 KVA,
- Total weight 3250 kg,
- Dielectric oil weight: 720 kg,
- Cooling system, trade name of dielectric oil:

The team took sample from both transformers with the ID: RAKTA 07 & RAKTA 08.
Both transformers have had dimensions as:
- High 2,10 m.
- Width 1,5 m.
- Length 1,80 m.

Explanation’s to all engineers and technicians on how they can control PCBs cross contamination in all their equipment and take measures to protect themselves.
3.3 EEAA’s Alexandria RBO

<table>
<thead>
<tr>
<th>Date/Time:</th>
<th>17 December 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td>Alexandria</td>
</tr>
<tr>
<td>Contact person:</td>
<td>Dr / Sameh reyad, Director of Alex RBO lab</td>
</tr>
<tr>
<td>Tel:</td>
<td>002 01284321299</td>
</tr>
<tr>
<td>EEAA RBO ALEX:</td>
<td>Hoda Moustafa, Charmin Alex RBO</td>
</tr>
<tr>
<td>Tel:</td>
<td>002 01 00192164</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Auditors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mr Panos Ioakimidis, International PCB Expert</td>
</tr>
<tr>
<td>Dr Elham Refaat, Project Manager – General Environmental development Department</td>
</tr>
<tr>
<td>Dr.Eng / Manal Samy Farag - Environmental Researcher in the General Environmental Development Department – Deputy Project manager</td>
</tr>
<tr>
<td>Eng. Yasser Badr - Hazardous waste Director</td>
</tr>
<tr>
<td>Chem. Mohamed Khalifa – Hazardous Substances Director</td>
</tr>
<tr>
<td>Chem / George Zarif, Water-Lab ALEX RBO’s EEAA</td>
</tr>
<tr>
<td>Agricultural Engineer / Mona Mohsen Inspection Department ALEX RBO’s EEAA</td>
</tr>
<tr>
<td>Mr / Ahmed Moumen EIA Department ALEX RBO’s EEAA</td>
</tr>
</tbody>
</table>

Hoda Moustafa, Charmin Alex RBO welcomed the team and declared their will to assist us in order to enhance the awareness and identification of PCBs.

Dr Elham Refaat and Panos Ioakimidis presented to all participants the task and goals of the PCBs project and explained to all participants, where and why we need their contribution and assistance in order to get Egypt to get the maximum benefit from the PCBs awareness and demonstration project.

In the Laboratory of EEAA Alexandria RBO a team consisting of 15 people was formed, in order to use the two Analyzers L2000DX granted from UNEP/MAP and perform the analysis of all taken samples from 14 until 16 of December 2013.

Both Analyzers were transported from Cairo to Alexandria and one of them after the analysis will remain in EEAA Alexandria RBO Laboratory. The second L2000DX analyzer returned to the central Lab at EEAA-Cairo.

During the audits in Cairo and Alexandria, the team got 31 samples. Three of those samples were pure PCBs and the reason we got those samples was to introduce the participants in the dedicated smell, color and viscosity of pure liquid PCBs.
Mission Report UNEP MAP / CPRAC Egypt - PCB Inventories and Environmentally Sound PCB Management – December 14-17, 2013
3.3.1 Analysis

Under the supervision of Panos Ioakimidis, both analyzers were assembled and tested for their functionality. Both analyzers worked as the manufacturer descripts in the submitted operation manual. Then the team under the supervision of Panos Ioakimidis started the preparation of Seventeen samples and performed the analysis using the analyzer L2000DX. The analysis of remaining eleven samples was performed by Chemist / George Zarif, ALEX RBO’s EEAA using the Analyzer L2000DX later. The next table provides the level of their PCBs contamination using the analyzer L2000DX.
## 3.4 Results of samples from EGYPT

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Kind of appliance</th>
<th>Manufacturer</th>
<th>Cross weight kg</th>
<th>OIL WEIGHT Kg</th>
<th>Date analysis</th>
<th>Result mg/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TIB-01</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>34X630 = 21420</td>
<td>34X220= 7480</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>2 TIB-02</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>8250</td>
<td>3100</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>3 TIB-03</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>8250</td>
<td>3100</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>4 TIB-04</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>8250</td>
<td>3100</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>5 TIB-05</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>8250</td>
<td>3100</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>6 TIB-06</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>8250</td>
<td>3100</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>7 TIB-07</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>8250</td>
<td>3100</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>8 TIB-08</td>
<td>Transformer</td>
<td>TIBBIN, CAIRO</td>
<td>~5000</td>
<td>~1600</td>
<td>18-12-13</td>
<td>Pure PCBs</td>
</tr>
<tr>
<td>9 ABBIS 01</td>
<td>Transformer</td>
<td>SIEMENS 132/58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 ABBIS 02</td>
<td>Transformer</td>
<td>SIEMENS 143/58</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 ABBIS 03</td>
<td>Transformer</td>
<td>SIEMENS 151/58</td>
<td></td>
<td></td>
<td>18-12-13</td>
<td>23.4</td>
</tr>
<tr>
<td>12 ABBIS 04</td>
<td>Transformer</td>
<td>SIEMENS</td>
<td></td>
<td></td>
<td>18-12-13</td>
<td>20.5</td>
</tr>
<tr>
<td>13 ABBIS 05</td>
<td>Transformer</td>
<td>SIEMENS 57/108</td>
<td></td>
<td></td>
<td>18-12-13</td>
<td>21</td>
</tr>
<tr>
<td>14 ABBIS 06</td>
<td>Transformer</td>
<td>SIEMENS 57/108</td>
<td>~30000*</td>
<td>~10000*</td>
<td>18-12-13</td>
<td>117</td>
</tr>
<tr>
<td>15 ABBIS 07</td>
<td>Transformer</td>
<td>SIEMENS</td>
<td></td>
<td></td>
<td>18-12-13</td>
<td>30.2</td>
</tr>
<tr>
<td>16 ABBIS 08</td>
<td>Transformer</td>
<td></td>
<td></td>
<td></td>
<td>18-12-13</td>
<td>15.8</td>
</tr>
<tr>
<td>YARD</td>
<td>SIEMENS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------</td>
<td>----------</td>
<td>----------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17 KARMOUZE</td>
<td>KAR 01 Transformer,</td>
<td>18-12-13</td>
<td>17.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 KARMOUZE</td>
<td>KAR 02 Transformer</td>
<td>18-12-13</td>
<td>45.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 KARMOUZE</td>
<td>KAR 03 Transformer</td>
<td>18-12-13</td>
<td>11.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 KARMOUZE</td>
<td>KAR 04 Transformer</td>
<td>18-12-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 KARMOUZE</td>
<td>KAR 05 Transformer</td>
<td>18-12-13</td>
<td>9.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 KARMOUZE</td>
<td>KAR 06 Barrel</td>
<td>18-12-13</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 KARMOUZE</td>
<td>KAR 07 Barrel</td>
<td>18-12-13</td>
<td>21.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24 KARMOUZE</td>
<td>KAR 08 Barrel</td>
<td>18-12-13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>REPAIR STATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 El Siuf</td>
<td>SAB 01 Transformer VEB TRANSFORMATOREN</td>
<td>5600</td>
<td>1200</td>
<td>23.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 El Seuf</td>
<td>SAB 02 Transformer VEB TRANSFORMATOREN</td>
<td>5600</td>
<td>1200</td>
<td>54.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 El Seuf</td>
<td>SAB 06 Transformer VEB TRANSFORMATOREN</td>
<td>5600</td>
<td>1200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 El Seuf</td>
<td>SAB 04 Transformer VEB TRANSFORMATOREN</td>
<td>5600</td>
<td>1200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29 El Seuf</td>
<td>SAB 05 Transformer VEB TRANSFORMATOREN</td>
<td>5600</td>
<td>1200</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 El Seuf</td>
<td>SAB 03 Transformer VEB TRANSFORMATOREN</td>
<td>2895</td>
<td>525</td>
<td>22.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 El Seuf</td>
<td>SAB 07 Transformer VEB TRANSFORMATOREN</td>
<td>2895</td>
<td>525</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinning,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sabahi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 Copper</td>
<td>COPPER Transformer VEB</td>
<td>18-12-13</td>
<td>274</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Transformer Specifications

<table>
<thead>
<tr>
<th>ID</th>
<th>Industry</th>
<th>Model</th>
<th>Power (kVA)</th>
<th>Voltage (kV)</th>
<th>Date</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>Copper industry</td>
<td>COPPER 02</td>
<td>4000</td>
<td>2200</td>
<td>18-12-13</td>
<td>333</td>
</tr>
<tr>
<td>34</td>
<td>Copper industry</td>
<td>COPPER 03</td>
<td>4000</td>
<td>2200</td>
<td>18-12-13</td>
<td>117</td>
</tr>
<tr>
<td>35</td>
<td>Copper industry</td>
<td>Transformer</td>
<td>4000</td>
<td>2200</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 1</td>
<td>ALLIS CHALME</td>
<td>4354</td>
<td>1542</td>
<td>18-12-13, 22-12-13</td>
</tr>
<tr>
<td>37</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 2</td>
<td>ALLIS CHALME</td>
<td>4354</td>
<td>1542</td>
<td>18-12-13</td>
</tr>
<tr>
<td>38</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 3</td>
<td>SIEMENS</td>
<td>3300</td>
<td></td>
<td>18-12-13, 22-12-13</td>
</tr>
<tr>
<td>39</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 4</td>
<td>SIEMENS</td>
<td>3300</td>
<td></td>
<td>22-12-13</td>
</tr>
<tr>
<td>40</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 5</td>
<td>TRAFO UNION</td>
<td>3250</td>
<td>720</td>
<td>18-12-13, 22-12-13</td>
</tr>
<tr>
<td>41</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 6</td>
<td>TRAFO UNION</td>
<td>3250</td>
<td>720</td>
<td>22-12-13</td>
</tr>
<tr>
<td>42</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 7</td>
<td>TRAFO UNION</td>
<td>3250</td>
<td>720</td>
<td>22-12-13</td>
</tr>
<tr>
<td>43</td>
<td>RAKTA PAPER INDUSTRY</td>
<td>RAKTA 8</td>
<td>TRAFO UNION</td>
<td>3250</td>
<td>720</td>
<td>22-12-13</td>
</tr>
</tbody>
</table>

*Estimated weight*

The results of this screening demonstrates, that:

- **Three sample are pure PCBs**
- **Three samples are high PCBs contaminated, (~ and > 5000ppm)**
- `< 50 ppm : 17 samples`
- `50-100 ppm : 4 samples`
- `100 – 500 ppm : 4 samples`

For samples ID: RAKTA 4, RAKTA 6 and SAB 2 are recommended to verify the results by GC Analysis.
4. Conclusion and Recommendations

The goal to assist Egypt in its dynamic PCBs inventory funded from UNEP/MAP & CPRAC through the use of granted L2000DX Analysers and to train local experts which is fully achieved from this mission.

The summarised results of this screening are:

- The cross weight (solid and liquid) of the identified pure PCBs out of scrap appliances was **76520 Kg**.
- The cross weight (solid and liquid) of the identified high PCBs cross contaminated scrap appliances was **9750 Kg**.
- The cross weight (solid and liquid) of the identified middle PCBs cross contaminated scrap appliances was **8000 Kg**.
- The weight of the identified low liquid PCBs cross contaminated scrap was **13742 Kg**.

**EEAA** should ask:

- The IRON AND STEEL INDUSTRY TIBBIN, CAIRO management if they are willing to deliver the total quantity of pure PCBs Identified transformers, participating in our demonstration project.
- The ABBIS interim storage - Alexandria management if they are willing to deliver the total quantity of their Identified liquid PCBs, participating in our demonstration project.
- The El Seuf Spinning and weaving Co – Sabahi Alexandria management if they are willing to deliver the total quantity of pure PCB Identified transformers participating in our demonstration project.
- The Rakta paper Co, Alexandria, management if they are willing to deliver the total quantity of PCBs contaminated identified transformers, participating in our demonstration project.

We recommend the Laboratory of EEAA Alexandria RBO to use the L2000DX Analysers for screen oil samples received from next coming stakeholders. The quantity of chemicals is sufficient for next oil analysis of at least 300 samples.

We recommend that EEAA to repeat physical audits using local experts trained during the next workshop of February 2014.

We recommend to include the identified PCBs of **108012 Kg** (76520+9750+8000+13742) to be exported as part of the demonstration sound PCBs management of “component 2.3: Environmentally Sound Management of equipment, stocks and wastes containing or contaminated by PCBs in national electricity companies of Mediterranean countries”.

The Undersigned would like to thank:

- Dr Elham Refaat, Project Manager – General Environmental development Department, for her accurate contribution to have an successful mission
- Dr.Eng / Manal Samy Farag – Environmental Researcher in the General Environmental Development Department--- Deputy Project manager, for her accurate contribution to have an successful mission
- Eng. Yasser Badr - Hazardous waste Director, for his commitment and performance on PCB sampling and analysing
- Chem. Mohamed Khalifa – Hazardous Substances Director for his commitment and performance on PCB sampling and analysing
- Chem / George Zarif, Water-Lab ALEX RBO’s EEAA
- Agricultural Engineer / Mona Mohsen Inspection Department ALEX RBO's EEAA, for her commitment and performance on PCB sampling and analysing
- Mr / Ahmed Moumen EIA Department ALEX RBO's EEAA for his commitment and performance on PCB sampling and analysing

International PCB Expert

Athens/Greece, December 20, 2013