

**REGIONAL PROJECT FOR PROMOTION OF STRATEGIES TO REDUCE UNINTENTIONAL
PRODUCTION OF POPS IN THE RED SEA AND GULF OF ADEN COASTAL ZONE**

GF/RAB/08/006/11- 51

April 30- May 19, 2011

Port Sudan, Cairo, Hurghada, Suez, Aqaba

SUDAN, EGYPT, JORDAN

Joint Mission Report

**Regional organization for the Conservation of Environment of the
Red Sea and Gulf of Aden**

United Nations Industrial Development Organization

24th May 2011

1. Objectives

The objectives of the mission were to:

- Assist the Regional project Coordinator and the International Experts in evaluating the technologies of the selected industries regarding the implementation of BAT/BEP to reduce UP-POPs releases.
- Evaluate the technologies of the selected industries regarding the implementation of BAT/BEP to reduce UP-POPs releases.
- Participate and advise on the initial dioxin and furan sampling programme at the selected industries.
- Discuss the resource mobilization plan of the participating industries for BAT/BEP implementation.

The detailed job descriptions of the consultants are attached as Annex I.

2. Introduction

After the fifth PMC meeting, held in April 2011, it was agreed that the site-specific assessments of each selected industrial location for BAT/BEP implementation would be submitted to the Regional Project Coordinator before the end of April 2011. These reports would be forwarded to the selected international experts for review and comments. The field mission of the international experts was planned from the 1st May 2011 to 18th May 2011. It was also decided that due to the political instability in Yemen the site-specific assessment would not be undertaken there.

Two international experts have been selected, Massimo Gobbi and Andrea Sbrilli. UNIDO CTA has met both experts in Vienna and briefed them on the project and expectations from their assignments. In April the team has prepared for the assignments, the RPC has submitted all evaluations undertaken by the national site specific assessment teams to the Experts for review.

Since the mission addressed similar activities of the participating experts and the preparation of the sites specific assessments were cumbersome and challenging, it was agreed that a joint mission report would be prepared.

3. Achievements during the mission

30th April 2011.

Italian experts have travelled to Cairo. UNIDO CTA travels from Budapest to Khartoum.

1st May 2011.

Italian experts travelled from Cairo to Khartoum, where the team assembled. Team members were, Dr. Mohammed Badran RPC, Massimo Gobbi international expert, Andrea Sbrilli international expert and Dr. Szabolcs Fejes CTA. The team flew to Port Sudan, where the National Project Coordinator of Sudan received them.

2nd May 2011.

The programme for the day addressed solid waste management in Port Sudan. The first meeting was scheduled with the newly appointed Minister of Environment for Red Sea State Mr. Abdullah Mohammed Ahmed Kunna. The minister welcomed the team and reassured his full support for the data collection. He stated that there were significant changes in the municipal waste management in the Red Sea State as the former three companies that were engaged in waste collection and disposal had been merged to a government owned company the General Corporation for Cleaning Wastes for Red Sea State. This company could provide harmonized and standard service to the people. He also stated that it was the best time for the team to come, as they were about to implement better municipal waste management practices for which he welcomed the assessment and recommendations of the team.

The next meeting took place at the headquarters of the General Corporation for Cleaning Wastes for Red Sea State (GCCW). The representatives of the company have presented the company, its, vision and objectives. Since they had started operating since 1st May 2011, they did not have any figures on the amount of waste they collected. They had however information concerning the

population and former waste collection data from the previous companies. During the discussion basic information was collected concerning the major characteristics of the collection and disposal system in place. At the same time crucial information concerning the waste amount and composition could not be retrieved. The major financial and population figures could also be collected; thereby the initial calculation on the costs and earnings could be undertaken.

Followed by the discussion the team continued its programme with investigating the collection system. They have pressing and non pressing collection truck with different sizes. The smallest are the tractors that can take up to 2 tons of waste, while the largest are the trucks with press that can handle 25 tons of waste.- The team observed this equipment in the city. The field visit continued at the main bus station area, where the employees of the GCCW were cleaning the ground. This process involved the burning of the collected waste right on the spot. In some cases the waste was burned in containers, but most of the time on the ground.

The next stop was the dump site west of Port Sudan. The place covered a very large area. It was not fenced, the waste was offloaded virtually everywhere in a very thin layer. Unlike most of the dump sites, where the waste is dumped in a small area in thick layers, here, due to the availability of land, it was spread in a very large area. Animals were grazing on the leftovers of the waste. The team calculated approximately 10-15 scavengers that lived on and from the waste. They pay to the collection team so that the waste is off loaded at "their" place. Then they recover the valuables. What remains is burnt. They sell the metals, the PVC plastics and the glass bottles. The sewage from the septic tanks of the households is also taken to the dump site and spread on top of the waste. Floods in the rainy season take the remaining wastes through the city to the sea. Expert team has collected as much information as possible from the scavengers and other employees of GCCW.

With this visit the team concluded the data collection on municipal waste management and open burning of waste in Port Sudan.

In the evening the team assembled and discussed the observations of the site visits and drafted general conclusions concerning the waste management practices. It was also agreed that two options would be elaborated in the report. The first would be the short term and thus low cost option, which could be the starting point towards environmentally sound waste management. This would mainly establish a dedicated area for dumping the waste, would measure the collected waste at the dump site, would discourage burning the waste in the city and at the dump site except for contagious wastes. This option would generate information for planning of the long-term, sophisticated solution of an engineered landfill, with high amount of waste recycling and complete elimination of open burning.

The detailed analysis of the waste management practices and the proposed BAT/BEP measures are provided in the corresponding technical report on the municipal waste management practices.

3rd May 2011.

First the Athager Engineering Co., asphalt mixing plant was visited. The general manager of the plant Mr. Ahmed Taher showed us the plant. All technological steps were carefully investigated and documented. The facility was just grinding and sorting the aggregates, as they did not have orders. The Expert team concluded that there were three points for UP-POPs generation. One was the diesel generator which produced the electricity for the whole plant. This was a 385 KW diesel generator. The second point was the burner that heated up the aggregates for mixing with the bitumen. The third was the burner for heating the bitumen to appropriate temperature, so that it could be pumped and mixed with the aggregates. Another point of potential discharge of UP-POPs was also identified, being the container where the bitumen and the aggregates were mixed and finally loaded on the trucks. The facility lacked the proper operational control measures, thus it uses more energy than it is necessary for the production of asphalt mix. The main economical and technological figures were recorded, however some of the information could not be retrieved right on the site as the general manager did not have them ready. It was agreed that the expert team would e-mail him the questions and he would answer them quickly.

The last meeting for the day was with an investor UNAR Environmental Services. The general manager Mr. Magdi Mohamed Salim introduced the company that works in the field of environment. They have several partnership agreements with other NGOs working in the field of environment. They would be willing to invest in waste management, specifically land filling and waste recycling. He stated that they had bought a land where the landfill could be created. He was not aware of the fact that the three former waste collection companies had been merged into one governmental owned one, which completely changes the business opportunities in this field. The expert team recommended him to continue to build relationships with the Ministries in order to get support and approval of his plans.

Afternoon, the expert team met again to discuss the findings and conclusions for the day. The asphalt mixing plant was discussed in details. The questions for further information from the plant were developed. The team concluded that by small investment on measuring major parameters of the technology, such as temperature of the drum, pressures of the inlet and outlet of the bag-house filter etc., and a process automation based on the measured data could significantly increase the environmental

performance of the facility and at the same time could reduce the fuel cost. Regular maintenance practices on the technology should also concentrate on the efficiency as well, since now they only consider whether the plant can operate or not.

The detailed analysis of the asphalt mixing plant and the proposed BAT/BEP measures are provided in the corresponding technical report.

4th May 2011.

In the morning the expert team de-briefed the Minister of Environment for Red Sea State Mr. Abdullah Mohammed Ahmed Kunna. The media was also invited for this meeting in order to create general recognition of the problem and awareness on the project and UP-POPs. During the discussions expert team had presented their conclusions concerning the waste management practices and asphalt mixing. The recommendations concerning the improvement of the environmental performance of these practices had also been discussed.

Later the team learned that the flight to Khartoum was delayed and thus the connecting flight to Cairo could not be met. Therefore the flight tickets concerning the Khartoum-Cairo leg of the mission were changed and the team took the first flight in the next morning to Cairo.

5th May 2011.

The team arrived in Cairo early morning. Dr. Badran has visited the Ministry of Environment to discuss the details of the mission, while the experts have agreed on the content of the technical reports and started to write the documents.

6-7th May 2011.

Over the weekend experts were working on the Sudanese documents. It was agreed that for the municipal dump site two options, a short term and a long term option would be developed. Since the sampling could not be undertaken, the PCDD/Fs releases would be calculated based on literature data. The PCDD/Fs releases would be used to indicate the UP-POPs releases as well.

Over the weekend the Egyptian team has also arrived and thus the details of the activities of the team in Egypt was agreed.

8th May 2011.

The first meeting in Hurghada was with Sayed Mohamed Madian general manager for EEAA Red Sea Regional Branch. He welcomed the team and assured his support over the mission. He also assigned two of his assistants to the team in order to improve the transparency and information sharing within the Ministry of Environment.

The team visited the municipal landfill site of Hurghada. At the first glimpse it was obvious that open burning was not undertaken at the landfill. This was discussed with the RPC and the NPC of Egypt. It was decided that another dumping location should be visited in the vicinity of Hurghada. Local environment officials recommended Safaga dump site, which was 50 km from Hurghada. The team agreed, but before going to the Safaga dump site, information was collected concerning the management of Hurghada landfill. The landfill applies segregation of the waste by private entrepreneurs. They are paid according to the type and weight of the waste stream they separate. They search for aluminium cans, PET bottles, plastics, glass, cardboard paper, plastic bags, and thin paper. Waste Management Company then takes these waste streams and sells it.

The team continued its information collection at the headquarters of the Waste management company. The director gave us valuable information concerning the price and amount of different waste streams, as well as the running and other costs of the facility. The team finally visited their facilities, which was designed to produce compost, but was not in operation. The main reason for that was that they could not sell the compost they produced. Careful investigation of the technology and the compost, it was obvious that they produce something else than compost. The material was a shredded mixture of different waste streams, mainly organics, sand and glass. In the sacks syringes and other medical waste parts could be found.

The team concluded that the technology was not appropriate for compost production. This plant might be used for segregation of electronic and electrical wastes as they had very good process lines for sorting and shredding. The only investment they would require is a chain shredder as the one they have now is mostly good for plastics and small in size for electrical waste.

The team finally visited the Safaga dump site. This location is an excellent example for open burning of waste. The area was very close to the sea, waste was dumped in an uncontrolled manner. Scavengers, especially children were working on the site to sort out valuable items. Detailed information could not be collected because the Safaga municipality should officially be informed before any information could be collected.

It was agreed that the Egyptian Site Specific Assessment would be revised and this site included. BAT and BEP would be developed for this location based on information collected by the national experts who would do the site assessment. International expert would provide a questionnaire to the national consultant through the RPC to assure that appropriate data is collected.

In the evening the team has reviewed the Sudanese draft report on municipal waste management and concluded that further work was needed on the long term option.

9th May 2011.

Early morning the team travelled to Suez to Suez Oil Processing Company. The meeting with the management of the SOPC started at 11:00. The meeting included a general introduction to the facility. Then Dr. Badran gave a short summary on the purpose of the project and on the mission to SOPC. Later the management requested information regarding the output of the mission. After clarifying as to what the team would like to do at the facility, the program was agreed. It started with a brief introduction to the general manager of SOPC then a brief tour was organized. All important steps of the technology were investigated and the sources of PCDD/PCDF releases were identified.

10th May 2011.

This day the expert team has split into two teams. Massimo Gobbi and Andrea Sbrilli continued the site inspection at SOPC, while Szabolcs Fejes and Mohamed Badran have gone to Cairo to hold a training lecture on inventory taking of PCDD/PCDFs according to the Stockholm Convention.

The team at SOPC collected further, in depth, information concerning the flaring installations, industrial boilers generating low pressure and high pressure steam and on burners that are used to heat materials. As well as the recovery system for the catalyst was carefully investigated.

The training programme in Cairo on PCDD/Fs and the assessment of their annual releases have been discussed. The training started with the usual welcoming formalities, then a presentation was given on dioxins and furans. This discussed their chemistry, physical, chemical and environmental properties, as well as their biological and health related effects. Their formation and the environment that favour their de-novo synthesis was also discussed. Inventory results of these chemicals have also been presented.

The next presentation was about the UNEP Toolkit for identification and quantification of PCDD/PCDFs releases. All the main source categories and sub categories of the toolkit were demonstrated. After the lunch break a few questions were presented to practice the calculation of PCDD/PCDFs releases.

12th May 2011.

The team has reassembled this they again and visited SOPC to complete the information collection. The data that was requested during the first two days were received and the distillation towers, the flares and some burners were investigated. With this the site assessment at SOPC was finished.

Afternoon the team travelled to Amman via Cairo.

13-14th May 2011.

Over the weekend the reports on the municipal waste dump site and Althager asphalt mixing plant were completed.

15th May 2011.

On Sunday the team visited the Jordanian Phosphate Mines Co. in Aqaba. The head of the environmental department Eng. Mohammed Hjoj received the team and briefly discussed the technology process of the facility. He elaborated on the power production, water supply, sulphuric acid plant, the phosphate grinding and mixing plant, the phosphoric acid plant, the DAP plant, the aluminium flouid plant and the dumping of phospho-gypsum side stream product.

The whole process was demonstrated on a 3D plan. Later a visit to the plant was organized. The auxiliary boilers, the power generation and main boilers were briefly inspected. This assisted the consultants to better prepare for the full day evaluation scheduled on Tuesday.

The afternoon was utilized to draft the skeleton of the Egyptian technology evaluations. It was agreed that for the Hurgada and Safaga dump sites one report would be prepared, since at the Hurgada landfill there was no open burning therefore there was no need to write an evaluation on PCDD/PCDFs release reduction.

Three reports would be prepared for Egypt. One on the Safaga, Hurghada dump sites, one for the Waste Recycling Facility in El Gouna and one for the Suez Oil Processing Company.

16th May 2011.

On Monday the team had meetings in Aqaba. A first meeting was held with the Environment Commissioner of the Aqaba Special Economic Zone Authority. H E welcomed the mission and expressed his full support to the activities the Project in general and to the activities assigned to the mission. This was followed by a visit to Ben Hayyan Aqaba International Laboratories. A meeting was held with the director and some staff members, then the team had tour in the laboratories. Afternoon was dedicated to work on the reports

17th May 2011

The team went again to the Jordanian Mines Company for a thorough assessment of specific activities identified on Sunday. The team was accompanied by a specialist from the department of environment and responsible engineers in the different units gave to the team the necessary information and answered their questions.

18th May 2011

It has been planned that this day would be devoted to an outreach and awareness workshop at the industrial complex of the Jordanian mines Company. The workshop was inaugurated by H E the Environment Commissioner, the Executive Director of the Industrial Complexes and the Regional Project Coordinator. Presentations were given by the Regional Project Coordinator and the invited Experts. The workshop was attended by 17 participants from the industrial Complex and the neighbouring facilities. Participants appreciated the initiative and recommended more activities along the same line to be carried out.

19th May 2011

End of the mission and team members leaving to their planned destinations.

Annex I. Detailed job descriptions

UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Regional Promotion of Strategies to Reduce Unintentional Production of POPs in the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) region (BAT and BEP and Incremental Costs for Selected Sectors of Industry) *Egypt and Kingdom of Saudi Arabia*

JOB DESCRIPTION GF/RAB/08/006/11-51

Post title: Expert in Chemical Safety/Persistent Organic Pollutants
Duration: 0.8 w/m
Date required: 22 March 2010
Duty station: home-based with travel to Cairo, Egypt and, Jeddah, Saudi Arabia
Counterpart: PERSGA Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden
Duties: The consultant is expected to perform the following activities in cooperation with the counterpart as well as other NIP stakeholders:

| Main duties | Expected duration | Location | Expected result(s) |
|---|---------------------|----------------------|---|
| 1) Review the coastal zone PCDD/Fs inventories of Egypt, Jordan, Sudan and Yemen. Prepare request for tender document for sampling equipment for PCDD/Fs analysis. Develop ToR for the national sampling experts, and ToR for specific site assessment for UP-POPs sources; as well as prepare the work plan for the project for 2010. Prepare presentation for POPs inventory taking for the training in Jeddah. | 10 days | home-based | Coastal zone inventories review reports Request for tender document ToRs for sampling experts and for site specific UP-POPs assessment, Work plan for 2010 Finalized presentation materials |
| 2) Provide technical guidance during the third PMC meeting in Cairo; assist the PMC members in selecting the common source and country specific sources for BAT/BEP introduction. Discuss and finalize with the stakeholders the work plan for 2010, and take minutes of the workshop. | 5 days incl. travel | Cairo, Egypt | Industrial sectors and UP-POPs sources are selected for BAT/BEP introduction Work plans agreed for 2010 Minutes of the workshop |
| 3) Provide training for the Saudi national team for preparing POPs inventories. Assist the Regional Project Coordinator (RPC) in securing additional financial resources for the BAT/BEP introduction | 8 days incl. travel | Jeddah, Saudi Arabia | Presentations held, minutes of the training Financial sources for BAT/BEP implementation are identified |
| 4) Prepare detailed mission report and submit it to UNIDO | 1 day | home based | Detailed mission report |

Qualifications: Pharmacist or chemist or with advanced university degree in chemicals engineering. At least 8 years of professional experience. Experience with POPs substances and the Stockholm Convention is required. Familiarity with GEF project development, project cycle and in-depth knowledge of the region is obligatory.

Language: English

Annex II.: Contact details of the mission

Sudan:

| Name | Position | Organization |
|-----------------------------------|--|--|
| Mr. Abdullah Mohammed Ahmed Kunna | Minister | Ministry of Environment, Tourism and Wildlife of Red Sea State |
| Mr. Ohag Saied Hamid | General director | Ministry of Environment, Tourism and Wildlife of Red Sea State |
| Dr. Farang Abdel Salam | Consulting engineer, associate professor | Red Sea University, Chemical Engineering Department, Faculty of Engineering. |
| Mohammed Ali Bashir | Assistant | Ministry of Environment, Tourism and Wildlife of Red Sea State |
| Mr. Omar | Technician | General Corporation for Cleaning Wastes for Red Sea State |
| Ms. Badria | Technician | General Corporation for Cleaning Wastes for Red Sea State |
| Eng. Ahmed Taher | General manager | Althager Engineering Company |
| Mr. Magdi Mohamed Salim | General manager | UNAR Environment Services |

Egypt:

| Name | Position | Organization |
|-----------------------------|--------------------------------------|--|
| Mohamed Khalifa | officer and inspector | Egypt Environment Affairs Authority |
| Dr. Elham Refaat Abdel Aziz | general manager environmental sector | Egypt Environment Affairs Authority |
| Sayed Mohamed Madian | general manager | Egypt Environment Affairs Authority, Red Sea Regional Branch |
| Hussain Nasser Mohamed | inspector | Egypt Environment Affairs Authority, Red Sea Regional Branch |
| Abdel Mohamed Amine | officer | Hurghada City Municipality |
| Kharnis Gomaa | officer | Hurghada City Municipality |
| Mohamed Bakhite | officer | Hurghada City Municipality |
| Ashnaf | officer | Safaga City Municipality |
| Eng. Essam E.R. El Khayyat | general manager assistant | Suez Oil Processing Company |
| Hassan Mohamed Saleh | development manager | Suez Oil Processing Company |
| Abdul Galil Eleiwa | project consultant | |
| Dr. Asmaa Sayeed Hamouda | planner and inspector | Cabinet of ministers, Egypt Environment Affairs Authority, |
| Eng. Sara Mohamed | junior sector coordinator | Federation of Egyptian Industries |
| Mostafa Salah Hassan | cleaner production specialist | Egyptian National Cleaner Production Centre |
| Maysara Fouad | senior cleaner production specialist | Egyptian National Cleaner Production Centre |

| Name | Position | Organization |
|------------------------------|---|---|
| Raid Abdelrahim Damra | Senior Environmental Auditing and Inspector Officer | Aqaba Special Economic Zone Authority |
| Eng. Mohamed Khader Al-Hjouj | Environment and safety manager | Jordan Phosphate Mines Company |
| Aiman Oklat PhD | General manager | Ben Hayyan Laboratories |
| H.E Dr. Salim M. AlMoghrabi | Environment Commissioner | Aqaba Special Economic Zone Authority |
| H. E. Eng. Najeeb el Sheik | Executive Director | Industrial Complex. Jordanian Mines Company |

Participants list in the Workshop

أسماء المشاركين في ورشة استخدام أفضل التقنيات المتاحة وأفضل الممارسات البنينة الممكنة لخفض الانبعاث غير المقصود للملوثات العضوية الثابتة
شركة مناجم الفوسفات الأردنية - مجمع العقبة الصناعي
الأربعاء 18/5/2011

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