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DANIDA;
Environmental Information and Monitoring Programme (EIMP). Air Quality Monitoring Component
Mission 9 Report

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1 Introduction

The ninth mission to Egypt was undertaken in October -December 1998.
The EIMP project is funded by Danida and headed by COWI.
The total project includes four components:

- Coastal Water monitoring (responsible VKI (Danish Water Quality Institute) and COWI)
- Air pollution monitoring (responsible NILU),
- Reference laboratory (responsible VKI) and
- Pollution sources and emissions (responsible COWI).

The work undertaken during the autumn of 1998 included the preparations, establishment and start up of monitors, on-the-job training, training in chemical analyses, data evaluation and reporting and passive sampling. Monitors and samplers are being checked and installed in Cairo and in Alexandria.

The Air Quality Monitoring Team consisted of B Sivertsen, Heba Adly who had replaced Mohamed Nassar, Rolf Dreiem who supported Leif Marsteen in the installation procedures and Oddvar Royset, who was reaponsible for chemical analyses of samples. Leif Marsteen prepared the Seminar on QA/QC.

The following tasks are being undertaken, referring to the work programme activities :

A. Institutional support
   Describing work functions for new experts
B. Design of monitoring programme
   Modify sites in Alexandria and introduce the new counterpart to all sites.
C. Procurement
   Specifications for additional equipment needed. Prepare instruments for installation
D. Data management
   Discuss data availability, data quality and specify data bases locally and at EEAA.
E. Training
   On-the-job training at Monitoring Laboratories included installations, calibrations, operation and chemical analyses.
F. QA/QC
   Specify instrument calibration procedures/standard operational procedures. Establish SOPs as part of on-the-job training, and hold seminar on the use of QA/QC at Monitoring Laboratories and at Reference Laboratory.

G. Monitoring
Start monitoring programme and data retrieval. Install new stations. Begin maintenance programme. Finalise installations in Cairo and Alexandria. Evaluate data, develop reports at Monitoring Laboratory and at EEAA.

H. Reference Laboratory
Reference Laboratory, prepare audits, calibrate of monitors and samplers, take responsibility for standard gases.

I. Component Co-ordination
Various reporting, memos, status reports, meetings etc.

The responsible personnel at the various institutions involved, as well as some of the persons we met during mission 8 are presented in Appendix A.

A list of abbreviations can be found in Appendix I.

2 A. Institutional support

2.1 Activity A.2.2 Assist in describing work functions for new experts

As part of the work function descriptions and the operation of the total monitoring programme, the contracts for the next year of operations between EEAA/EIMP and the Monitoring Laboratories were discussed.

The personnel had been selected for the various tasks at the Monitoring Institutions at Cairo University (CEHM) and at Alexandria University (IGSR).

Cairo University Centre for Environmental Hazard Mitigation (CEHM) had been selected Monitoring Laboratory for the Air Quality Monitoring Programme. EIMP will develop the capacity of this institution to carry out the monitoring activities and to report the results to EEAA, including provision of necessary equipment, training and initial supervision and development of quality control procedures.

The positions held by the staff at CEHM to execute the air monitoring in Cairo and Upper Egypt were as follows:

- Official Consultant, Prof. Dr. Yeiha El Sayed, Director of the Center
- Project Manager, Dr. Tarek El Araby
- Quality Manager, Dr. Hesham El Araby
- Chemical Analysis Manager, Dr. Ahmed Soliman
- Data Retrieval, Ashraf Saleh, Essam Abdel Hallim
- Technicians:Maher Sayed Hafez, Ahmed Sayd, Yassin Fathi, Kamela Mohamed

The Institute of Graduates Studies and Research (IGSR) in Alexandria had been selected a second monitoring institution with the objective of taking care of the monitoring and sampling stations in Alexandria and in the Delta.

The positions held by the staff at IGSR were as follows:

- Consultant's Director Prof Mohamed El-Raey
- Project Manager, Dr. El Sayed Shalaby
- Quality Assurance Manager, Dr. Shawkat K Guirguis
- Computer expert Dr Zekry f Ghatass
- Project engineer, Mohamed M Kotb
- Station operators, Mr. Ashraf A Zahran, Mr. Mohamed Rashad, Mr. Hossam A Saied

3 B. Design of monitoring programme

3.1 Activity B.2.1 Select representative monitoring sites for air quality measurements

Most of the sites for the total air pollution monitoring programme for Egypt have been selected in earlier visits. However, due to the change of counterapart, several of the sites in Alexandria and in the Delta had to be revisited.

Some of these sites were also changed. In Alexandria we had to modify Abu Quir and the background site in Alexandria. The ozone monitoring site was moved to the roof (27 m above ground) at IGSR. The site in GheatElEnab was moved from a school to the fire station at the Gheat ElEnab square.

Also the detailed positions of shelters in 10 Ramadan City and in 6 October City were moved to more appropriate places for small shelters. (See Appendix B2.1).

In the Delta the site at Damnhour was changed to Kafr Dawar, which from passive sampling had proven to be much more polluted. The site at Kafr Dawar was selected as shown in Appendix B2.1. Also the site at ElMansoura was revisited, and details concerning the location of a shelter and a meteorological mast were discussed with Governorate representatives.

In Suez the sites were re-visited. We had meetings with the Secretary general of the Governerate on 16 November 1998 and the site close to the bus station was approved. Also measurement sites in Ismailia and in Port Said were selected.

3.2 Activity B.2.2 Define site characteristics

For the new monitoring sites the surrounding area, local sources and possible impacts has been described in Appendix B. The site descriptions also include local maps, co-ordinate specifications and photos where available.

3.3 Activity B.2.8 Establish agreements with monitoring site owners

Agreements with the site owners about the use of their sites have been prepared. A general letter was developed to present the monitoring programme and to seek approval for using the location. The letter also described the location of the instruments. The use of electricity and other requirements at the site. The letter has been signed by the Chairman of EEAA and stamped.

4 C. Procurement of equipment, hardware and software

4.1 Activity C.2.1 Procure instruments and equipment

After meetings with CTS, weekly meetings at CEHM and visits to IGSR in Alexandria several additional instruments and various equipment was identified for procurement.
To increase the information on ambient particle load in Egypt we proposed to buy a new Reflectrometer instrument to be placed at the Monitoring Laboratory at CEHM. The advantage of this instrument will be that all filters at the 12 sequential SO_2 samplers in field can be analysed for black smoke (BS/soot).

Following detailed discussions of the use of simple particle samplers for the EIMP program, we received 5 bids for $PM_{10}/PM_{2,5}$ samplers. None of these offers perfectly met our requirements, It was thus proposed that these offers were rejected. Also based on our experience concerning the availability of electricity, we will propose in the following to purchase simple PM_{10} or $PM_{2,5}$ samplers with battery back up. New updated specifications have been presented for simple particle samplers with battery backup. (See Appendix C.2.1)

Additional number of shelters were contracted as it was decided at EEAA that all sites were to be equipped with shelters. For transport to the sites in Alexandria and in the Delta, it was agreed that IGSR at Alexandria University will need a small car to be able to undertake the necessary operations. This car will be part of the procurement in the near future.

4.2 Activity C.2.2 Prepare instruments for installation

All instruments arrived in Egypt, and stored at the Storage in Maadi, were checked and verified before transfer to the Monitoring Laboratories. All monitors and samplers were calibrated at the Reference Laboratory at NIS prior to the installation in the field.

As part of the preparation of the sites all shelters were constructed in a work shop located north of Maadi and inspected at the work shop prior to transport to the sites. The schedule for shelter deliveries is presented in Appendix C.2.2.

An installation time schedule is also presented in Appendix C.2.2.

5 D. Data management

5.1 Activity D.1.1 Specify data collection and data transfer

The monitoring programme is collecting different types of data. For the air quality monitoring stations each site has been equipped with a data logger unit including a Station Manager that will collect and store data at each site.

As soon as telephone lines are made available hourly average data are being transferred as raw data via modem and telephone lines to the central computer unit. The System Manager at the Monitoring Laboratory at CEHM is used to check the data and to identify errors at the sites. In this way the second level Quality Control is undertaken at the computer centre every day. Problems and inadequate operability have resulted in a long period of trial and errors. We were still in November 1998 requesting an updated version of the System manager user manual.

At the end of 1998 telephone lines have been made available at Tebbin, Giza CU, Quolaly and Shoubra. We are preparing telephones also at FumAlKhalil and at Maadi. At the other monitoring sites data were retrieved via diskettes once a week

Data from the Monitoring sites in Alexandria and in the Delta will also be retrieved via the Station Managers to a new System manager at IGSR at the Monitoring Laboratory in Alexandria. The System Manager for IGSR had not arrived in Egypt at the end of 1998.

5.2 Activity D.1.2 Specify data retrieval and local data base at Monitoring Laboratory

The data retrieval and data storage at the Monitoring Laboratory has been based upon the use of the System Manager. Data scaling, data storage, data quality control etc. has been discussed as part of the training of the Monitoring Laboratory personnel. Training of expert personnel for this operation at the data retrieval computer was based upon System Manager specifications. However, a preliminary database including a simple graphical and statistical tool was developed based upon Excel. The Monitoring Laboratory experts have been trained in the use of this tool for preparing the quarterly reports.

5.3 Activity D.1.3 Specify data quality check and control procedures

Data quality controls apply both to the automatic monitoring data and to semi automatic and manually collected data. Description of the quality control procedures for monitoring data was presented in Mission report 8.

The technical tools have been supported by quality control descriptions, manuals and reporting procedures. Logbooks are established for each instrument. The laboratory routine data monitoring, retrieval, storage and quality control begins as soon as the instruments are installed.

Manuals and reporting procedures for manually collected samples analysed in the analytical lab was developed in October 1998. More detailed descriptions and a copy of a manual are to be found in Mission report 10. A summary is also found in Appendix D.1.3.

5.4 Activity D.1.5 Telecommunication lines

Telephone lines have been made available at Giza,Cairo University, IGSR, Tebbin, El-Gomhoriya, Quolaly and Shoubra el Kheima. The goal is to equip all monitoring sites with telephone lines to enable the daily quality control on the stations.

5.5 Activity D.2.1 Prepare database for manually analysed data

A laboratory database for samples was prepared for chemical analyses. Preliminary data will be entered into this database for manual check and control before the data are transferred to the Monitoring Laboratory database for statistical treatment and presentation. (See Mission Report 10 and Appendix D.2.1)

Data approvals have to be issued before the data are entered into the main database. After final approval of the data this main database may be the same system at EEAA and at the Monitoring institutions. A GIS based database combined with statistical, numerical and graphical presentation tools has been proposed and a preliminary specification of the content of such database has also been prepared.

Descriptions and manuals for the chemical analyses of sampling data were prepared for use at the Monitoring Laboratory in October 1998.

5.6 Activity D.2.2 Local database for monitor data at the Monitoring Laboratories

A local data base for the data retrieved from the monitoring system is part of the System Manager. This database includes in addition to raw data and corrections, the final product of the one-hour average cleaned data as performed by the System Manager.

A system manager for IGSR had been requested during the summer 1998. We are still waiting for a quotation from EMC/Kontram. The system manager (as a local database) will contain all one-hour average data; concentrations of gases and particles as well as all meteorological data. These data will be quality assured and controlled in the final version of the local database. The data will represent the basis for the development of quarterly reports and aggregated data transferred to the EEAA database.

5.7 Activity D.3.1 EEAA data base

As the data base for statistical handling of ambient air quality data and preparation of annual reports at EEAA it was originally proposed to install the Norwegian developed air quality and information system (AirQUIS), which was proposed for the European IT price 1998. The decision made by Danida during the summer 1998, however, was that this air pollution database was to be developed in Egypt.

It was decided that the database for air quality data would be developed by use of local consultants under supervision of EIMP expatriate and Egyptian staff. EIMP staff will prepare specifications for the database, which will include all air quality data, i.e. automatically registered monitoring data as well as manually generated data from samplers.

A preliminary specification of the content of this system had been prepared (see Appendix D.3.1). The system should be based on a Geographical Information System (GIS) and act as a data base and a presentation tool well suited for the purpose of generating a final Air Quality status report for EEAA. The statistical and graphical tools delivered, as part of this database should also be used by the Monitoring institutions for preparing quarterly and annual reports.

6 E. Training

6.1 Activity E.2.1 Prepare on-the-job training

The on-the-job training programme continues continually during the calibration and installation of monitors and samplers. Personnel at the Monitoring Laboratories have been following the installation phase both in Cairo and in Alexandria.

Training has been undertaken both at the Reference Laboratory and at the Monitoring Laboratory and will continue through the whole project.

6.2 6.1.2Activity E.2.2 Training programme for instrument operation and maintenance.

To present the complete QA/QC procedures given in the SOP and manuals a seminar was held in Cairo on 3 December 1998 (see Appendix E.2.2). The following topics has been included in this training programme:

-QA/QC in the field
-The station manual
-Routine maintenance, SOP and form
-Field calibration, SOP and form
-Travel report
-QA/QC in the laboratory
-The history log book
-Calibration in the laboratory, SOP and form
-Establishing QA/QC documentation for a new station
-Results from maintenance and calibrations

An important part of this training programme is to learn to install and operate the various types of monitors. All training is aimed at improving the quality of the data collected. A seminar report has been made available (Marsteen and Lund, 1998)

6.3 Activity E.2.3 On-the-job training at the Monitoring Laboratories

The instrument supplier undertook the monitoring system training in the installation and calibration of instruments at the beginning of 1998. The monitor experts from EIMP (NILU) has continuously performed on-the-job training for the Monitoring Laboratory personnel during preparation, installation and calibration of instruments.

During the autumn 1998 training was given to both Monitoring Laboratories to present, discuss and explain the air quality data. Quarterly reports were developed as part of this training. At CEHM the layout and content of the first annual report was also discussed.

Concerning the sampling equipment included in the programme, The NILU chemical analyses expert spent three weeks at the CEHM Chemical Laboratory. Training was given for preparation of filters and analyses of various filters for sequential samplers, passive samplers and high-volume samplers. More details are given in Appendix 6 and in Mission Report 10.

6.4 Activity E.2.4 Support training to Reference Laboratory personnel

The first training in the use of monitors and in the calibration of monitors was undertaken during installation, tests and calibrations. Experts from the Reference Laboratory also participated in training given to the Monitoring Laboratory personnel.

The responsible for the Reference Laboratory, Dr Mohammed Amer, participated in the calibration of the instruments for IGSR, as part of the training programme. The Reference Laboratory personnel started calibration and preparation of both monitors and samplers during the fall 1998.

6.5 Activity E.5.1 Use of data base at System Manager

The supplier undertook some training in the use of the System Manager at the Monitoring Laboratory in 1997. This training was repeated after re-installation of a new System Manager on 20 April 1998.

The main part of this training, including practical use of the system, remote calibrations, data quality controls, cleaning of data, data plots and storage of raw data is being undertaken as on-the-job training during applications.

The System Manager was used during the autumn of 1998, and on-the-job training improved the skills in using the System Manager at CEHM.

6.6 Activity E.5.2 Training in use of EEAA data base

It was decided during the summer of 1998 that "the database for air quality data will be developed by use of local consultants under supervision of EIMP expatriate and Egyptian staff. EIMP staff will prepare specifications for the database, which will include all air quality data, i.e. automatically registered monitoring data as well as manually generated data from samplers. The database will be structured to handle hourly, 8 hour and 14 hour average values for monitoring data. It will be developed by use of standard software applications thus facilitating easy import/export of data and compatibility to standard GIS software (e.g. ArcView)"

The EEAA ambient air pollution database will have to include statistical programmes designed for air quality and meteorological data and a report generator. It was originally planned to use the GIS-based AirQUIS system as this database and report generator. New specifications for presentations have to be prepared. The decision taken to develop a new database will delay the training procedures compared to the original schedules. These will have to be modified when more details have been developed concerning the database development.

6.7 Activity E.6.1 Sample preparations

The expatriate chemical analysis expert in October 1998 undertook training in the preparation and use of various filters for sequential samplers and for passive samplers. The work performed at CEHM chemical laboratory is described in Mission Report 10. Procedures for sampling and analyses as part of the QA/QC routines is presented in Appendix F.2.3.b)

6.8 Activity E.6.2 Chemical analyses of various filters

The expatriate chemical analysis expert in October 1998 undertook training. The summary report delivered after this training period stated that:

- The laboratory has got good experience with the equipment needed for the analysis of SO2 and NO2 for both active and passive sampling.
- The staff is interested in the topic of air analysis and has during the short training period gained experience with all parts of the equipment and procedures needed for the treatment of the samples.
- The ion chromatographic equipment is working well, although the need for a autosampler was identified.
- The laboratory had already worked for about one year with TSP measurements at one site. There was a problem with the balance which had a too small weighing chamber to fit the high-volume filters. A balance with a larger weighing chamber is recommended.

Training on the evaluation of results of the SO_2 and NO_2 samples. The laboratory had already finished the analysis for first week at the Nasr City site in Cairo. The chromatograms were evaluated together with Dr. Ahmed Soliman Abd Ellah. The analysis seemed to be of good quality. The calibration graphs were linear between 0 - 20 µg/ml of both SO_4 and NO_2.

Also the chromatograms using the AS4A column were satisfactory. The NO_2 at a retention time of about 1 min, were effectively separated from the front peak (which was low). The iodide peak eluted after about 4 minutes and the signal reached baseline again after about 7 minutes. A total analysis time of 10 minutes is enough for the NO_2 application.

7 F. QA/QC

7.1 Activity F.2.1 Instrument calibration procedures

Specifications for instrument calibration and descriptions of measurement and sampling procedures (SOP; Standard Operation Procedures) have been developed. An example is presented in Appendix F2.3.

7.2 Activity F.2.2 Design QA / QC procedures at Monitoring Laboratory

Well-defined descriptions of day by day analytical routines, including quality control, are essential for generating reproducible results. The monitoring laboratory will have to handle both automatically monitored data received via telephone communication direct to the local computers and manually collected samples that will be analysed by wet chemical or other analytical methods.

A major part of the QA/QC procedures were developed during the first half of 1998. (See Mission report 8). In October 1998 the expatriate chemical analyses expert developed procedures for sampling and analyses of SO_2, NO_2 and particles (see Mission report 10). A summary for SO_2 procedures is presented in Appendix F.2.3.b.

The Monitoring Laboratory personnel at CEHM are being trained in these operations. After statistical treatment of the data, systematic errors or trends can be discovered. It is the responsibility of the QA Manager and the Air Quality Manager to undertake these final corrections of the data before entering them into the Quarterly Report, which represents the basis for final data to be stored in the EEAA data base.

A control of the QA/QC procedures will be developed as an Audit Programme, to be undertaken by the Reference Laboratory the design of QA/QC procedures for the analytical programme.

7.3 Activity F.2.3 Establish Standard Operational Procedures as part of QA/QC

Standard Operational Procedures (SOP) has been developed as an important part of the QA/QC procedures. A list of SOPs and forms were made available

at the end of Mission 8 is presented in Mission Report 8 Appendix F 2.3. All procedures to be undertaken at the sites have been collected in a Station Manual. The historical log for all instruments at the stations are to be found in this logbook.

Some of this work continued during Mission 9, and a summary of all procedures was presented as part of the QA/QC seminar in December 1998.

7.4 Activity F.3.1 QC and calibration routines as part of the on-the-job training

The Monitoring Laboratory personnel will have the responsibility for the operation of monitors and samplers, and for undertaking weekly controls in field. All procedures for controls and calibrations have been presented to the Monitoring Laboratory experts. On-the-job training in the use of these routines started as part of calibrations and installations during the second half of 1998.

For monitors the procedures for zero and span controls, flow controls and various checklists are given in the Station Manuals and the SOPs. Manuals and checklists have to be followed at every visit and all detailed information has to be stored in the historical logbook forms. A control of the use of checklists and station logbooks indicated that the Monitoring Laboratory personnel have understood the use of the QA system.

8 G. Monitoring

8.1 Activity G.2.1 Specify sampling programme procedures

The sampling programme consists of integrated (sequential or individual) samplers, from which samples have to be collected and brought to the laboratory for analyses. The schedule for calibration, preparation and installation was updated, as the sampling programme proceeded during Mission 9 in the fall of 1998.

8.2 Activity G.2.2 Specify monitoring programme procedures

Detailed procedures for operation of the air quality monitoring programme was developed parallel to the installations. Procedures were modified and supplied with new specifications during 1998.

8.3 Activity G.2.3 Start monitoring programme and data retrieval

An important part of this phase of the monitoring programme has been to train the operational personnel at the Monitoring Laboratories to participate in and to undertake installations and calibrations of the different type of monitors. For further information about the installation and start up of the monitoring programme see Activity G.3.2.

8.4 Activity G.3.1 Establish monitoring station infrastructure

Heba Adly who had replaced Mohamed Nassar as the air quality team leader counterpart was responsible for preparing the monitoring station infrastructure, including official letters, electricity and telephone lines.

It was decided during the summer 1998 that the whole air quality monitoring programme, where monitors and sequential samplers were to be used, should use different types of shelters at the sites.

Six shelters had been constructed for use in the greater Cairo area, and another 7 shelters were requested for Alexandria, the Delta and Assyut. Two different sizes of shelters were designed dependent upon the number of instruments at the site. At three sites in Cairo, the shelters were shared with the Cairo Air Improvement project (see Appendix C.2.2).

Visits and preliminary audits to the installed sites are reported in Appendix G.2.3.c. An installation work plan for October-November 1998 is presented in Appendix G.2.3.d.

8.5 Activity G.3.2 Install monitors in Cairo and Alexandria

The installation of monitors in Cairo started in 1997. The installation programme follow a schedule that was established in October 1997. An updated version of the monitoring programme and the installation schedule id presented in Appendix G.3.2.a.-b.

At the end of 1998 the monitoring personnel had to share time between operation, installation, calibration and maintenance. At CEHM they had to consider increasing the staff.

At the end of the Mission 9 in December 1998 the sites installed and set in operations were the following:

Tabbin:

Monitors and samplers operated on routine bases. Problems had been reported on the NO_x monitor.

Gomhoryia street:

Monitors operated and data were retrieved weekly on diskettes. Minor problems reported on CO, NMHC does not function properly.

Giza, Cairo University:

The SO_2 and the ozone monitor were operating in good condition. The NOx monitor originally installed had been changed to the one assigned for the Monitoring Laboratory. This operated well. The Meteorological measurements were of good quality.

Shoubra ElKheima

The station operates adequately, and shows very high SO_2 concentrations.

El Quolaly

The Quolaly site near Ramses square, installed in May 1998, was operated satisfactory. The PM_{10} monitor was started in October.

Tebbin South

The sequential SO_2 sampler and a dust fall collector had been installed at Tebbin South. Due to low voltage (175 V) a stabilisator was installed here. The shelter for this sampling station was shared with Cairo Air Improvement Project.

Maadi, EEAA building

The monitoring site in Maadi was selected to be in the EEAA building. The installations of the monitors were finalised in November. They were operating satisfactory at the end of 1998.

Nasr City

Nasr city site installations of sequential samplers was finalised in September, the PM_{10} sampler in November. Problems in the power supply have been recorded at this site.

Fum AlKhalil

The installations of monitors at Fum AlKhalil were finalised in November. Problems obtaining a direct power line to the shelter and installations of air conditioning were solved.

Abu Zabel

Passive sampling of SO_2 and NO_2 was undertaken at Abu Zabel. The dust fall collector was installed, and the site is operated as planned.

Ten Ramadan City

The shelter on top of the security room at the school of district 3 was installed in December 1998. The samplers for SO_2 and particles were performing perfectly at the end of 1998.

Six October City

The shelter on top of a security room in district 6 was installed in December 1998. The samplers for SO_2 , NO_2 and particles were performing perfectly at the end of 1998.

IGSR, Alexandria

Initial malfunctions on the IGSR monitoring station were corrected. Air quality and meteorological data were collected and reported. Most of the data were of good quality but check and calibrations had to be undertaken during the visit of air monitoring expert in October. The PM_{10} monitor was still not functioning perfectly at the end of 1998. This will have to be repaired by CTS.

IGSR, Background station

The shelter for ozone monitoring at the background station in Alexandria arrived was prepared in October. Due to difficulties in lifting the shelter to the roof the installation had to be postponed to 23 November 1998.

Abu Keir College

The station was installed in November 1998. The site selected was not perfect for measuring within the maximum impact area downwind from the most important sources in the area. The instruments were performing perfect at the end of 1998.

El-Max area

The shelter with samplers for SO_2, NO_2 and particles were installed in November. The instruments performed perfectly at the end of 1998.

El-Azafra

The shelter with samplers for SO_2 , NO_2 and particles were installed in November. The instruments performed perfectly at the end of 1998.

Gheat El-Enab

The shelter on top of the fire station was installed in November 1998. The samplers for SO_2, NO_2 and particles were performing perfectly at the end of 1998.

Work summaries for the installation phase at all sites have been developed and are presented in Appendix G.3.2.d.

A schedule for tasks to be undertaken by the EEAA counterpart is presented in Appendix 3.2.e. Various work notes are being developed as the installation of instruments proceeds. An example is presented in Appendix G.3.2.g.

8.6 Activity G.4.1 Maintenance and calibrations at the monitoring stations

The measurement sites that have been installed and set in operation need maintenance and calibration. Weekly visits are being paid to all monitoring sites from the Monitoring Institutions. IGSR in Alexandria will have the responsibility for the operations of sites in Alexandria and in the Delta. IGSR will be supported by CEHM and the Reference Laboratory concerning repair and basic calibrations of monitors, as stated in the memo presented in Mission Report 8, Appendix D.1.1.b. CEHM at Cairo University will have the responsibility for the rest of the stations in Egypt.

A maintenance and visit schedule will have to be developed by the monitoring institutions, including support from institutions outside CEHM and IGSR, where this is necessary. This will probably be necessary for the sites in Upper Egypt.

8.7 Activity G.4.2 Service and repair

As part of the weekly visits to the stations, together with the daily quality controls undertaken by the monitoring institutions, the instrument experts will evaluate the need for repair and service.

Already in the very first phase of the monitoring programme we have seen the necessity for trained personnel to take care of this. It may take years to fully train the monitoring experts to handle all instruments. In the mean time we have established a one-year warranty period with the supplier from the time of the Installation of the instrument.

Examples of work related to service and repair undertaken already in the beginning of 1998 are:

- The PM_{10} monitor delivered in Alexandria had to be changed due to automatic start up problems/errors.
- The CO monitor delivered at IGSR had to be changed due to hang up at start up.
- The CO reactor had to be changed due to errors in the span gas pressure indicator.
- The NOx monitor at Tebbin had to be repaired.

Monitors and samplers will be taken to the laboratory for repair when ever necessary. In some cases simple repairs will be undertaken at the station.

8.8 Activity G.5.1 Data retrieval and data evaluation

The monitoring laboratory is performing data evaluation every day. Calibration factors and span checkpoints, errors, peak values, false data and other peculiarities in the retrieved data have to be controlled at the System Manager. Errors in the data will have to be corrected.

A time plot of the data will be produced at the Monitoring Laboratories. At Cairo University they have the System Manager, but the routine collection of data plots have not started. Daily control routines will also be developed for IGSR in Alexandria, ehen they receive the System Manager.

Training in the judgement of concentration levels and units started during the Mission 8 visits and continued during the Mission 9.

At CEHM data from Tebbin and from Gomhoryia street were retrieved via diskettes until telephone lines were made available. The data were manually loaded into the Excel programme on a weekly basis and cleaned according to data quality flags given in the Station Manager or by visual information and experience. The system improved throughout 1998, but there are still improve

8.9 Activity G.5.2 Data presentation

Air quality data have been presented in various forms and for various purposes during the first phases of the monitoring programme. By request of EEAA a memo was prepared describing the air quality in the Cairo area based upon the first data available from the EEAA/EIMP air quality monitoring network. These data were supported by results of passive sampling of SO_2 and NO_2 .The Memo is presented in Appendix G.5.2.c.

In October 1998 an air pollution episode occurred in Cairo. This episode was described in a Memo presented in Mission Report 9 Appendix G.5.2. The Air pollution concentrations measured at El-Gomhoriya street in central Cairo, at Giza and at Tebbin indicated wide spread sources of air pollution at the surface. Particle concentrations (PM_{10}) were observed at very high levels during night time hours from 23 October to 28 October.

The winds were blowing from around north during the whole period. At night the winds weakened to become almost calm conditions at the surface level. During these relatively cool nights wide spread burning took place at the surface. Smoke was observed both from local waste burning, burning of rubbish, from various types of fires and from small industries burning rubbish, tires and mazoot. Hundreds of small private industries contribute in this way to an undesirable high pollution level, giving rise to health impacts.

The one-hour average PM_{10} concentrations at El-Gomhoriya street in the central part of Cairo, exceeded 500 microgram/m^3 almost every night in during this episode. The daily averages were about 300 microgram/m^3, which is almost 4 times more than the air quality limit given in Law no.4. At Nasr City the SO_2 concentrations exceeded the Air Quality limit values by more than a factor of 2. Also at Tebbin the PM_{10} concentrations were higher these days than normally observed during northerly winds at this site.

The first data for SO_2 and NO_2 collected with sequential samplers at Nasr City and Tebbin South is presented in Appendix G.5.2.b. Data for the first weeks indicate that there are problems linked to the power suppliers. Power breaks have influenced the data. This problem will have to be solved in the near future.

8.10 Activity G.6.3 Passive sampling

The first data collection as part of the programme scheduled for passive sampling at historical monuments and tourist sites was undertaken in April 1998. A total of 20 samples of SO_2 and 20 samples of NO_2 were collected.

The following areas were studied in this campaign:

Hurghada, Luxor, Edfu, ComOmbo, Aswan, Sharm el Sheik, Giza, Sakkara, Memphis, and ElMaadi.

A more detailed description of sampling points and sampling periods including maps are presented in Mission Report 8 Appendix G.6.3.

Passive sampling was further undertaken during the summer and early autumn of 1998. The results of these studies will be reported in a separate memo. A sampling schedule for the use of passive samplers in the future programme was developed in November 1998, and is presented in Appendix G 6.3.

8.11 Activity G.7.1 Quarterly reports

The first quarterly report was produced at the beginning of 1998 and contained a very limited amount of air quality data. However, information on the monitoring programme and the instrumentation was part of this first report.

The second quarterly report containing data from 2 sites was produced in April 1998 and the third quarterly report was presented in November 1998. A brief summary report was also produced based upon the first quarterly report. This summary report was presented to the Chairman Dr. Ibrahim on 13 May 1998. This summary report can also be found in Mission Report 8 Appendix G.7.1.

The content and discussions of the air quality data collected in the EIMP programme improved throughout 1998. The reports available at the end of 1998 are to be found in the list of References. The list of content for the second quarterly report submitted by IGSR in Alexandria is presented in Appendix G.7.1. A comment to the schedule for submitting annual reports was also developed (see Appendix G.7.1.b).

9 H. Reference Laboratory

Training has been carried out for the personnel at the Reference Laboratory Air at NIS (National Institute for Standardisation). Selected experts have been invited to participate in the training in operation, calibration and maintenance of monitors.

Most of the calibrations of monitors and of travelling standard gases were carried out during the first half year of 1998. This training continued during the second half by practical work with the various instruments. Training was also given to prepare sequential samplers and high-volume samplers.

Discussion concerning the responsibilities of the reference Laboratory Air continued through 1998. A memo on quality control and external quality assessment in the EIMP monitoring network is presented in Appendix H. The number of calibration gases, working standards and travelling standards needed to undertake calibrations and controls is shown in Appendix H.

10 I. Component Co-ordination

10.1 Activity I.2.1 Follow up and administration

A number of meetings are held during Mission 9 to Egypt. Weekly staff meetings and weekly air quality project meetings are reported, and represent a major input to the operation of the programme. Examples of minutes from these meeting are presented in Appendix I.2.1.a-c.

The Draft Revised Project Document for EIMP, indicated a change in finalising the responsibilities of the expatriate personnel. For the NILU air quality experts it generated a change leading to a new instrument expert supporting Leif Marsteen in the preparations, calibrations, installations and training during one year from September 1998.

Status reports and Component outputs from the beginning of the programme was also produced. The weekly meeting with the air quality monitoring staff at the Monitoring Laboratory at CEHM has been a valuable input to the operations of the programme. Examples presented in Appendix I.2.1.are;

- Weekly air quality staff meetings, Appendix I.2.1.d.
- Weekly EIMP staff meetings, Appendix I.2.1.e.
- Various outputs Appendix I.2.1.f.

A list of reports available from the EIMP air pollution monitoring component is presented in Chapter 11, References.

11 References

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Appendix A

People and colleagues - Job descriptions

A.1 People and colleagues
A.2 Job descriptions

People met and colleagues (Oct-Dec 1998)

EIMP office,3 EEAA Building, 30 Helwan Str.Maadi, Cairo (behind Sofitel hotel) ,
Tel. 202 525 6442, Fax: 202 525 6467 ,E-mail: eimp@intouch.com
Staff: Mohammed Fathi,(PM), Morten C Andersen (PM temp.) Dina, Lydia, Hassan, Mahmoud, Emad, Ahmed (secr. Tel: 5721289)

Air: B Sivertsen (Task Manager), tel. 351 1615, Dreiem, L Marsten, Ms Heba Mohammed Adly (444 3394, 444 7105)
CEHM / Cairo Univ, tel 571 9688, Fax; 571 9687: Dr Sharkawi, Dr Tarek El Arabi (Project Manager) mob: *0123104082*, Dr. Hesham ElArabi (QA)

Staff: Ashraf Saleh (data retrieval), Essam Abdel Hallin (data retrieval), Mahir Sayed Hafez (Tabbin st.), Ahmed Sayd (Qualaly, Gemhoroya), Yassin Fathi (Giza CU, Fumm al Kahlig), Kamela (Mon.lab., Shoubra), Ahmed Sulamen (Chem lab head), Ameni Taher (Chem. Anal.).
IGSR Alex Univ, tel:03422 7688, lab: 03 422 5007, Proj: 424 1485
Fax 203 421 5792
Dr M El-Raey Mob: 0123109051, Dr. El Sayed Shallaby, proj.tel: 424 1485
Ashraf A Zahran, Shawkat K. Guirguis (QA) (*aplab@igsrnet.net*),
Mohamed Mamdoua, Mohamed Rashad, Sekri,

Data Management: Jacob Andersen, Mohammed Zaki, Ayman El Maazawy
Procurement: Anwar Ahmed
Coastal Water: Arne Jensen, Erling, Ole, Sherine Khaliw
Reference Lab: Ulla Lund, (Street 13 Maadi) tel: 012 312 0951, Mai EzzEldin Ahmed (counterpart), Fleming Boysen, Kirsten, Suzanne, Jill, Vibecke.
EEAA,Dr. Ibrahim Abdel Gelil (Chairman)
Mr Ahmed Abou ElSeoud (EIMP PM)
Dr. Mohamed el Zarka (EIMP counterpart)
Dr. Abdil Latif Hafez (Air Quality respons.), , (Env. researcher).
Mrs Hoda Hanaffi (head of GIS),
SharmElSheik, EEAA Nat. Park Office, Dr. Omar Hassan,
Wael Roger Karkour (passive sampl.)
NIOF: Dr.El Betagy
Sofitel Hotel: Maadi, Tel: 202 350 6092, Fax: 202 350 6209
Ambassader:
Norge: Al Gazira al Wusta str.
Amassadør: Mette Ravn, 2.sekr.Kathrine Rath, tel.340 3340 , fax: 342 0709
Danmark: 12 Hassan Sabri, Zamalek, John Carstensen 378 2040
COWI: 00 45 45 97 22 11
USAID - CAIP: Jim Howes, Monir Labib, Jennifer Baker (Training) , Kirk Stopenhagen
CTS: Amr ElSoueini, tel: 378 2908, Fax: 350 4977, *Mobile: 012 216 6670*, Ali Hamed
EMC(Env. Monitoring Company inc.): Bill Hayes, Steve Gersh (Vice President), Fax:805 544 1824, (sgersh@emcslo.com)
Mohammed Nasar (AQ) , tel 351 5174
Giza Pyramids: Dr. Hawas, Ahmed El Hagar
Sakkara: Mohammed Hagras, Hamdi Amin
Delta Steel Company: Engineer Yussry Ibrahim (Project Director)

Leif Marsteen /Rolf Dreiem: 10 street 86, apt. 10, Maadi, Cairo, tel 351 3226, Magde 351 1359
Bjarne Sivertsen, Al Sharifa Dina no6 (78 street), Maadi, tel. 351 1615

19.02.99

Oct-Nov 1998

1. Dec 98
El Mansoura
Governorate

محافظة الدقهلية
مكتب السيد المحافظ

أبو بكر عبد الحميد الشهاوى
مدير إدارة شئون البيئة
تالى ٢١٠٩٩٩٩

المنصورة - توريل الجديدة - ش مكة المكرمة ☎ منزل : ٣٩٦٣٥٥ عمل : ٧١٥٥٧٥

Cabinet Of Ministers
Egyptian Environmental Affairs Agency
EEAA

Hazem Salah Ali Mohammed
Environmental Chemist
Central Lab For Environmental Monitoring

30 Misr - Helwan Rd Maadi Tel- 02-5256452
P.Code 11728

Consulting Engineer
Dr. Islam Ibrahim Abdou
Arbitrator, CRCICA, ADCCAC, CIA - London
Head, Training Institutes ~~Sector~~
Environment Dept.

The Arab Contractors
OSMAN AHMED OSMAN & Co.
34 Adly St. Cairo - Egypt
Tel. : 3916043 - 3900918
Fax : 3908123 - 3604754 Cairo

MAHER FARES FAHMI

ENVIRONMENT AFFAIRS MANAGER
ISMAILIA GOVERNORATE Tel. & Fax. (064) 345925

WASTEWATER ENGINEERING CONSULTANT
SUEZ CANAL UNIVERSITY Tel. : (064) 356418
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IMPLEMENTATION OFFICER
SUSTAINABLE ISMAILIA GOVERNORATE PROJECT
Tel. & Fax. (064) 344585

ISMAILIA - EGYPT **Home Tel. : (064) 355649**

2/12
head of monitoring
EEAA

Chemist
Ekhlass Gamal Eldin Mohamd
Director of
Water Pollution Control Lab.
Environmental & Monitoring
Studies Center

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د. عمرو الصوينى
Dr. Amr El-Soueni

برج رقم (١) أبراج القنال إمتداد شارع القنال - ثكنات المعادي - القاهرة
ت : ٣٧٨٢٩٠٨ - ٣٧٨٤٩٧٣ فاكس : ٣٥٠٤٩٧٧ محمول : ٠١٢ ٢١٦٦٦٧٠
Burg No. 1, Abrag El-Canal - El-Canal Str. Extenstion - Thakanat El-Maadi, Cairo - Egypt Tel.: 3782908 - 3784973 Fax.: 3504977 Mobile : 012 2166670

عبد الكريم بغدادي
السكرتير العام المساعد

م س ٢٤٨٢٨٧

الإسماعيلية - ت. مكتب / ٣٢٥٦٠٠ - فاكس / ٣٢٣٦٢٢ - ت. منزل / ٣٢٤٢٣٢
349832

Oct - Dec 1998

EMC ENVIRONMENTAL MONITORING COMPANY, INC.

STEVE GERSH
VICE PRESIDENT

183 Prado Rd. San Luis Obispo, Ca 93401 USA
TEL (805) 544-2037 FAX (805) 544-1824 INTERNET [redacted]@emcslo.com
SGERSH

ARGONNE NATIONAL LABORATORY

9700 South Cass Avenue
Building 203
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Mohamed I. Sultan, Ph.D. Geochemistry
Project Manager
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Hiroshi Hachiyama
JICA expert
Regional Environmental Management

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30 Misr Helwan Road El Maadi, Cairo
11728
Phone: 525-6452(ext.8305)
Fax: 525-6490

Japan International Cooperation Agency
World Trade Center 10th floor
1191 Corniche El Nile St., Boulak, Cairo
Phone: 574-8240/41/42, Fax: 574-8243
Mail address: P.O. Box475, Dokki, Cairo
E-mail: hatiyama@internetegypt.com

Appendix B

Design of monitoring programme

B.2.1 Site reports
B.2.2 Site used by CAIP

Air quality monitoring network
Site visit report, Alexandria

Site Name:ElMansura
Co-ordinates:. UTM:

New sites selected 1 December 1998

Access/ availability: Along Corniche on eastern side of Nile branch. Governerate building on the Corniche. El Mansura is the capital of Dakahliya Governorate, on the Damietta branch of the Nile. It is a commercial centre with textile, food and other industries. Population estimated 1991 is 362 000.

Buildings and rooms available: Shelter on the roof of third floor about 15 m above street level.

Area description: Urban, downwind from industrial sources in Talkha.

Local sources: Some traffic on streets around the building. The site is downwind from power plant, fertilisers and other industrial sources in Talkha on the opposite side of the Nile river. The site will be impacted by emissions from fertiliser industries about 1 km. on northern bank of the river, when the wind is from around NNE. For all other wind directions the site will be moderate polluted, due to its height above the street level.

Representativity: Mainly industrially impacted in an urban area.

Parameters to be measured: SO_2 , NO_x , PM10

Measurement equipment: Monitors .

Infrastructure: Power: 220 V available on the roof.
Telephone lines: Taken from the telephone company.
Sampler/monitor locations: In a large shelter on roof.
Air intake: About 17 m above the ground.

Personnel:. - We talked to General manager of Environment in the Dakahliya Governorate; engineer Abou Bakr El-Shahawy. The General secretary Saad Hassan Ismail was not present. Engineer Mohammed El-Sergane (Deputy Gen. Secr.) received us. Tel: 31 2535, Fax: 31 6939

Comment: Atomic Energy Autority had placed a shelter for air pollution measurements only 600m north of the District Office building. No measurements are being undertaken.

B.2.1.

Air quality monitoring network
Site visit report, Alexandria

Site Name: Abu Quir , Air Defence College
Co-ordinates:. UTM: (map 35R) 529.4, 953.1

Access/ availability: Through main gate of the Air Defence College. Identification needed, strong control.

Buildings and rooms available: A shelter Model A will be located at the ground east-south east of the main office building and about 600 m ESE of the fertiliser industries.

Area description: Industrial area , the site is downwind (ESE) from several industries

Local sources: Fertiliser only 600 m upwind from the site. (yellow NO_x plume and ammonia aerosols!). Paper and pulp industry, chemical industries, Petrojet petrochemical factories, power plant (gas and heavy residue oil).

Representativity: Representative of impact from industries.

Parameters to be measured: SO_2 , NO_x , PM_{10}, dust fall (occasionally other samples?)

Measurement equipment: Monitors.

Infrastructure: Power: 220 V available will be made available from the Defence College to the shelter.
Telephone lines: Taken from the College.
Sampler/monitor locations: In shelter A
Air intake: From the shelter roof about 3 m above ground..

Personnel:. Said Shallaby,IGSR, Ahmed Monsour Ahmed (Head of the College)
Agreement has been established with the Head of the College concerning the site and the telephone lines.
Contact perswon: General Tarek Rashid.
The head of the Chemical Department at the college is: Abdel Basid.

Air quality monitoring network
Site visit report

Site Name: Maadi EEAA building

Coordinates: UTM: X: 330.9, Y: 3315.7

Access/ availability: First floor of EEAA building, eastern corner of laboratories

Buildings and rooms available: Corner of laboratory

Area description: Residential

Representativity: Typical for western Maadi area, near street surrounded by tall trees (slightly more traffic impacted than inside residential Maadi?).

Parameters to be measured: SO_2 , NOx , PM10

Measurement equipment: Monitors (SO_2, NOx), sampler PM10

Infrastructure: **Power:** 220 V available
Telephone lines: Will have to be arranged?
Sampler/monitor locations: Gas monitor intakes trough window. Location of sampler not yet decided.
Air intake: For gas monitors about 5 m above ground

Personnel: Dr Magdi Allam, Cairo Branch Director, Mr Mamdoh Ahmed, Assistant.

Permissions given 6 November 1998.

Air quality monitoring network
Site visit report

Site Name: 6 October city
Coordinates:. UTM: 329.23 , 3369.48

Access/ availability: Easily in front of the school in 6 October, 6 District 6 neighbourhood at The Al Ashar school. (see map)

Buildings and rooms available:. A shelter Model B will be located at the top of the security room at the main entrance to the school..

Area description: Residential area in southern part of 6 October city 6 District. About 17 000 flats; 50 000 people live in this district. In 6 october totally about 150 000 (per 1997). The area does not seem to be very polluted.

Local sources: Industrial areas are located 1 to 3 km west and north west of the site. All kinds of small and medium size industries are found. However, very few heavy polluting industries are yet established. Plans are to have these at the north western corner, about 5 km from the site.

Representativity: The site is representative for the Residential (low income) part of the city of Six October.

Parameters to be measured: SO_2 , NO_2 , PM10 .

Measurement equipment: Sampler for SO_2 , NO_2 and PM_{10} (simple).

Infrastructure: Power: 220 V available in the building.
Telephone lines: not needed
Monitor locations: In shelter on a small room, 3 m high.
Air intake: About 5 m above the ground .

Contact persons: Head Master of School: Mr. Hassan Mohammed Hassin.
We earlier met the Head of Authority Eng. Ahmend Samir Abedollah

Application for permissions has to be sent to the Giza Governerate.
Electricity has to be negotiated with AlAshar scool in the Giza Gov.

Air quality monitoring network
Site visit report

Site Name: 10 Ramadan city
Coordinates:. UTM:

Access/ availability: From Ahmed Hamdi street around the building to the main entrance on southern side of the Salem Primary School.

Buildings and rooms available:. A shelter model B will be placed on the top of the security room of the main entrance.

Area description: Residential area in central part of Ten Ramadan City (Neighbourhood Nr 3 in First Stage city).

Local sources: Some smaller industries ca. 1 km to the north (upwind). Some industries to the west, but the major industrial park is located to the south and south east; 2-3-km away. Not expected to be a polluted area.

Representativity: The site is representative for the Residential new city of TenRamadan.

Parameters to be measured: SO_2 (seq. Sampler), PM10 (simple sampler), NO_2 with passive sampler and dust fall.

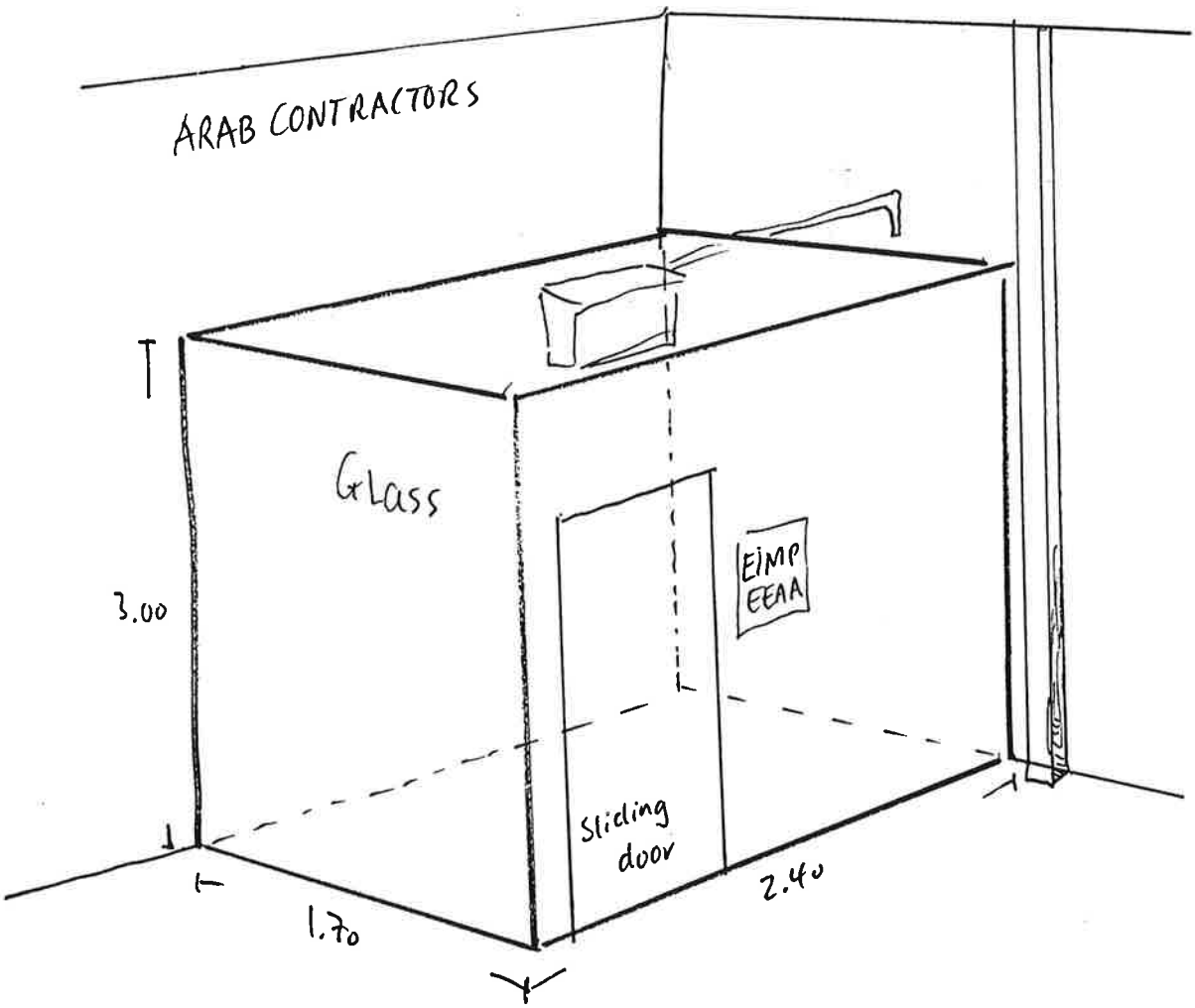
Measurement equipment: Samplers for SO_2 and PM_{10} , passive sampler for NO_2 .

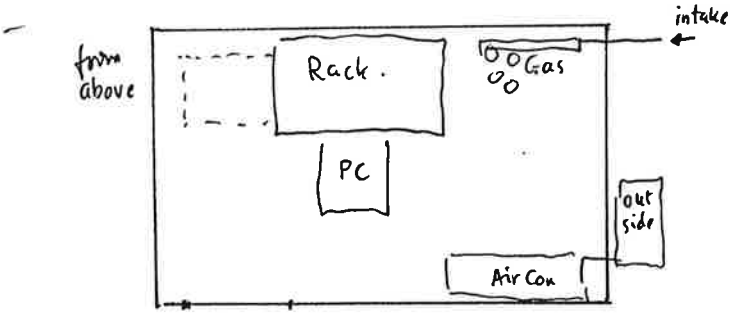
Infrastructure: Power: 220 V available in the building.
Telephone lines: Not needed
Monitor locations: At roof about 4 m above the ground.
Air intake: About 5 m above ground.

Contact persons: Headmaster Mohammed Ged Saleh.
Agreement has to produced and an annual fee for electricity has to be negotiated.

Gombovoya Street

(New glass room).





EIMP B.2.2.

CAIP
Mr. Stasys V. Rastonis, Chief of Party
EEAA Building
30 Misr Helwan Road
Maadi, Cairo

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

30 Misr-Helwan Street
Maadi, Cairo, Egypt

Tel.: (+202) 525 6439/42/ 47/ 52
Fax: +202 525 6467

E-mail: eimp@intouch.com

Date
29 Jun 1998
Our ref.
27776/MCA/mca

Installation of CAIP particulate matter sampler at EIMP El Qualaly site

Dear Mr. Rastonis,

Thank you for letter dated 28 June 1998 in which you propose to install one of your PM-samplers at the EIMP El Qualaly station.

I agree in your assessment of the appropriateness of the location of the El Qualaly station and appreciate your proposal for improvements to the site infrastructure through installation of safety railing and ladders to access the station. I furthermore agree that the additional installation of a CAIP PM-sampler will provide both programmes with a very good opportunity for demonstrating comparability of PM data.

I thus approve of the proposal as described in your letter and kindly request you to proceed with your plans and to keep Dr. Mohamed Nassar informed about your schedule for installation work.

I look forward to expanding the cooperation between our two programmes within relevant fields of air monitoring.

Yours sincerely,

Morten C. Andersen

EIMP Project Manager

cc: Eng. Ahmed Abou Elseoud, EIMP Egyptian Project Manager
Dr. Mohamed Nassar, EEAA counterpart, air quality monitoring ✓

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Appendix C

Procurement of equipment, hardware and software

C.2.1 Additional procurement
- **a) Data retrieval**
- **b) Improvements**
- **c) c) Chemical equipment**
- **d) Particle sampler**
- **e) Shelves and benches**
- **f) Car for IGSR**
- **g) Calibration gases**
- **h) Deliveries from CTS**

C.2.2 Site preparations
- **a) Shelter deliveries**
- **b) Preparation work**

C.2.1a

Additional procurement

Ambient air quality instrumentation
Computerized communication and data display system

EIMP - Egypt

Introduction

The ambient air quality monitoring system includes severel measurement stations with monitors and meteorological sensors connected to data loggers. The data loggers are connected to a central polling system. Data is transfered to the central polling system via modem and dial up or leased line connections or on diskette from stations without telephone lines.

The monitoring network is already operative and equipped with the EMC Model SM-2000 Station Manager Data Loggers. They are delivered by Environmental Monitoring Company (EMC), 183 Prado Road, San Luis Obispo, California 93401, USA, Tel (805) 544-2037, Fax (805) 544-1824, e-mail emc@emcslo.com.

It is the responsibility of the bidder to provide a central polling system wich is compatible with the data loggers and to verify the compatiblity in the bid. According to the EMC Model SM-2000 Station Manager Data Logger Operations Manual (August 1995, p. 3-23) the central polling systems supplied by ESC, SUMX/ETC and Dasibi are known to be compatible with the data loggers.

Supplier addresses

Listed here are some supplier addresses.

Environmental Monitoring Company (EMC)
183 Prado Road
San Luis Obispo
California 93401
USA
Tel: (805) 544-2037
Fax: (805) 544-1824
E-Mail: emc@emcslo.com

EMC has already delivered one Computerized communication and data display system through Kontram.

Environmental Systems Corporation
200 Tech Center Drive
Knoxville
TN 37912
USA
Tel: (423) 688-7900
Fax: (423) 687-8977
E-Mail: esccorp@envirosys.com

Dasibi Environmental Corporation
506 Paula Ave.
Glendale
California 90201
USA
Tel: (818) 247-7601
Fax: (818) 247-7614
E-Mail: dasibi@dasibi.com

SUMX/ETC
Address unknown

Environnement s.a
111 Bd Robespierre
78300 Poissy
France
Tel: 33-1 39.22.38.00
Fax: 33-1 39.65.38.08
E-Mail: europe@environnement-sa.com

Equipment at Computer center

Equipment: Computerized communication and data display system

Quantity of equipment: 1

Purpose
A computerized communication system (hereafter called the system) is required to collect data from the data loggers in the shelters and to communicate with the monitors in the shelters. A display system is required for on line display and to make chart and data report printouts for quality control purposes.

Qualification requirements

1. Total number of shelters in network (approx.): 30.
2. Total number of logged parameters in all shelters (approx.): 150 including ambient air and meteorological parameters.
3. Data collection interval: Hourly or daily. Data collection performed automatically according to a user defined schedule. Interval set individually for each station. Collected time series will be of any length.
4. System capable of communicating with and downloading data from the EMC Model SM-2000 Station Manager Data Logger.
5. Documentation of the system's capability to communicate with the EMC Model SM-2000 Station Manager Data Logger.
6. Data import from diskette: The EMC Model SM-2000 Station Manager Data Logger can export data to diskette. It must be possible to import the data from diskette into the system data base. Imported time series will be of any length.
7. Data export format: Tabular ASCII formatted file format for data export to other data bases and spreadsheets. One station per file. One parameter per column. Each row time stamped in the leftmost column. Exported time series will be of any length.
8. Data editor with history log making it possible to return to previously edited values. Possibility to scale values using the y=ax+b function.
9. Data listing displaying in tabular format one parameter per column each row time stamped in the leftmost column. Parameters from different stations will be combined in one listing. Displayed time series will be of any length.
10. Time series charts displaying air quality and meteorological parameters. User defined x-axis time base, day, week, month set individually for each chart. User defined y-axis span set individually for each parameter. Parameters from different stations will be combined in one chart.
11. Wind rose charts displaying a joined wind speed/ wind direction relative frequency analysis.
12. Pollution rose charts displaying a joined pollution concentration, wind direction relative frequency analysis, or average concentrations as a function of wind direction.
13. Histogram displaying a frequency distribution analysis.

14. Report printouts of data listing, time series charts, wind rose charts and pollution rose charts with specifications as above. Reports printed automatically on demand and at user defined intervals.
15. Online display of measured values.
16. Remote configuration of data logger in shelter.
17. Remote control of zero and span check in shelter.
18. The software must run on a PC as described in Equipment: Computer center computer. The software should preferably be Windows based (Windows 95/ 98/ NT 4.1).
19. The supplier shall provide concise and clearly written documentation in English language (or other language accepted by the costumer) which provides the following data:
    a) clearly written instructions for routine use and maintenance.
    b) a specification of equipment performance characteristics and productivity.
    c) full health and safety information.

Spare parts
Accessory and spare parts kit for 5 years' operation, according to supplier's experience. Budget for spare parts must be clearly specified.

Packing and delivery, installation and training
Packing and delivery
Delivery of equipment to Cairo including insurance, packing and transportation should be provided by the supplier.

The delivery shall take place less then two months after acceptance of the contract. If otherwise the time of delivery shall be specified by the supplier.

The bidder is responsible for a packaging that ensures against damage during transportation to Cairo.

Installation
The computerized communication system shall contain instructions in English and also preferably in Arabic that enable installation and start of operation by a person with a degree in science.

Operation and maintenance
Operation and maintenance for five years costs must be clearly specified with a workload of twenty-four hours a day.

After sales facilities/incidental services
Price for repair including transportation expenses shall be quoted as an example: e.g. price for repair of faulty modem.

Time for repair shall be quoted, with repair of faulty modem given as an example.

Name and location of nearest organization for incidental services shall be specified.

Warranty
Warranty of a minimum of 1 year for overall equipment is required. The warranty period shall be specified.

Equipment: Computer center computer

Quantity of equipment: 1

Purpose
A personal computer (PC) is required for communicating with the data logger in the shelters and for displaying historical data and printing reports. The PCs will run the software as described in Equipment: Computerized communication and data display system.

Qualification requirements

1. Power requirements: 220 - 240 V. The power supply should be internal and the power plug should be of German (European) type.
2. Processor: Pentium II.
3. Clock rate: 300 MHz or better if necessary.
4. RAM: 32 Mbyte or more if necessary.
5. Hard disk: 4 Gbyte or more if necessary.
6. 24x CD player or better.
7. Backup unit including software and backup media for backing up the measurement data base. The supplier must provide a written procedure for backing up and seccuring the data base.
8. Windows latest version, installed.
9. MS Office latest version, installed.
10. Software as specified in Equipment: Computerized communication and data display system, installed.
11. Backup on diskette or CD of all installed software.
12. Ethernet communication card, twisted pair.
13. 17" color monitor with internal 220 V power supply and German (European) type power plug.
14. The system must include all necessary equipment including modem (14,400/28,800 baud), cables, connectors etc. for communicating with the shelter data logger via public telephone lines, leased line, radio e.t.c. The modem should have a 220 V power supply and German (European) type power plug.
15. UPS for supporting the computer and printer during power failures.
16. The bidder must specify additional specifications if any of the above specifications do not meet the necessary conditions.
17. The supplier shall provide concise and clearly written documentation in English language (or other language accepted by the costumer) which provides the following data:
    a) clearly written instructions for routine use and maintenance.
    b) a specification of equipment performance characteristics and productivity.
    c) full health and safety information.

Spare parts
Accessory and spare parts kit for 5 years' operation, according to supplier's experience. Budget for spare parts must be clearly specified.

Packing and delivery, installation and training

Packing and delivery

Delivery of equipment to Cairo including insurance, packing and transportation should be provided by the supplier.

The delivery shall take place less then two months after acceptance of the contract. If otherwise the time of delivery shall be specified by the supplier.

The bidder is responsible for a packaging that ensures against damage during transportation to Cairo.

Installation

The PCs shall contain instructions in English and also preferably in Arabic that enable installation and start of operation by a person with a degree in science.

Operation and maintenance

Operation and maintenance for five years costs must be clearly specified with a workload of twenty-four hours a day.

After sales facilities/incidental services

Price for repair including transportation expenses shall be quoted as an example: e.g. price for repair of faulty monitor.

Time for repair shall be quoted, with repair of faulty monitor given as an example.

Name and location of nearest organization for incidental services shall be specified.

Warranty

Warranty of a minimum of 1 year for overall equipment is required. The warranty period shall be specified.

Equipment: Reference lab printer

Quantity of equipment: 1

Purpose
A printer is required for printing data from the Computer center computer.

Qualification requirements

1. Power requirements: 220 - 240 V. The power plug should be of German (European) type.
2. Ink jet color printer.
3. Automatic single sheet feeder.
4. Fan fold paper feeder.
5. Print speed: Minimum 300 CPS at 10 CPI.
6. The supplier shall provide concise and clearly written documentation in English language (or other language accepted by the costumer) which provides the following data:
   a) clearly written instructions for routine use and maintenance.
   b) a specification of equipment performance characteristics and productivity.
   c) full health and safety information.

Spare parts
Accessory and spare parts kit for 5 years' operation, according to supplier's experience. Budget for spare parts must be clearly specified.

Packing and delivery, installation and training
Packing and delivery
Delivery of equipment to Cairo including insurance, packing and transportation should be provided by the supplier.

The delivery shall take place less then two months after acceptance of the contract. If otherwise the time of delivery shall be specified by the supplier.

The bidder is responsible for a packaging that ensures against damage during transportation to Cairo.

Installation
The printer shall contain instructions in English and also preferably in Arabic that enable installation and start of operation by a person with a degree in science.

Operation and maintenance
Operation and maintenance for five years costs must be clearly specified with a workload of twenty-four hours a day.

After sales facilities/incidental services
Price for repair including transportation expenses shall be quoted as an example: e.g. price for repair of faulty signal sheet feeder.

Time for repair shall be quoted, with repair of faulty signal sheet feeder given as an example.

Name and location of nearest organization for incidental services shall be specified.

Warranty
Warranty of a minimum of 1 year for overall equipment is required. The warranty period shall be specified.

EIMP 2.1.6.

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: , Ahmed ElSeoud, Heba Adly, Rolf
From Bjarne Sivertsen
Date: 16 November 1998

Improvements to the EIMP air quality monitoring network

From experience in the operation of the air quality monitoring network there will always be some improvements, additions and support to be considered. The following two iyems have been discussed with field personnel and the Monitoring Laboratory lately.

1.) Safety for operating the Shoubra site
Some of the instruments at Shoubra is located at the roof of the Shoubra school. The access to this roof is at present by climbing over a fence and up a steep roof about 10 m above ground without any safety installations. This operation may be dangerous.

When the site was selected it was planned to access the roof from inside the monitoring room. However this was not prepared due to the possibility of dust entering the room. I still suggest that the necessary construction work will be undertaken to find a better and safer access to the roof. Some construction work is needed to make a ladder through a tight door at the roof. An alternative will be to find another entry through a stair/ladder to the roof.
This work should start as soon as possible.

2.) Additional supply of filter holders
Due to the fact that all analyses of samples (SO_2 , NO_2 , PM_{10} , TSP etc..) will be undertaken at CEHM at Cairo University, the operations in the Delta and in Upper Egypt may require that more filter holders are needed to keep up a sufficient amount of ready prepared filters at any time in all areas.

To reduce transport costs we have discussed the possibility of transporting exposed and new filters and filter holders to the Delta area, to Alexandria and to Upper Egypt only once a month. All these sites are operated by "local" personnel. (in Alex and Delta by IGSR).

The number of filter holders available at CEHM at present is sufficient for two weeks operation plus one extra set. This is normal for all operations undertaken by the laboratory that perform analyses themselves.
To enable a full one month operation with sufficient back up filters, we thus suggest to purchase

250 filter holders for SO_2
100 filter holders for NO_2

These filter holders are to be obtained from NILU.

EIMP c.2.1.

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: Heba Adly, Ahmed Abou Elseoud
From Bjarne Sivertsen
Date: 2 November 1998 (updated)

Various improvements to the EIMP Air Quality Monitoring Programme

After meetings with CTS, weekly meetings at CEHM visits to IGSR in Alexandria the following items should be considered to improve the EIMP Air Quality Monitoring Programme.

Reflectrometer
To increase the information on ambient particle load in Egypt I will propose to buy a new Reflectrometer instrument to be placed at the Monitoring Laboratory at CEHM. The advantage of this instrument will be that all filters at the 12 sequential SO_2 samplers in filed can be analysed for black smoke (BS/soot). This parameter is still reported internationally, and will be a good indicator for particles originated from combustion. I would suggest that we obtain a:
EEL M43D Smokestain Reflectometer
from: Diffusion Systems Ltd.
43 Rosebank Road, Hanwell
London W7 2EW
England
Phone: +081 579 5231
Fax: + 081 566 1524
The price quoted is about 4000 EL.

UPS for IGSR
The Station Manager computer at the IGSR station in Alexander is poorly responding to short term power breaks (especially at night time). I propose to install a UPS system to support the PC at this station.

Power stabilisators
To avoid flow variations due to variations in voltage readings in the local power systems, I propose to buy stabilisators to install in front of the sampler pumps. As a beginning I believe that 5 stabilisators will be adequate. The price has been indicated at about 200 EL each (1 kW).

Temperature and humidity sensor for CEHM
To improve and ensure the quality of gravimetric measurements of high volume filters at the CEHM laboratory I propose that the weighing room will be equipped with an inexpensive temp/humidity sensor (thermo-hygrograph?).

Large shelter (type A) for Abu Quir
In addition to the shelter construction contract, a large shelter is needed for location at the surface at Abu Quir Military Academy. This will be delivered at the same time as the three small shelters for Alexandria medio November.

Benches and shelves for Monitoring Laboratory
When the warranty period for various instruments is over, the Monitoring Laboratory at CEHM will start instrument repair and maintenance. It was originally, as part of procurement, specifications for benches and shelves at the Monitoring Laboratory. This is now needed to enable adequate maintenance and repair.
Specifications are available at the Team Leader.

Data back up and storage
Data back up and storage of all air quality data are now taken care of by the Monitoring Laboratory according to an agreed procedure presented in a memo from the EIMP data expert in May 1998.
However, this backup will only be available by use of the system manager located at the Monitoring Laboratory. To enable all information, Quarterly reports and raw data, to be transferred to EEAA it will be necessary to support the Monitoring Laboratory with a CD-rum read/write driver. The price has been indicated at about 2000 EL.
The system will have to be installed by computer experts from EIMP/EEAA.

Bags for site inspection accessories
The technical personnel at the Monitoring Laboratory need a simple bag to carry various accessories needed for site inspections, maintenance, repair and calibrations + filters and samples.
I propose that we find an inexpensive bag preferably with the EEAA/EIMP logo. We will need a total of 10 such bags for Cairo, Alex and the Delta.

Bjarne Sivertsen
Air Quality Team Leader

EIMP a.l.c.

Environmental Information and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: Ahmed, Heba, Rolf, Anwar
From Bjarne Sivertsen
Date: 12 November 1998

Equipment needed to finalise the EIMP air quality monitoring programme installations, the following equipment still has to be obtained. For background information and argumentation we refer to various Memos earlier presented to M Fathy.

Type of equipment	Priority	Quantity	Approx. price (1000 DKK)
Autosampler for the Dionex Ion Chromatograph at CEHM	high	1	75
Water treatment system	med/high	1	50
Reflectromenter	high		8
Laboratory shaking machine	high?	1	13
New micro balance for TSP	high	1	25
Computer + dessicator + filtration equipm.	High		10
Small car for IGSR	High	1	80
UPS systems	high/med	5?	15
Shelters for Damietta, Aswan and Edfu	high	3	25
Particle samplers, simple battery back up	High	12	120
System Manager for IGSR			ordered
Benches and shelves for CEHM for instrument repair and maintenance	high	see spec.	3
Data base for EEAA			??????
Total sum			**414**

C.2.2.d.

EIMP

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: Heba, Anwar, Rolf
From Bjarne Sivertsen
Date: 8 November 1998

Simple particle sampler for EIMP

Following detailed discussions of the use of simple particle samplers for the EIMP programme, we received 5 bids for PM_{10}/$PM_{2,5}$ samplers. None of these offers perfectly met our requirements, It was thus proposed that these offers were rejected.

Also based on our experience concerning the availability of electricity, we will propose in the following to purchase simple PM_{10} or $PM_{2,5}$ samplers with battery back up.

Equipment: Simple particle sampler

Quantity of equipment: 12

1. Purpose

A simple battery operated filter sampler (or with battery back up) is required to sample suspended particles in ambient air. The sampler should be delivered with PM_{10} or $PM_{2,5}$ intake.

Qualification requirements

1. Power requirements: battery operation or back up from 220 - 240 V.
2. Sample particle size on filter : with intake for2.5 µm ($PM_{2.5}$) and/or10 µm (PM_{10}).
3. Analysis of matter on filter: SO_4, NO_3 , heavy metals and trace elements.
4. Flow rate: 10 l/min.
5. Sampling time: 24 hours.
6. Sampling frequency: Once every 6th day.
7. Programmable start and stop time.
8. Total flow indicator (gas meter).
9. External flow meter/ rotameter for controlling the gas flow.
10. Filters for one year of operation.

11. Sampler must include necessary tubing and fittings as well as equipment for positioning the air intake two meters above ground
12. Complete schematic layout of all electric and pneumatic circuits for repair and maintenance.
13. Complete spare part list with prices.
14. The supplier must have spare parts in stock for at least five years after delivery of sampler.
15. The supplier shall provide concise and clearly written documentation in English language (or other language accepted by the customer) which provides the following data:
    a) clearly written instructions for routine use and maintenance.
    b) a specification of equipment performance characteristics and productivity.
    c) full health and safety information.

Spare parts
Accessory and spare parts kit for 5 years' operation, according to supplier's experience. Budget for spare parts must be clearly specified.

Packing and delivery, installation and training
Packing and delivery
Delivery of equipment to Cairo including insurance, packing and transportation should be provided by the supplier.
The delivery shall take place less then two months after acceptance of the contract. If otherwise the time of delivery shall be specified by the supplier.
The bidder is responsible for a packaging that ensures against damage during transportation to Cairo.

Installation
The two filter sampler shall contain instructions in English and also preferably in Arabic that enable installation and start of operation by a person with a degree in science.

Training
Installations and some basic training should be supported by experts from the supplier.

Operation and maintenance
Operation and maintenance for five years costs must be clearly specified with a workload of twenty-four hours a week.

After sales facilities/incidental services
Price for repair including transportation expenses shall be quoted as an example: e.g. price for repair of faulty pump motor.
Time for repair shall be quoted, with repair of faulty pump motor given as an example.
Name and location of nearest organization for incidental services shall be specified.

Warranty
Warranty of a minimum of 1 year for overall equipment is required. The warranty period shall be specified.

EIMP
Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: Heba, Anwar, Rolf
From Bjarne Sivertsen
Date: 11 November 1998

MiniVol Portable particle sampler for EIMP

Referring to my memo dated 8 November 1998 the following arguments have been forwarded to select a new type of particle sampler, compared to the inexpensive "two filter sampler" first indicated in the procurement specifications:

1. In the first discussions of a simple and inexpensive particle samplers it was proven that the prices first quoted were too low. We therefore concluded that a new request for bids were to be issued.
2. New specifications were developed, the requests were sent out, and the EIMP program received five offers. However, none of these five offers for a $PM_{10}/PM_{2.5}$ sampler met our requirements, We therefore decided to reject all these offers.
3. Based on our experience during the last few months of installation and start up concerning the availability of electricity in Egypt, we therefore concluded that the EIMP program would benefit from purchasing a simple PM_{10} or $PM_{2.5}$ sampler with battery back up.

Specifications for this sampler was presented in a Memo of 8 November 1998. Further specifications are given below.
A number of 12 simple filter samplers with battery back up is required to sample suspended particles in ambient air. The samplers should be delivered with PM_{10} or/and $PM_{2.5}$ intake.

1. Power requirements: rechargeable battery operation on 12 AH capacity.
2. Sampling time: 24 hours.
3. Programmable start and stop time on 7 days timer.
4. Constant flow control unit
5. External flow meter for controlling the gas flow.
6. Filters for one year of operation.
7. Equipment for positioning the air intake two meters above ground
8. Complete schematic layout of all electric and pneumatic circuits for repair and maintenance.
9. Complete spare part list with prices.
10. The supplier must have spare parts in stock for at least five years after delivery of sampler.
11. The supplier shall provide concise and clearly written documentation in English language (or other language accepted by the customer) which provides the following data:

Installation
The sampler shall contain instructions in English and also preferably in Arabic that enable installation and start of operation by a person with a degree in science.

Training
Installations and some basic training should be supported by experts from the supplier.

Operation and maintenance
Operation and maintenance for five years costs must be clearly specified with a workload of twenty-four hours a week.

After sales facilities/incidental services
Price for repair including transportation expenses shall be quoted as an example: e.g. price for repair of faulty pump motor.
Time for repair shall be quoted, with repair of faulty pump motor given as an example.
Name and location of nearest organisation for incidental services shall be specified.

Warranty
Warranty of a minimum of 1 year for overall equipment is required. The warranty period shall be specified.

Based upon the above specifications we propose to purchase
12 MiniVol Portable Samplers

The samplers can be purchased from:
AIRmetrics
225 5th Street Suite 501
Springfield, Oregon 97477, USA
tel: (541) 726 0560
fax: (541) 726 1205
e-mail: sales@airmetrics.com

The price for the instruments have been indicated at about 5000 EL. We have requested a quotation from AIRmetrics.

C.2.2.e.

EIMP
Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: Heba Adly, Anwar, Rolf
From Bjarne Sivertsen
Date: 4 November 1998

Shelves and benches for Monitoring Laboratory Air Quality

I am referring to previous discussions concerning maintenance and repair of monitors at the Monitoring Laboratory, which starts as soon as the warranty period of the instruments is over.

For this work the Monitoring Laboratory will need shelves and benches, which was originally specified in the Procurement Report. The following is a slight modification of the original specifications (the size here is much smaller than originally specified). The following texts are taken directly from the Procurement Document:

Monitor lab

The monitor lab will be responsible for repair and maintenance of the field instruments.

The monitor lab will reside in an air conditioned room of approx. 20 m^2. Necessary electrical power will be approx. 4 kW not including the air conditioner. 10 220 V mains twin sockets with earth contacs must be available in the room.

In addition to the monitor lab a storage room of approx. 10 m^2 is required for keeping backup instruments

Equipment: Bench for maintenance and repair

Quantity of equipment: 1

Purpose
Solid benches are required for repair and calibration of ambient air monitors.

EIMP
Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: **Mohammed Fathy**
Copy: **Ahmed, Heba, Rolf, Anwar**
From **Bjarne Sivertsen**
Date: **12 November 1998**

Transport to monitoring sites in Alexandria and Delta

Background
When the EIMP air quality monitoring programme was originally planned, the Monitoring Laboratory at IGSR in Alexandria was only supposed to undertake monitoring and sampling inside Alexandria. For that reason it was assumed that the operations could be undertaken by use of motor bikes or by public transportation.

During the contract negotiations the inspection schedules were changed so that IGSR also became responsible for several sites outside Alexandria. The institution will have to cover an area as far away as to Damietta (about 200 km from Alexandria).

They will have a total of 12 sites to inspect, calibrate, check and service. All of the sites have to be visited every week, some more frequent. To undertake this effort they will need a small car, or they will have to estimate the expenditures of using rented cars from local dealers. It has been clearly stated that none of the operations can be undertaken by motor bikes.

Proposed action
We propose that a small car will be purchased for the use at IGSR for weekly site visits, calibrations, data retrieval and various sampling.

This car will be in operation every day of the week and will hopefully meet the needs of the IGSR as a Monitoring Laboratory for EIMP/EEAA air quality monitoring programme.

A full programme will be installed in the greater Alexandria area at the end of November 1998, and the Delta sites will be in operation from the beginning of 1999. We thus propose to go ahead with the necessary procurement procedures to be able to include this car into the programme as soon as possible.

Qualification requirements

1. Table dimension (approx.), W, D, H: 210 cm, 80 cm, 90 cm.
2. Work load: 150 kg.
3. A solid shelf under the table top.

Equipment: Table for maintenance and repair of ambient air monitors etc.

Quantity of equipment: (original 5), new 1

Purpose
Solid tables are required for maintenance and repair of ambient air monitors etc.

Qualification requirements

1. Drawers under the table top instead of a shelf.

Spare parts
See Equipment: Table for wet gas meters and monitors

Equipment: Chairs (stool) for calibration and maintenance inside shelters

Quantity of equipment: 3

Purpose
A chair or a stool for sitting on in shelters during calibration, data retrieval, maintenance and repair of ambient air monitors inside the shelters.

Qualification requirements

1. Small and soild without arm rests.

COWI c.2.1.g.

Fax Transmission

To	EIMP-office, Cairo
Fax no.	+20 2 525 6467
Attention	Anwar Ahmed
No. of pages	8 (incl. this page)

Consulting Engineers and Planners AS

Parallelvej 15
DK-2800 Lyngby
Denmark

Tel +45 45 97 22 11
Fax +45 45 97 22 12

Quotation for calibration gases

Date
17 Nov 1998

Our ref.
27776cp/dar

Dear Anwar

Today I have received the quote from Kontram for calibration gases. In order to speed up things, Kontram has forwarded the quote by fax, which I enclose hereto. However, if the fax copy is in a rather poor condition, I am also attaching the same quote received from Kontram as an attachment to an Email.

The only difference being that the Email-quote does not have a signature and is not printed on Kontram company stationery.

I hope everything is appropriate and look forward to your further instructions in this matter.

Kindly notice that Kontram anticipates to forward a bid for the data acquisition system soon.

Regards

Shiraz A. Dar

17/11/98 15:23 COWI LYNGBY → EIMP-OFFICE NO.090 P02
LÄHETT. KONTRAM OY 358981543222 :17-11-98 : 13:03 : → +45 45 97 22 21:# 1/

TELEFAX

kontram P.O. BOX 88, FIN-02201 ESPOO. Tel. +358 9 615 4300. Fax +358 9 615 43222

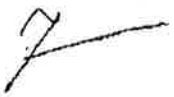
Date : 17.11.98
No of pages: 4
To : COWI
Fax: 990 45 4597 2221
Attn : Shiraz A. Dar
Copy:
From : Jarmo Kiukainen

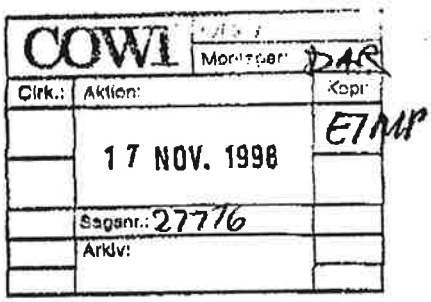
Subject : Egypt Project

Hi Shiraz,

enclosed you have our bid for calibration gases. Soon I'm able to send a bid for data acquisition system, too.

Kindest regards





ULTRA TECH

التراتيك

18/11/98 **PROFORMA INVOICE**

EIMOP
Cairo,Egypt

PRO.INV NO. : 50/98 عرض رقم : ٩٨/٥٠
TERMS :50% Cash Advance against L/G شروط الدفع:
Valid Till : one month أنتهاء الصلاحية:
SHIPMENT : 12 Weeks from receipt of Cash Advance تاريخ الشحن:
Delivery : At our Warehouse against payment & with L/G مكان التسليم:

ITEM	QTY	CAT NO.	DESCRIPTION	UN.PRICE	Total price
1	1	46029	AS40 Automated Sampler with Starter Vial Kit (5 ml) Designed especially for Dionex Ion Chromatographapplications. It holds up to 11 cassettes of either six 5ml vials or eight 0.5ml vials and up to 3 injections can be made from each vial. Each sample is automatically filtered during loading by a 20 micron filter in the vial cap.	41,525.00	41,525.00
2	2	46032	AS40 Cassettes, 6 Position, 5ml, Box of 6	385.00	770.00
3	5	38141	PolyVials & Filter Caps, 5ml, pkg. of 250ea	770.00	3,850.00
4	2	46031	AS40 Cassettes, 8 Position,0. 5ml, Box of 6	385.00	770.00
5	5	38142	PolyVials & Filter Caps, 0.5ml, pkg. of 250e	770.00	3,850.00
			Total Quote		**50,765.00**

السعر بالجنيه المصرى ويشمل ضريبة المبيعات

نقبل تخفيض ٥٪ مبدئيا (مع الدفع)

Authorized Signature

Makam M.Mohamed

quote 02/97 فاكس : ٣٦٠٩٨٠٠ تليفون : ٣٤٩٠٢٨٤ ٢٨ شارع طيبة ـ الدقى ١٢٣١١ ـ القاهرة

28 Teiba St., - Dokki, 12311 - Cairo - Egypt Tel. : 3490284 Fax : 3609800

C.2.2.h.

Fax from EIMP

Environmental Information and Monitoring Programme
EEAA Building, 30 Misr Helwan St, Maadi, Cairo, Egypt
Email: eimp@intouch.com. Tel. 202 525 6442 Fax: +202 526 6467

To: CTS, att: Dr A ElSoueini **+ 202 350 4977**

Date: 1.11.98

No pages:1

Ref: EIMP Air Quality equipment

I have been trying to reach you on the phone without success.
We have sent you a Minute from the meeting on 19 October concerning air quality equipment, which I hope you have seen. Please undertake all actions according to agreed schedules, and report back to us as soon as the operations have been undertaken.

Please check all new equipment at the storage as soon as possible, as we will need this equipment in the near future. Please give us a plan for this checking procedures on Fax this week. Verify plans to Dr Anwar at EIMP office.

Also the NMHC monitor that has been at NIS for calibration did not function so that calibration could not be undertaken. The instrument will have to be returned to CTS. Please indicate whether you want to check at NIS or return it to your office.

The PM_{10} monitor at IGSR did not work properly. Flow checked at 10 000 cc, should be 18900 cc. Please repair this as soon as possible!!

Looking forward to a immediate answer.

Yours sincerely

Bjarne Sivertsen
Task Manager, EIMP Air

EIMP C.2.2.

Note	**Air Quality Monitoring**
Subject	**CTS tasks for EIMP**
Date	28 October 1998
To	EIMP Air Monitoring staff, CTS
Copy	Mohamed Fathy, Ahmed Abou Elseoud, Tarek ElAraby,
From	Bjarne Sivertsen

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

30 Misr-Helwan Street
Maadi, Cairo, Egypt

Tel.: (+202) 5256 442
Fax: +202 5256 467

E-mail: eimp@intouch.com

In a meeting between EIMP and CTS on 19 October 1998 the following actions were agreed upon:

A manifold blower at the Monitoring Laboratory (CEHM) will be installed by CTS before mid November.

CTS will finalise installations at NIS before 15 November 1998

CTS will together with CEHM (Ali and Maher) will **upgrade the Station Manager** at Tebbin (change file), so that data can be retrieved after power failure.

The System/ Station Manager: The missing original software diskettes and last version of the manuals will be obtained from EMC as soon as possible. CTS contact EMC!

CTS will update and re install all Station Managers (version 5.3/5,5?!) at Shoubra, Alex and other sites ?) before the end of October. This will enable to load zip files from SM and will hopefully solve some of the problems after power breaks.

NOx monitor at ElGomhoriya show low flow after calibration. This will be checked and repaired by CTS after 29 Oct. (first week of November).

NOx monitor owned by Cairo University will be repaired by CTS. A price quote will be presented to CEHM before 1 November.

Data logger at Cairo University station (Odessa) will be checked by Ali/Tarek and operated as it should.

NOx monitor at Tebbin reads zero. The monitor will be checked and repaired as soon as possible. CTS has to replace valve now?

Rain gauge at Cairo University: Is it operating properly? Has to be checked. CTS responsible to confirm that it is operating properly.

second / second

Portable met. tower power supply: In equipment specifications we asked for an optional solar powered battery pack, or battery operated station. The EIMP programme still needs a battery operation. CTS checks and supplies the battery pack.

Calibration of PM10 monitors: We need a complete list showing which monitors (serial numbers) have been calibrated and what kind of adjustments that have been made to them including the results.

A New PM_{10} calibrator will be ordered as soon as possible. The responsibility to get this as soon as possible is at CEHM and at CTS. Report back to EIMP concerning status on 1 November!

CO monitor (ser. no. 57596-317): Did not pass self test at start-up. The instrument is at CTS and will be finalised and released mid November.

CO reactor (ser. no. 58275-317): Right pressure gauge indicator not working. New equipment in shipment, will be delivered by CTS in November.

CO monitor at Gemhoryia street hanging. Has to be checked.

A procedure for action when instruments break down during the warranty period is needed. CTS and EIMP will discuss this item further and develop a procedure.

EIMP C.2.2.h.

Note	**Air Quality Monitoring**
Subject	**CTS tasks for EIMP**
Date	12 November 1998
To	EIMP Air Monitoring staff, CTS
Copy	Mohamed Fathy, Ahmed Abou Elseoud, Tarek ElAraby,
From	Bjarne Sivertsen

Environmental Information and Monitoring Programme

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30 Misr-Helwan Street
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E-mail: eimp@intouch.com

Updated list of tasks based on meeting 11 November 1998

Referring to a meeting with CTS on 19 October 1998 and the Memo of 28 October 1998 a meeting with CTS was held in the evening of 11 November 1998. The following status can be reported relevant to the list reported on 28 November.

Tasks undertaken and finalised:

CTS will together with CEHM (Ali and Maher) **upgrade the Station Manager** at Tebbin (change file), so that data can be retrieved after power failure

NOx monitor owned by Cairo University will be repaired by CTS. A price quote will be presented to CEHM before 1 November.
Was presented in Fax 6 August at 2850 EL.

Portable met. tower power supply: In equipment specifications we asked for an optional solar powered battery pack, or battery operated station. The EIMP programme still needs a battery operation. CTS checks and supplies the battery pack.
Rechargeable battery will be handed over.

Calibration of PM10 monitors: We need a complete list showing which monitors (serial numbers) have been calibrated and what kind of adjustments that have been made to them including the results.
List should be available at M Nasar as certificates.

A New PM_{10} calibrator will be ordered as soon as possible. The responsibility to get this as soon as possible is at CEHM and at CTS. Report back to EIMP concerning status on 1 November!
Taken care of by Anwar??

The System/ Station Manager: The missing original software diskettes and last version of the manuals will be obtained from EMC as soon as possible. CTS contact EMC! -
Has been handed over to Anwar!

Waiting for spare parts from Thermo USA

A manifold blower at the Monitoring Laboratory (CEHM) will be installed by CTS before mid November.

NOx monitor at Tebbin reads zero. The monitor will be checked and repaired as soon as possible. CTS has to replace valve now?

CO reactor (ser. no. 58275-317): Right pressure gauge indicator not working. New equipment in shipment, will be delivered by CTS in November.

Will be undertaken in near future

CTS will finalise installations at NIS before 15 November 1998

CTS will update and re install all Station Managers (version 5.3/5,5?!) at Shoubra, Alex and other sites ?) before the end of October. This will enable to load zip files from SM and will hopefully solve some of the problems after power breaks.

NOx monitor at ElGomhoriya show low flow after calibration. This will be checked and repaired by CTS after 29 Oct. (first week of November).

CO monitor at Gemhoryia street hanging. Has to be checked.
Will be undertaken at visit to the site Tuesday 17 Nov.

Data logger at Cairo University station (Odessa) will be checked by Ali/Tarek and operated as it should.
Training has been undertaken. Status will be checked.

Rain gauge at Cairo University: Is it operating properly? Has to be checked. CTS responsible to confirm that it is operating properly.

CO monitor (ser. no. 57596-317): Did not pass self test at start-up. The instrument is at CTS and will be finalised and released mid November.

One of the **NOx monitors in storage** has a leakage. Will be fixed in near future, before Wednesday 18 Nov.

One out of 6 **PM_{10} hivol samplers** was damaged in transport. Screws will be changed on 18 Nov. 1998. The other 5 are ready for installation.

A procedure for action when instruments break down during the warranty period is needed. CTS and EIMP will discuss this item further and develop a procedure.

EIMP C.2.2a.

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Nasar
Copy: M Fathy
From Bjarne Sivertsen
Date: 1 November 1998

Shelter deliveries

The shelter for IGSR was delivered on 28 October according to schedule.

Site	Delivery date	Model
Abu Quir, Alex	10 Nov. 1998	A
El Max, Alex	10 Nov. 1998	B
El Azafra, Alex	10 Nov. 1998	B
Gheat El Enab, Alex	10 Nov. 1998	B
Dhamanur	10 Dec. 1998	B
Suez	15 Dec. 1998	A
Kafr ElZayat	10 Jan. 1999	A
El Mahalla	10 Feb.. 1999	A
El Mansura	March. 1999	A
Assyut	May 1999	A

The shelters will be delivered at the specified sites according to the contract dated 1 Nov 1998.

Bjarne Sivertsen
Air Quality Team Leader

C.2.2.a.

EIMP

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Nasar
Copy: M Fathy
From Bjarne Sivertsen
Date: 7 November 1998

Shelter deliveries and sizes

After updated site visits to 1Ramadan and 6 October city it was verified that the EIMP air quality sampling stations at these two sites will need two small shelters Model B.

Our experience during installations at FumAlKhalig has further shown that to enable the installation of two AC-systems and a rack for monitors including PM_{10} monitors the shelters Model A have to be slightly modified.
The new Model A shelters will measure:

2,00 m x 2,30 m with an inside height of 2,02 m.
To obtain the inside height it is agreed to reduce the floor isolation thickness to 2 cm.

The updated delivery schedule will be as following:

Site	Delivery date	Model
Abu Quir, Alex	10 Nov. 1998	A
El Max, Alex	10 Nov. 1998	B
El Azafra, Alex	10 Nov. 1998	B
Gheat El Enab, Alex	10 Nov. 1998	B
Dhamanur	10 Dec. 1998	B
10 Ramadan	11 Dec 1998	B
6 October	12 Dec 1998	B
Suez	15 Dec. 1998	A
Kafr ElZayat	10 Jan. 1999	A
El Mahalla	10 Feb.. 1999	A
El Mansura	March. 1999	A
Assyut	May 1999	A

The shelters Modal B will be delivered at the specified sites according to the contract dated 1 Nov 1998 the Model A shelters will be modified according to the specifications given above.

Bjarne Sivertsen
Air Quality Team Leader

EIMP C.2.2.b.

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

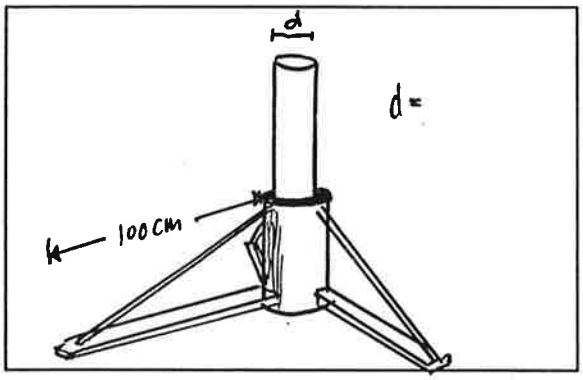
Memo

To: Mohammed Fathy
Copy: Heba, Anwar, Rolf
From Bjarne Sivertsen
Date: 9 November 1998

Various preparation work for EIMP air quality monitoring sites

Stand for Dust Fall collectors

For dust fall collectors to be placed at the roof of buildings a simple stand has to be constructed. A sketch showing the typical dimensions is presented below. At present we will need 4 pieces of this stand.



Foundation for PM_{10} sampler at Nasr City

The PM_{10} sampler to be located at the roof of the site in Nasr City, need a concrete foundation. The place and size for this has been indicated by Rolf Dreiem. This installation should be undertaken as soon as possible.

New lock for Tabbin South

The lock for the EIMP part of the shelter at Tebbin South has been broken. The lock will have to be replaced as soon as possible.

Ladders for 10 Ramadan and 6 October

Two ladders is needed for accessing the roof of the security rooms at 10 Ramadan Salem Primary school and 6 October Al Ashar school. The ladders should be made in light material to enable to remove them after each vist and lock them to the building.

EIMP
Environmental Information
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30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: **Mohammed Fathy**
Copy: **, Heba Adly, Rolf, Anwar**
From **Bjarne Sivertsen**
Date: **9 November 1998**

Various preparation work for EIMP air quality monitoring sites

Stand for Dust Fall collectors
For dust fall collectors to be placed at the roof of buildings a simple stand has to be constructed. A sketch showing the typical dimensions is presented below. At present we will need 4 pieces of this stand.

Foundation for PM_{10} sampler at Nasr City
The PM_{10} sampler to be located at the roof of the site in Nasr City, need a concrete foundation. The place and size for this has been indicated by Rolf Dreiem. This installation should be undertaken as soon as possible.

New lock for Tabbin South
The lock for the EIMP part of the shelter at Tebbin South has been broken. The lock will have to be replaced as soon as possible.

Lock for ladders at 10 Ramadan and 6 October
Two ladders is needed for accessing the roof of the security rooms at 10 Ramadan Salem Primary school and 6 October Al Ashar school. The ladders will be purchased in aluminium. Locks have to be prepared at the base of the buildings.

Stand for PM_{10} samplers
Ten simple iron rods 0,4 cm x 10 cm x 150 cm have to be prepared as base for the PM_{10} samplers.

EIMP c.2.2.b.

Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: Mohammed Fathy
Copy: Heba, Rolf, Anwar
From Bjarne Sivertsen
Date: 5 December 1998

Work to be undertaken by contractor

The following tasks have been assigned to the Contractor (EECompany), and I would appreciate that these tasks were followed up and carried out as soon as possible.

Work to be performed	Priority	Specification site	Estimated price LE
Mount shelves to wall at Storage	asap	EIMP storage	---
Transport of shelters and rental of crane for lifting of shelters to assigned positions	Before 7 December	10 Ramadan city 6 October city	700 700
Cable fixed to shelter, included painting	Before 18 December	Fum ElKhalig	150
Water tight shelter roof (painted wooden roof (alternative made in steel LE 1100)	Medio December	Fum ElKhalig	700
Ladder and door at monitoring room at Shoubra school (included ladder, door, lock, paint and labor)	December 1998	Shoubra ELKheima	1200
Ladders to enter the shelters on top of security rooms we have quotation for aluminium ladder at LE 1750,-)	Medio December 1998	10 Ramadan 6 October	400 400

The work has been approved and will have to undertaken within the dates indicated to enable operations of the monitoring sites.

Bjarne Sivertsen
(Team leader Air monitoring)

Appendix D

People and colleagues - Job descriptions

D.1.3 Procedures for quality control
D.2.1 Data base sheets
D.3.1 EEAA data base specification

D 1.3

Procedures for QA/QC

Manual collected samples

SOPs

Training have been performed for 6 methods where SOPs have been developed. This includes the 6 methods given below:

Parameter	Procedure name
SO_2	Procedure for sampling and analysis of SO_2 in air by use of a filterpack sampler
NO_2	Procedure for sampling and analysis of NO_2 in air. Iodide absorption method
Passive SO_2 and NO_2	Procedure for sampling and analysis of NO_2 and SO_2 in air by the use of passive samplers.
TSP, PM_{10}	Procedure for sampling and analysis of suspended particulates in air by the use of a highvolume sampler
Dustfall	Procedure for sampling and analysis of dust fallout from the air
QA-QC	EIMP Air Quality QA-QC-procedures

QA/QC samples

The level of quality control needed was discussed with Ulla Lund, and it was decided that two quality control samples was needed. One should contain of 10.00 and the other 1.00 µg/ml of both $SO_4^=$ and NO_2^-. On the basis of these samples , X- and R-charts should be prepared by the laboratory. The QC-samples should be prepared by the Ain Shams University, and delivered to CEHM of the Cairo university to control the ion chromatographic analysis of sulphate and nitrite. Details about the preparation and handling of the QC-samples is described in a separate procedure "EIMP Air Quality QA-QC-procedures". The laboratory had access to a specially developed program for presentation of quality assurance data. The program is developed by VKI in Denmark and has the name Quality.

EIMP
Site form

Year	**FIELD STATION FORM** **Sequential FK-Sampler** **Filterpack method - SO_2**	

Station code	Station name	Observer

From		To		Ch.	Air flow L/h		Air volume	REMARKS	
Date	Time	Date	Time	No	Start	Stop	m^3		X
				1					1
				2					2
				3					3
				4					4
				5					5
				6					6
				7					7
				8					8

Instruction for reporting

Use ballpoint pen.
If the remark column is too small, write on the backside with column x) as reference for the date.
When changes are done, cross over the old value and write a new value beside.

Samples received laboratory		REMARKS FOR THE LAB. -- ONLY LAB. FILLS IN HERE	Proof read	
Date	Sign.		Date	Sign.

D.2.1

EIMP
Site form

Year	**FIELD STATION FORM** **Sequential FK-Sampler**	Amount of tubes left
	Iodide method - NO_2	

Station code	Station name:	Observer

From		To		Hours	Channel	Air volume	REMARKS
Date	Time	Date	Time	exposed	No.	m^3	
					1		
					2		
					3		
					4		
					5		
					6		
					7		
					8		

READING OF THE GAS METER AT START AND STOP

	Date	Time	Total	Reading of gas meter - m^3
	YY/MM/DD	Hour:min.	number	NB ! 3 decimals behind comma
START			of hours	⊥⊥⊥⊥⊥⊥⊥,⊥⊥⊥⊥
STOP			exposed	⊥⊥⊥⊥⊥⊥⊥,⊥⊥⊥⊥
				Total air volume: ,

Instruction for reporting

Use ballpoint pen. If the remark column is too small, write on the backside with column x) as reference for the date.
When changes are done, cross over the old value and write a new value beside.

Samples received laboratory		REMARKS FOR THE LABORATORY	Proof reading	
Date	Sign		Date	Sign

EIMP
Site form

Year	FIELD STATION FORM
	HIGHVOLUME SAMPLER

Station code:	Station name:	Observer:

From		To		Flow meter		Air	Remarks	
Date	Time	Date	Time	reading, m^3		volume		
				Start	Stop	m^3		X
								1
								2
								3
								4
								5
								6
								7
								8

Instruction for reporting

Use ballpoint pen.
If the remark column is too small, write on the backside with column x) as reference for the date.
When changes are done, cross over the old value and write a new value beside.

Samples received laboratory		REMARKS FOR THE LAB. -- ONLY LAB. FILLS IN HERE	Proof read	
Date	Sign.		Date	Sign.

EIMP
Site form

Year	**FIELD STATION FORM**
	Passive samplers - NO_2/SO_2

Station code:	Station name:	Observer:

From		To		Sampler type	Site location Position	Sampler no	Remarks	Ref
Date	Time	Date	Time	NO_2/SO_2				x
								1
								2
								3
								4
								5
								6
								7
								8
								9
								10
								11
								12

Instruction for reporting

Use ballpoint pen.
If the remark column is too small, write on the backside with column x) as reference for the date.
When changes are done, cross over the old value and write a new value beside.

Samples received laboratory		REMARKS FOR THE LABORATORY	Proof reading	
Date	Sign		Date	Sign

WORKSHEET FOR WEIGTH OF HIGHVOLUME FILTERS

Project no:_____ **Field station name:**_____ **Filter type:**_____

Weight name_____

Unexposed filters					Exposed filters			DUST	Remarks
Filter no.	Date exposed	Date weighed	Sign	Weight unexposed - mg	Date weighed	Sign	Weight exposed - mg	Exposed - unexposed - µg	

LABORATORY WORKSHEET
ION CHROMATOGRAPHY

Seq nr	Sample identification					NO_3^- µg NO_2^-/ml	SO_4-S µg S /ml	Remarks
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

Analysis date _____ Sign _____

LABORATORY WORKSHEET
ION CHROMATOGRAPHY

Seq nr	Sample identification					NO_2 µg NO_2/ml	SO_4-S µg S /ml	Remarks

Analysis date: ____________ Sign: ___________

WORKSHEET FORM - WEIGHT OF WATERSOLUBLE DUSTFALL

Project no:_____ **Field station name:**_____

Weight name_____

Empty beaker				Beaker after evaporation			Difference	Total volume	Remarks
Beaker no.	Date weighed	Sign	Weight empty mg	Date weighed	Sign	Weight after mg	After - empty mg	of solution ml	

WORKSHEET FORM - WEIGHT OF WATERINSOLUBLE DUSTFALL

Project no:_____ **Field station name:**_____ **Filter type:**_____

Weight name_____

Unexposed filters				Exposed filters			Difference	Remarks
Filter no.	Date weighed	Sign	Weight unexposed mg	Date weighed	Sign	Weight exposed mg	Exposed - unexposed mg	

EIMP D.3.1.

Note	Data Management
Subject	Cairo Lab Visit & Quarterly Reports formats
Date	20/1/1998
To	Ahmed, Mohamed Fathy
Copy	Bjrane, Heba
From	M.Zaki

Environmental Information and Monitoring Programme

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E-mail: eimp@intouch.com

Activities

- The CD-write drive was installed on their computer and working properly
- discussion about the files size and backup
- Cairo lab Staff will practice on how to operate the CD-drive

Study

Concerning the file size

1. They declared that the quarterly report (QR) takes form 100- 150 NW. They divided the QR into files because of memory and loading limitation (starting from 30MB word file, difficulties with memory, file navigation and Hard disk space may occur)
2. QR is set of files (MS-Word, MS Excel sheets and graphs ArcView)
3. QR size might increase as the number of station will increase

It seems to be difficult for us and for them to organise QR files if we take them as they are (Word, Excle .... etc) difficult to know which is which

Recommendations

- The QR is highly recommended to be in HTML format for the following reasons (see Figl and \\Eimpserver\eimp public\example\TOC.HTM as example)
  1. It will be readable by any one's computer
  2. The whole QR can be loaded and read easily (no limitation on memory and material included)
  3. The file size might be decreased
  4. More Organised and manageable

- Many free tools can be used to produce the QRs in HTML (Forn - Page Express, Word, Excel and PowerPoint)
- We can offer them training on how to make HTML
- As for the size mentioned (100- 150 MB), 2 CD-ROMs (20 LE) per year is sufficient (one for us and one backup for Cairo Lab)
- Add an article in the new contract to define that HTML required format for the QR in

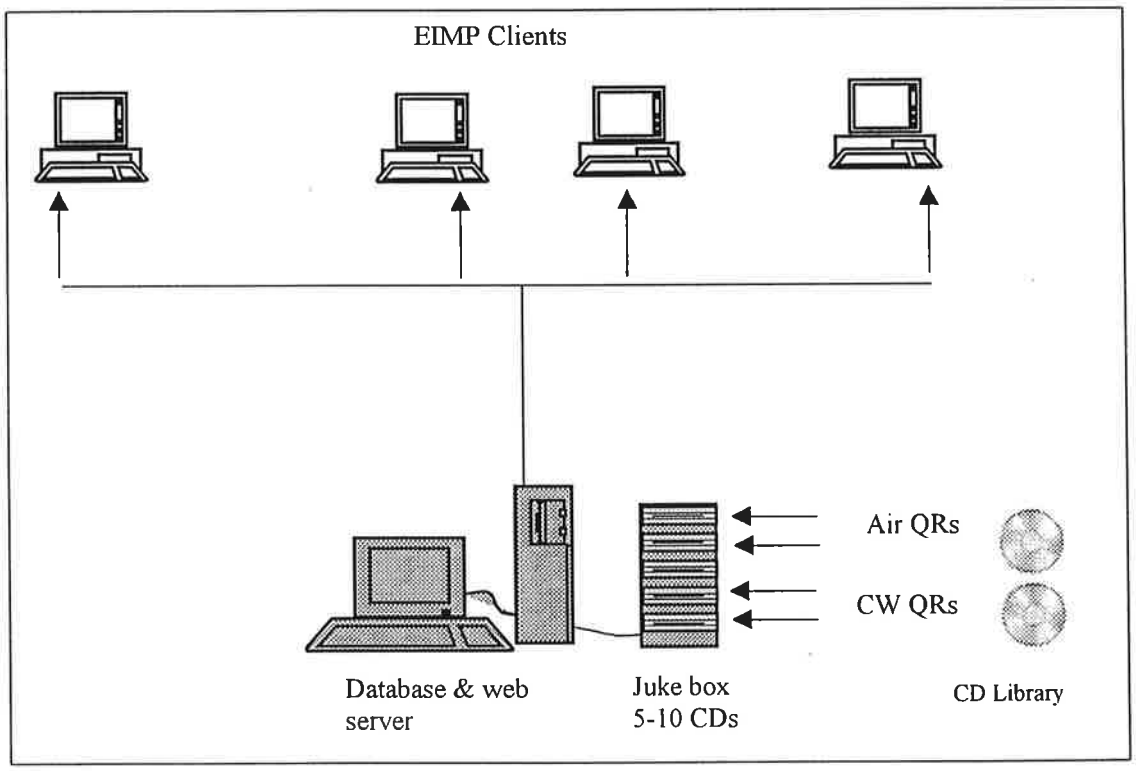
- The effort in preparing the QR in HTML is worthy compared to the benefits

As our intention to have the QRs in digital format, HTML is recommended

File size comparison

Word and Excel	Equivalent HTML
Cat.xls 16 K	Cat.htm 4 K Cat.gif 4 K
Rep.doc 22 K	Rep.htm 4 K

Making use of the QRs for EIMP



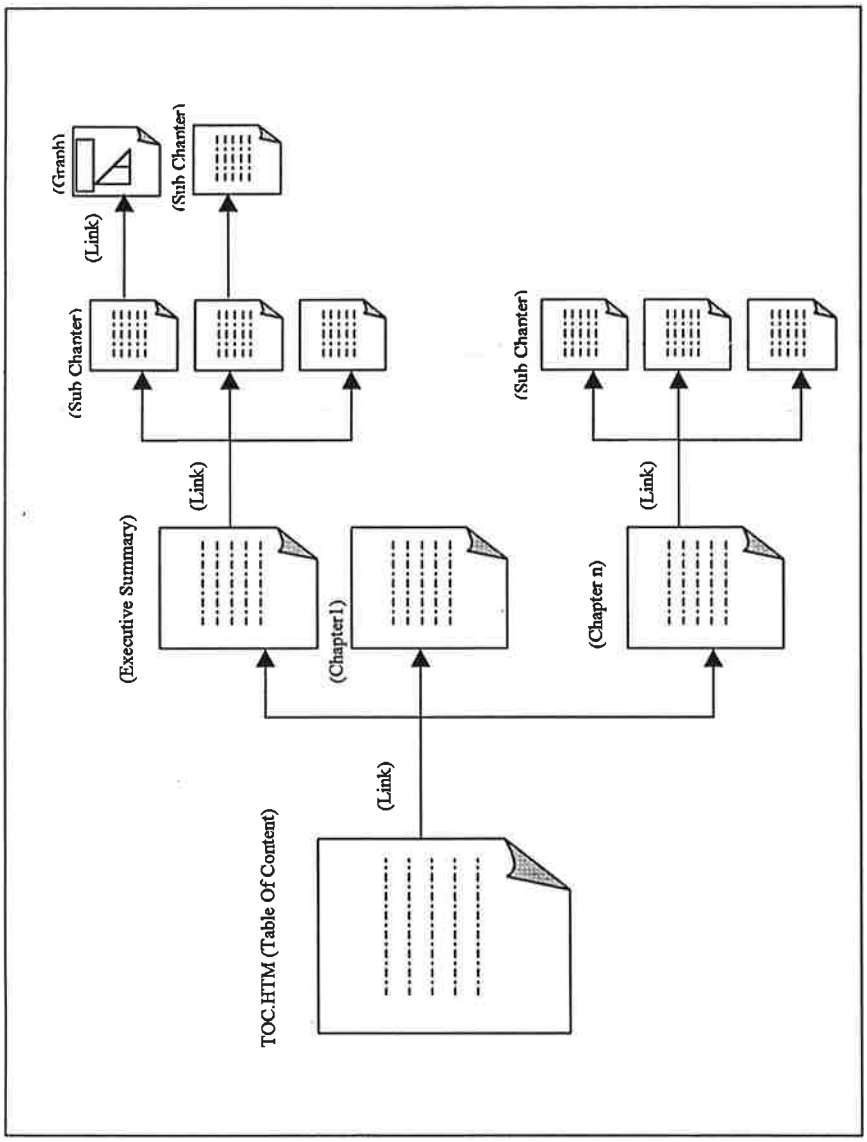


Fig 1 HTML (organization and files link)

Appendix E

People and colleagues - Job descriptions

E.2.2 Seminar on understanding and using the QA/QC system

EIMP

EIMP Air Pollution Monitoring Programme

Invite to a Seminar on:

Understanding and using the QA/QC system

Thursday 3 December 1998, 12:00-16:30 hrs.

Location: Seminar room 2. Floor EEAA building in Maadi

The main content of the air pollution QA/QC procedures will be presented by
Leif Marsteen, Norwegian Institute for Air Research (NILU),
Air quality instrumentation and monitoring expert within EIMP.

Programme for the seminar is:

12:00 Introduction to Quality Assurance / Quality control
Ulla Lund, Team leader Reference Laboratory for Standardisation and Quality Assurance of Data at EIMP.
12:15 The operational level air quality monitoring (Leif Marsteen)
- Documentation overview

12:30 QA/QC in the field (LM)
- The station manual
- Routine maintenance, SOP and form
- Field calibration, SOP and form
- Travel report

14:00 Coffie break

14:20 QA/QC in the laboratory (LM)
- The history log book
- Calibration in the laboratory, SOP and form
- Establishing QA/QC documentation for a new station

16:00 Questions and discussions
16:30 End

Experts working in the EIMP Air Quality Monitoring Programme should attend the meeting. This invitation is presented to CEHM, IGSR and NIS specifically.

Sheet Number:

DAILY DATA VALIDATION LOG

STATION:	STATION ID: AQ-		
Date / time	Remarks on possibly invalid data, communication problems, etc. Write OK if there is no problems	Persons notified	Initials

Appendix F

QA/QC

F.2.3 a) SOP example from Quality handbook
b) Procedures for sampling and analyses

Quality Handbook	NILU
Instructions Manual Measurement methods Monitoring Lab	Page : 1 of 1 Date : 98.01.23 Issue No : 002

2. Measurement methods

This chapter describes the measurement method used by each instrument model including their calibration and maintenance schedules.

2.1 Gas monitors

2.1.1 Calibration and maintenance schedule

All measurement instruments need calibration and maintenance in order to produce reliable results. For every type of instrument there is a calibration and maintenance schedule. The schedule is general and must be adapted to each site depending upon local conditions.

Table 1. Calibration and maintenance tasks, SO_2, NO_x, CO, HC and O_3 monitors

Operation	Includes
Dynamic calibration	Determination of instrument response and linearity
Field calibration and extended maintenance	• Two-point calibration of monitor • Calibration of span gas source • Leak check • Cleaning of the inside of the instrument • If necessary cleaning of air intake and tubing
Routine maintenance	• Filter change • Instrument status
Z/S check	Automatic or manual check to verify instrument response
Major maintenance	• Cleaning of sample lines and reaction chamber • Inspection of capillaries

Table 2. Calibration and maintenance schedule, SO_2, NO_x, CO, HC and O_3 monitors

Operation	Period	Location
Dynamic calibration	• Before first time use • After major repairs • Yearly	Station
Field calibration and extended maintenance	• Every 3 months • If malfunction is suspected • If Z/S check deviates	Station
Z/S check	• Daily • Weekly if manual	Station
Routine maintenance	Weekly	Station
Major maintenance	Yearly	Laboratory

Routine maintenance. TEI model 43C SO2 monitor

Station name		Station Id. AQ-	Serial numbers Monitor	Z/S unit	Wrk. std.
	Date				
	Start time/ Stop time				
Ambient	Monitor	SO2			
Diagnostics	Volt	PMT			
		Lamp			
		+5 Supply			
		+15 Supply			
		-15 Supply			
		Battery			
	Temp	Internal			
		Chamber			
		Pressure			
	Sample	Flow			
	Lamp	Intensity			
Alarms	Temp	Internal			
		Chamber			
	Sample	Pressure			
		Flow			
	Lamp	Intensity			
		Volt			
	Conc.	SO2			
Filter		Changed			
Silica PT	Blue fract. / Changed				
Z/S check monitor	Wrk. std.	Pressure			
	Z/S unit	Cert. conc.			
	Response	Range			
		Zero			
		Span			
IB!	Intake tube in place				
	Cylinder valves closed				
	Logger monitor off				
Comments					
Signature					

Routine maintenance. TEI model 43C SO2 monitor

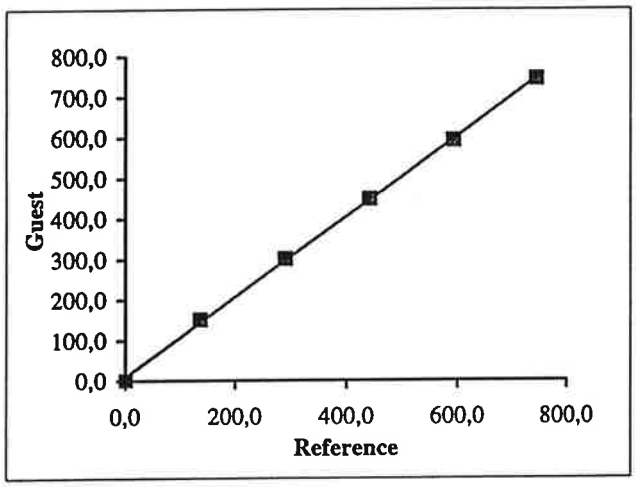
Station name		Station Id. AQ-	Serial numbers Monitor	Z/S unit	Wrk. std.
	Date				
	Start time/ Stop time				
Ambient	Monitor	SO2			
Diagnostics	Volt	PMT			
		Lamp			
		+5 Supply			
		+15 Supply			
		-15 Supply			
		Battery			
	Temp	Internal			
		Chamber			
	Sample	Pressure			
	Lamp	Flow			
		Intensity			
Alarms	Temp	Internal			
		Chamber			
	Sample	Pressure			
		Flow			
	Lamp	Intensity			
		Volt			
	Conc.	SO2			
Filter		Changed			
Silica PT	Blue fract. / Changed				
Z/S check monitor	Wrk. std.	Pressure			
	Z/S unit	Cert. conc.			
	Response	Range			
		Zero			
		Span			
B!	Intake tube in place				
	Cylinder valves closed				
	Logger monitor off				
Comments					
Signature					

Dynamic Calibration - SO2 Monitor

Guest			Reference		
Owner: NILU		SO2	Cal. lab: Mon.lab.	Gas std: Scott, SO2, 1%	
Monitor: TEI 43C	Range:	1000 ppb	Calibrator: TEI 146	Ser. no: ALM073293	
Ser. no: 58641-326	Cal. bkg:	10,3 ppb	Ser. no: 53246-314	SO2:	101,06 ppm
Date: 13.07.98	Cal. Cof:	1,040	Purpose: Calibration		

Parameter SO2

Zero air [LPM]	Gas [SCCM]	Ref. [ppb]	Guest [ppb]	G - R [ppb]	Statistics, y=ax+b	a	b
4,52	0,0	0,0	0,0	0,0	Scale f:	1,000	0,000
4,00	6,0	151,4	136,2	-15,2	Regression		
4,01	12,0	301,5	291,5	-10,0	Scale f:	0,991	8,930
4,01	17,9	449,1	441,6	-7,5	St. error:	0,010	4,650
4,01	23,7	593,8	593,0	-0,8	St. error y estimate:		6,505
4,00	29,7	744,8	745,0	0,2	r2:	0,99956	



Internal Zero/ Span check unit

[ppb]

SO2 PT ser. no: None

Zero air: _____

SO2: _____

Laboratory environment

Temp: 22,0 °C

Press: 760,0 mm Hg

Rel. h: 45,0 %

Procedure for sampling and analysis of SO_2 in air by use of a filterpack sampler	Page 2 of 9 pages
	Date: 01.11.98
Printed date: 10.03.99	Issue no: 002

Table of contents

Procedure for sampling and analysis of SO_2 in air by use of a filterpack sampler

1. Introduction

This procedure describes a method for sampling and chemical analysis of SO_2 in air by use of a 2 stage filterpack sampler. The method is applicable for ambient and urban air in the range 1 - 300 µg SO_2 m^{-3} for sampling periods of 1 day (24h).

2. Principle

The filterpack consist of 2 filters coupled in series. The first filter is an untreated paper filter which collects particles (and particulate sulphate). The second filter is impregnated with KOH and collects SO_2 .

The impregnated filter is extracted with a dilute solution of hydrogen peroxide which transforms the collected SO_2 to sulphate (SO_4^{2-}). This is determined with ion chromatography using a standard anion separation column and an ion chromatography system from Dionex Corp. , USA.

The particulate sulphate collected on the first filter can be determined if desired by extraction of the filter by water. The extracted sulphate is determination by ion chromatography as for SO_2. In the method described in this procedure, the particulate sulphate is not determined

The absorption capacity of the filtersampler is about 10000 µg SO_2. Using the recommended air volume of 3.6 m3 per 24 h, this capacity corresponds to about 3000 µg SO_2 m^{-3}. Taking precautions not to expose the filter to more than 10% of the total capacity, the filter pack can be used with small risks for breakthrough up to 300 µg SO_2 m^{-3} for 24 h sampling periods. In situations of mixed exposure to other acid gases (HCl, HNO3 etc.) this must be taken into consideration when calculating the capacity and breakthrough risk.

3. Sampling

3.1 Air sampler

A NILU FK sequential sampler equipped for 8 filter packs is used. Normal sampling flow for this sampler is 2.5 l/min (corresponding to 0.15 m^3 pr h or 3.6 m^3 per 24h).

3.2 Filters

Both the particulate and impregnated filter is a 47 mm Whatman 40 (W40) paper filter manufactured by Whatman, UK.

The filters must regularly be checked for blank values of sulphate. The blank value should normally not exceed 5 µg SO_4 per filter.

3.3 Filterholder

The filterholder is a standard NILU filterholder with 2 stages. The front part of the filterholder is the inline type (tube in front, not open face). A 40 mm opening clamp ring is used for both filter stages.

During use the clamp ring and filter support plate (thr grid plate) is removed and cleaned each time the filter is changed. The cleaning procedure is soaking in deminearalized water. Rinse afterwards in demineralized water and dry in a clean environment.

New cleaned clamp rings and support plates are put in when new filters are mounted into the filter holder.

3.4 Cleaning of filters

Normally the paper filters from Whatman (Whatman 40) are clean enough for sampling of SO_2 without any cleaning procedure before use. The blank value should normally not exceed 5 µg SO_4 per filter. The blank is normally monitored by the field blank filters. If the field blanks become higher than recommended in 3.8., blank values of the filters must be checked, and cleaning of filters before use must be considered.

3.5 Impregnation of filters

3.5.1 Impregnation solution

The impregnation solution consists of 1.0 M KOH and 10 % glycerol dissolved in methanol. The chemicals must be of analytical grade. KOH is used as pellets (MERCK 5033 is a suitable brand).

The solution is prepared by adding about 70 ml methanol to a 100 ml volumetric flask, add 5.6 g of KOH pellets and shake until dissolved. Add 10 ml glycerol and dilute to the mark with methanol.

This solution should be prepared freshly each time filters are to be impregnated. Keep tightly closed in the flask until used.

3.5.2 Impregnation of filters

The Whatman 40 filters are placed on suitable stands before impregnation. Suitable stands are plastic bottle caps with a diameter of about 40 mm. The filters are impregnated with 300 µl impregnation solution (corresponding to an amount of 0.3 meq KOH). The impregnation is preferably performed with a micropipette. Drip the solution onto the filter in a circular way so that the solution is equally distributed over the whole filter area. It is important that the whole filter area is wetted with impregnation solution. Let the filters dry (max. 30 min). Put the filters into plastic bags with zip closure.

During impregnation and packing of the filters, the filters should only be touched by clean forceps. If field blanks become high, it should also be considered to use protective gloves.

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3.5.3 Control of impregnated filters

The blanks of impregnated filters should be monitored before use. 3 filters of each bath of impregnation are ramdomly chosen and extracted as described in section 3.7.

The batch blank value should be below 5 µg SO_4 pr filter (preferably below 1).

3.5.4 Storage of impregnated filters

Store the closed plastic bags with filters in a desiccator which are tightly closed. Mark the bag with date for impregnation. Impregnated filters should not be stored for more than 3 months before use.

3.6 Mounting and dismounting of filter packs

3.6.1 Assembly

During this operation plastic gloves should be used and the filters should only be touched with clean forceps. The filterpack should be assembled and dismounted in the laboratory only.

The first (upper) particulate filter is a Whatman 40 filter which is untreated. The second stage is the impregnated filter.

Put the filters onto the support grid plates in the filter holder, put the clamp ring on top and mount the appropriate parts of the filterholder. Close the filter pack with the closure wrench tool to the torque specified by the manufacturer to prevent leaks.

After the assembly, the filterholder must be closed with plastic stoppers in both ends. It is recommended that each filter pack should be tagged with the site code, and the date for start and stop of the exposure. The closed filterpack is placed in plastic bags with zip closure to prevent contamination.

3.6.2 Dismounting

Exposed filterpacks are opened with the filterpack wrench tool. The first particulate filter is removed. If there are no requirements for analysis of this filter, it is discarded, otherwise it must be prepared and extracted according to the specified procedure for the determination of the desired components.

The second impregnated filter is placed in a clean plastic vial with a minimum volume of 15 ml. Single use polystyrene vials of about 15 ml volume are appropriate. If the filters are not extracted immediately, the vials must be closed. The filters must be extracted within the same day. Tag the vials with the necessary identification.

3.7 Extraction of exposed filters

The extraction solution for impregnated filters is 0.3 % hydrogen peroxide.

This solution is prepared by 10 ml of 30 % H_2O_2 (Merck 30% p.a. perhydrol or equivalents) which is added to 1000 ml demineralized water. This solution should not be stored more than a month. It is recommended to check the blank value of this solution, it should not be above 0.05 µg SO_4 ml^{-1}.

The solution is placed in a laboratory dispenser which can dispense exactly 10.0 ml solution to each vial tube with exposed filters. It is recommended to check the accuracy of the dispenser using a microbalance. Weigh the dispensed amount, it must dispense exactly 10.0 (+/- 0.1) g (ml) of solution.

The tubes are closed and left for some hours. Usually small amounts of gas is formed inside the tube. It is therefore recommended to gently open the stopper of the tube to release the overpressure within a few hours. The tubes must be shaken to ensure complete extraction of the filter. This is done by turning the tube upside down at least ten times. Ensure that the stopper of the tube do not fall out while doing this. An ultrasonic bath may be used for extraction, but this may release much fibres from the filter into the solution, making clogging of transfer tubes of the ion chromatograph a problem during analysis.

The vials with filters are stored in a refrigerator until analysis. The closed tubes with the samples may be stored up to 2 months in a refrigerator, but it is advised to analyse them as soon as possible.

3.8 Field blank samples

For each station it is recommended to prepare one field blank sample once a month. The field blank sample is marked properly and shipped together with the samples to the field site, but not taken out of the plastic bag at the site. The field blank sample is returned to the laboratory and extracted and analysed as the rest of the samples. To prevent mixture with normal samples, the filter pack with the field blank sample should be tagged with a red label.

A separate log is made with the result for the field blank samples. An acceptable field blank level must be established on experience, but a first guide to a target value is 5 µg SO_4 per sample. If field blanks increases, the procedures must be examined to sort out possible contamination sources.

To keep cross contamination between stations low and thereby field blanks low, it is recommended to use the same filterpack equipment repeatedly at each station and not mix filterpack equipment from highly exposed stations with equipment from lower exposed sites.

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4. Chemical analysis

4.1 Ion chromatography equipment an columns

The chemical analysis of sulphate in the extracts are performed by ion chromatography using standard conditions. This procedure is based on the use of ion chromatography equipment manufactured by Dionex Corp., USA.

The Dionex ion chromatograph is set up as recommended in the instructions from Dionex. The instrument should preferably be equipped with an autosampler for unattended analysis of series of samples.

For this application a anion separation column of the type Dionex AS4A is recommended. This is a general purpose rugged column which copes well with the matrix used. Sulphate is normally eluted after about 6 - 10 min depending on the eluent strength.

Other columns from Dionex may be used (such as AS9A, AS14 etc). These have similiar properties as AS4A. Refer to the column manuals for optimum conditions.

A normal anion supresssor system from Dionex must be used together with this column system. This may be a normal chemically based supressor or a self regenerating (an electrolytical) supressor. The latter is the simplest and most convenient in use.

Both the column and the supressor must be operated according to the instructions given in the manuals supplied with the systems from Dionex.

4.2 Calibration

4.2.1 Stock solutions based on sulphate (SO4)

Stock solutions of sulphate standards may be purchased from Dionex. These contains normally 1000 µg SO_4 ml^{-1} as sulphate (SO4).

A 1000 µg SO_4 ml^{-1} solution may be prepared as follows. Dry pro analysis quality of the salt Na_2SO_4 (Merck p.a. or equivalents) at 105 °C for at least 1 hour and cool in a desiccator. Weigh accurately 1.479 g Na_2SO_4 and transfer to a 1000 ml volumetric flask. Dilute to volume (1000 ml) with demineralised water. This solution contains 1000 µg SO_4 ml^{-1}. It must be noted that this solution is prepared as sulphate (SO4) and not as sulphur (S)! The stock solution must be stored in tightly closed PP or glass bottles. When stored cool in a refrigerator, the stock solution is stable for at least one year.

4.2.2 Stock solutions based on sulphur (S)

If the labortory expresses concentrations of standards as sulphur (S), a 1000 µg S ml^{-1} solution may be prepared as follows. Dry pro analysis quality of the salt Na_2SO_4 (Merck p.a. or equivalents) as in 4.2.1. Weigh accurately 4.439 g Na_2SO_4 and transfer to a 1000 ml

volumetric flask. Dilute to volume (1000 ml) with demineralized water. This solution contains 1000 µg S ml^{-1}. This solution is prepared as sulphur (S) and not as sulphate (SO4)! The stock solution must be stored in tightly closed PP or glass bottles. When stored cool in a refrigerator, the stock solution is stable for at least one year.

4.2.3 Working standards based on sulphate (SO4)

For the preparation of calibration standards, specifications are given for sulphate based standards only. Calibration standards are prepared by dilution from the stock solution containing 1000 µg $SO_4^=$ ml^{-1}. To cover the normal working range of this sampling and analysis method, working standards in the range 0 - 30 µg SO_4 ml^{-1} is normally appropriate

Typical working standards of 5.0, 10.0, 20.0, 30.0 SO_4 ml^{-1} is used. When stored in tightly closed bottles in a refrigerator (4 °C), these working standards are stable for at least 2 months.

If sample extracts contains more than 30 µg SO_4 ml^{-1} they should be diluted.

4.2.4 Calibration graphs and integration

Calibration graphs should be prepared by area integration of the peaks (not peak heights). Area integration must also be used for the samples. This is recommended as the matrix used may distort peak shapes somewhat. Normally linear fit of calibration graphs is recommended in the range 0 -30 µg SO_4 ml^{-1}.

4.3 Quality assurance

The following quality control procedures must be followed:

- Regular analysis of field blanks must be performed. Actions must be taken if the field blank increases above acceptable levels.
- Always check that the correct units of S is used throughout all analysis and calculations, ie. that either the unit S, SO2 or SO4 is used. Necessary formulas for transformation between units must be established and carefully evaluated.
- Before the calculations of the concentrations of the samples, it must be checked that the calibration graph fit to the model equations is good enough (either linear or curved fit).
- All chemicals, standards etc. should be used within storage limitations.

5. Calculations

5.1 Calculating the air concentration for sulphate based standards

If the standards used are based on sulphate ($SO_4^=$), the concentration of SO_2 in air is calculated by:

$$Ac(SO_2) = \frac{Ec(SO_4) \cdot Ev \cdot 0.667}{Av}.$$

where

$Ac(SO_2)$	air concentration of SO_2 [µg SO_2 m^{-3}]
$Ec(SO_4)$	concentration of $SO_4^=$ in extracts from filters determined by ion chromatography [µg $SO_4^=$ ml^{-1}]
Ev	extraction volume of filters [ml] (typical 10 ml)
Av	volume of sampled air [m^3]
0.667	the conversion factor between SO_4 and SO_2

5.2 Calculating the air concentration for sulphur(S) based standards

If the standards used are based on sulphur (S), the concentration of SO_2 in air is calculated by:

$$Ac(SO_2) = \frac{Ec(S) \cdot Ev \cdot 2}{Av}.$$

where

$Ac(SO_2)$	air concentration of SO_2 [µg SO_2 m^{-3}]
Ec(S)	concentration of sulphur (S) in extracts from filters determined by ion chromatography [µg S ml^{-1}]
Ev	extraction volume of filters [ml] (typical 10 ml)
Av	volume of sampled air [m^3]
2	the conversion factor between S and SO_2

6. Reports

The data are expressed in the desired unit (as explained in chapter 5). The sample identification and SO_2 results are transferred to the final data storage and retrieval system which is used for the project.

7. References

R.F. Ferek, D.A. Hegg, J.A. Herring, P.V. Hobbs, (1991) An improved filterpack technique for airborne measurements of low concentrations of SO_2. J. Geophysical Research, 96, 12, 22, 22373 - 22378, Dec. 20, 1991.

EMEP, Manual of analytical methods, , EMEP/CCC-Report 1/95, NILU, Lillestrøm.

A. Semb, K. Andreasson, J.E. Hansen, G. Løvblad, A. Tykeson, (1991) Vavihill, field intercomparison of samplers for sulphur dioxide and sulphate in air, EMEP/CCC-Report 4/91, Norwegian Institute for Air Research, NILU, Kjeller, Norway.

Appendix G

Monitoring

G.3.2 Installation

a) Location of instruments
b) Installation schedule
c) Preliminary audit at installed sites
d) Work plan October-November 1998
e) Tasks for EEAA counterpart
f) Installation status 14 Oct. 1999
g) Work notes

G.5.2 a) Air pollution episode
b) Sampling data

G.7.1 a) Quarterly report IGSR
b) Schedule for annual report

G.3.2.

EIMP Air Quality Monitoring Programme
Location of instruments

			Monitors							Samplers							
Site name	Area type		SO2	NOx	PM	HC	O3	CO	Met	PM	TSP	VOC	SO2	NO2	2F	PS	DF
Cairo																	
1 Cairo city El Qualaly	Urban centre	S	1	1	1						1	1					
2 El Gemhoroya street	Street canyon		1	1	1	1	1	1									
3 Meteorological Inst	Urban / Res.	ss	1				1		1								
4 Nasr City	Residential									1			1	1			
5 Maadi EEAA building	Residential		1	1						1							
6 Tabbin	Industrial		1	1	1				1		1						1
7 Tabbin south	Industrial	Sc									1	1	1				1
8 Fum Al-Khalig	Road side/urban	Sc	1	1	1	1		1		1							
9 Abu Zabel	Industry/res															2	1
10 Shoubra el Kheima.	Industrial		1								1	1		1	1		1
11 Giza, Cairo University	Residential		1	1			1		1								
12 Gizapyramid	Regional															2	
13 6 October	Res/industrial	ss								1			1	1			
14 10 Ramadan	Res/industrial	ss								1			1			2	1
Canal area																	
15 Suez	industrial/res.	S	1	1							1						1
16 Port Said	Residential														1	2	
17 Ismailia	Residential														1	2	
Upper Egypt																	
18 El Fayum	urban															2	1
19 El Minya	Res./ Industrial														1	2	1
20 Assyut 1	industrial/ res.	S	1	1	1				1								
21 Assyut 2	Residential/urban															2	1
22 Naga Hammadi	industrial/res														1		1
23 Luxor	urban/residential	?											1			2	1
24 Edfu	Industry/urban.	ss											1			2	1
25 Kom Ombo	industrial														1	2	
26 Aswan	urban/residential.	S	1				1		1							1	1
Sinai Area																	
27 Sharm ElSheik	background						1								1		1
Number of instruments *(this page)*			11	8	5	2	5	2	5	5	5	3	6	3	7	23	14

G.3.2.

EIMP Air Quality Monitoring Programme
Location of instruments

			Monitors							Samplers							
Site name	Area type		SO2	NOx	PM	HC	O3	CO	Met	PM	TSP	VOC	SO2	NO2	2F	PS	DF
Alexandria																	
28 Abu Keir College	Industrial	S	1	1						1							1
29 El-Max Petrogas	Industrial	ss								1		1	1	1			1
30 IGSR, Alex University	Urban/road side	S	1	1	1	1		1									
31 El-Azafra-El Azhar U	Residential	ss											1	1	1		
32 Gheat El-Inab school	Residential	ss								1			1	1			
33 Alexandria regional	regional	ss					1		1								
Delta Area																	
40 Kafr Dawar	urban/industr	ss											1		1	1	1
34 Damanhur	industrial/res														1	1	
35 Kafr el Zayet	industrial/res	S	1	1	1												1
36 Tanta	urban												1		1		
37 ElMahalla El Kubra	industrial/res.	S	1		1												1
38 El Mansura	industrial/res.	S	1	1					1			1					1
39 Domyat	residential									1			1				1
Instr. Alex+Delta			5	4	3	1	1	1	2	4	0	2	6	3	4	2	7
Instr Cairo+C+UE+S			11	8	5	2	5	2	5	5	5	3	6	3	7	23	14
Instr. at Ref Lab			1	1		1	1	1									
Instr. at Mon Lab			1	1		1		1									
Instr. at other institutions			1	1			2		1								
Backup instr.			1	1	1		1		1	1		1	1	1	1		1
Number of instruments needed			18	14	9	5	6	5	7	10	5	6	13	7	12	25	22
	Instrum ordered		18	14	9	5	7	5	7	10	5		*13*	*7*	*12*		*22*

S = shelter; (2.1m x 2.1m x 2.1 m)
Sc=shelter (joined with CAIP) (2.1mx3.0m.2.1m)
ss =shelter for samplers (1.5mx1.5mx2.1m)

EIMP Air Quality Monitoring Programme

G.3.2.b

Intallation plans

	Site name	Area type	Shelter	Power	Tel	Install date	Instruments				
	Cairo										
1	Cairo city El Qualaly	Urban centre	S	ok	?	May98	S	N	p		v
2	El Gemhoroya street	Street canyon	room ?	ok?	?	jan.98	S	N	H	C	HC
3	Meteorological Inst	Urban / Res.	?	?	?	?	S	O3			M
4	Nasr City	Residential	ok	ok?	no	sep.98	s	n	p		
5	Maadi EEAA	Residential	room	ok	?	nov.98	S	N	p		
6	Tabbin/Helwan?	Industrial	new?	ok	ok	okt.97	S	N	P	t	M
7	Tabbin south	Industrial	Sc	ok?	no	aug.98	s	t		v	d
8	Fum Al-Khalig	Road side/urban	Sc	ok	?	nov.98	S	N	P	H	C
9	Abu Zabel	Industry/res	no	no	no	nov.98				pp	df
10	Shoubra el Kheima.	Industrial	room	ok?	no	apr.98	S	n	p	v	t
11	Giza, Cairo University	Residential	room	ok	ok	feb.98	S	N	O		M
12	Gizapyramid	Regional	no	no	no						pp
13	6 October	Res/industrial	ssc	des.98	no	des.98	s	n	p		
14	10 Ramadan	Res/industrial	ssc	des.98	no	des.98	s		p	df	pp
	Canal area										
15	Suez	industrial/res.	S	des.98	?	jan.99	S	N	t		df
16	Port Said	Residential	no	des.98	no	jan.99			p		pp
17	Ismailia	residential	no	des.98	no	jan.99			p		pp
	Upper Egypt										
18	El Fayum	urban	no	no	no	mar.99			df		pp
19	El Minya	Res./ Industrial	no	feb.99	no	feb.99		p	df		pp
20	Assyut 1	industrial/ res.	S	may99	?	jun.99	S	N	P		M
21	Assyut 2	residential/urban	no	no	no	jun.99			pp		df
22	Naga Hammadi	industrial/res	no	jun.99	no	jun.99			p		df
23	Luxor	urban/residential	room?	mar.99	no	apr.99	s				
24	Edfu	Industry/urban.	ss?	mar.99	no	apr.99	s			pp	df
25	Kom Ombo	industrial	no	mar.99	no	apr.99			p		pp
26	Aswan	urban/residential.	S	apr.99	?	may99	S	O3	p	df	M
	Sinai Area										
27	Sharm ElSheik	background	EEAA	feb.99	?	feb.99	O3			df	pp

S = shelter; (2.1m x 2.1m x 2.1 m)
Sc=shelter (joined with CAIP) (2.1mx3.0m.2.1m)
ss =shelter for samplers (1.5mx1.5mx2.1m)

Instruments
Monitors: S (SO2),N (NO2),O3
M (met)
Samplers s,n,p,pp(passive)
df (dustfall)

EIMP Air Quality Monitoring Programme
Installation schedules

Site name	Area type	Shelter	Power	Tel	Install date	Instruments				
Alexandria										
28 Abu Keir College	Industrial	S	**nov.98**	**nov.98**	nov.98	S	N	P	df	
29 El-Max Petrogas	Industrial	ss	**nov.98**	no	nov.98	s	n	p	df	v
30 IGSR, Alex University	Urban/road side	S	ok	?	feb.98	S	N	P	C	HC
31 El-Azafra-El Azhar U	Residential	ss	**nov.98**	no	nov.98	s	n	p		
32 Gheat El-Inab school	Residential	ss	**nov.98**	no	nov.98	s	n	p		
33 IGSR, Background	Background	ss	ok	?	nov.98	M	O3			
Delta Area										
40 Kafr Dawar	industrial	ss	**jan.99?**	no	feb.99	s	p		df	
34 Damanhur	industrial/res			no	feb.99					pp
35 Kafr el Zayet	industrial/res	S	**jan.99**	**?**	feb.99	S	N	P	df	
36 Tanta	urban	?	**?**	no	apr.99				p	pp
37 ElMahalla El Kubra	industrial/res.	S	**feb.99**	**?**	mar.99	S	P		df	
38 El Mansura	industrial/res.	S	**feb.99**	**?**	mar.99	S	N	M	df	v
39 Domyat	resid	**ss**	**mar.99**	no	apr.99	s		p	df	

S = shelter; (2.1m x 2.1m x 2.1 m)
Sc=shelter (joined with CAIP) (2.1mx3.0m.2.1m)
ss =shelter for samplers (1.5mx1.5mx2.1m)

Instruments
Monitors: S (SO2),N (NO2),O3
M (met)
Samplers s,n,p,pp(passive)
df (dustfall)

Note

Subject	Preliminary audit of the Air quality measurement network - September 1998
Date	13 Sep 1998
To	MCA
Copy	MN, BS
From	Leif Marsteen and Rolf Dreiem

Environmental Information and Monitoring Programme

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During the first two weeks of September all installed Air quality measurement stations and laboratories in the EIMP project were visited by Leif Marsteen (LM) and Rolf Dreiem (RD). The background for the visits was to introduce RD to the installations and the people working with the instruments and to make a preliminary audit.

As of September 1998 the following stations and laboratories have been installed: Tabbin, Gumhorrya, IGSR, Qulally, Shoubra and the Reference and Monitoring laboratories. The person repsonsible for each installation was present during the visits except for the IGSR station where we were met by a stand-in.

Summary: All stations were clean. They were cleaned weekly. The monitors at Shoubra, Qulally and IGSR were checked inside for dust. Only little dust was found even though the monitors had not been cleaned inside during the last 45 days (Qulally) to 6 months (IGSR). The monitors at Gumhorrya were found to be dusty inside during the last cleaning done by CHEM 4 months ago. The monitors at Tabbin have also been found to be dusty inside during earlier cleaning. The temperature was too high at Qulally where the air condition seemed to be out of order and at Tabbin where the room is too big. The temperature has been reported to be too high at Gumhorroya too. The outdoor temperature during the visits was below 35 degrees Celsius. At the shelters dust does not seem to be a problem. It can be concluded that the best environment is maintained in stand-alone shelters. If double split unit air conditions are to be installed it is important that the units do not interfere with the space in front of the monitor rack making it impossible to remove the monitors.

The electrical power at Gumhorrya is very unstable. After power failurs the HC monitor refuses to start. A UPS should be installed to at least support the HC monitor including H2 generator, zero air generator, air compressor and data logger. If the quality of the electrical power is not improved one should consider to shut down the station until conditions have improved. The power stability at all stations should be investigated by studying the Power failure log in the data logger.

The NOx monitor at Tabbin, Cairo University and Gumhorrya need repair. They suffer from from different malfunctions. The SO2 monitor at IGSR shows very low values and must be checked. The CO monitor at IGSR shows an ele-

vated zero level and needs to be recalibrated. The PM10 monitor at IGSR is said to report too high values but no malfunctions were found. All monitors should be checked, repaired and subjected to a two point calibration. CHEM reports that the PM10 High volume sampler at Tabbin measured too low values after it fell over during the sandstorm last spring. CTS did not fix it to the roof.

Tabbin station: The station was visited 3 September. The station was clean. It is cleaned weekly. Cooling was not good. The air condition was working at full power but still the indoor temperature was close to 30 degrees Celsius. The NOx monitor has shown 0.0 ppb NO2 readings for a long time. A calibration at NIS did not solve the problem. CTS has mounted the air intake manifold vertically. There was less dust inside it now. The PM10 monitor was operating good. Irregular dust samples on the filter tape may indicate condesation of water in the intake tube.The PM10 hat is cleaned biweekly. CTS had finally connected both temperature sensor fans at the meteorological tower to 220V. The temperature sensor housings had been cleaned recently but they where already dirty again. There is one PM10 High Volume sampler still at Tabbin. It was mounted on the roof by CTS for comparison measurements with the PM10 monitor. CHEM reports that the sampler measured too low values after it fell over during the sandstorm last spring. CTS did not fix it to the roof. The documentation was good. Notes were taken at every visit.

Suggested actions: To improve cooling the ceiling should be lowered and the windows closed by wood or similar material. Holes in the walls should be sealed. The NOx monitor needs repair. The meteorological sensors have been running for almost a year and need cleaning.

Reference laboratory at NIS: The lab was visited 3 September. The instrumentation was off but no problems were reported by NIS staff. The room environment sensors, tempererature, humidity and CO alarm, was still not connected to the data logger. The wet gas meters had arrived but were not installed.

Suggested actions: CTS should connect the room environment sensors to the data logger. This is part of the contract. The wet gas meters must be installed in before calibrating sequential samplers.

Monitoring laboratory at CHEM: The lab was visited 6 September. The instrumentation was off but no problems were reported by CHEM staff. According to CHEM staff the rain gauge at the meteorological tower did not work. The NOx monitor has been transfered to the Cairo University station to replace the faulty NOx monitor. The validity of CHEM's own reference gases have expired.

Suggested actions: The NOx monitor at Cairo University station must be returned to the lab as soon as the other one is repaired. CHEM's reference gases should be calibrated at NIS in order to extend the validity of the gases.

Cairo University: The station was visited 6 September. The station was clean. It is cleaned weekly. Cooling was good. CHEM had solved the problem with the data logger not collecting correct SO2 values. The NOx monitor running at the station belongs to the Monitoring lab. The original monitor belonging to CHEM has been out of order since CTS installed it in January 1998 after calibration. The monitor has probably a faulty photo multiplier tube power supply. It has been transfered to CTS for repair. The air intake is still mounted horisontally and dust blows easily into it. The documentation was good. Notes were taken at every visit.

Suggested actions: The faulty NOx monitor must be repaired. To prevent dust from entering the air intake it should be bent down.

Shoubra: The station was visited 7 September. The station was clean. It is cleaned weekly. Cooling was good. The SO2 monitor was checked for dust inside but no dust was found although the monitor had not been cleaned inside since it was installed four months ago. Data from the portable meteorology tower was collected regularely. CTS has provided a replacement for the missing portable met. power supply. The documentation was good. Notes were taken at every visit although some parameters were missing.

Suggested actions: None

Gumhorrya: The station was visited 7 September. The station was clean. It is cleaned weekly. Cooling was good. No dust. A lot of people were using the room some smoking. An open window behind the monitors probably let a lot of dust and heat into the room. A lot of dust had been cleaned by CHEM from inside the monitors in May after three months of operation. Frequent power failures causes problems for the HC monitor - flame will not ignite and H2 generator will not restart. This is normal. The NOx monitor reported too low flow. It may be that the pump needs repair. The CO monitor reported low flow. The PM10 monitor is placed outside the window on a small area with no walls. It is dangerous and probably not possible to clean the PM10 hat. The data logger records 0.0 and flaggs data with 'c'after power failures. This is reset by the next automatic zero calibration. CTS 'solved' the problem by running a 1 min. automatic zero calibration every 5 hours. This is not a solution only an easing of the symptoms. The PC mouse is not working. The documentation must be improved.

Suggested actions: The PC mouse must be replaced. The open window behind the monitors must be closed to prevent dust and heat from entering the station. The room is too big and used by too many people to seccure a stable environment. The frequent power failures shortens the lifetime of all monitors. A UPS should be installed to at least serve the HC monitor including H2 generator, zero air generator, air compressor and data logger. If the quality of the electrical power is not improved and the window can not be closed one should consider to shut down the station until conditions have improved. Otherwise more monitor malfunctions will occur. The NOX monitor needs repair, probably of the pump. The low flow of the CO monitor must be checked. The data logger

software should be reinstalled. The 1 minute average values for the flagged '0.0' values exists in the data logger. They can be downloaded and used to restore the missing 1 hour values.

Maintenance routines must be brushed up in order to get better performance and documentation.

Qulally: The station was visited 7 September. The station was clean. It is cleaned weekly. Cooling was insufficient. Air cond. seemed to be out of order and the instruments reported too high inside temperature. Although the monitors had not been cleaned inside during the last 45 days only little dust was found. There had been water condensation in the intake tubes but this had been solved by increasing the setpoint temperature and directing the air cond. fan away from the tubes. There had also been water condensation in the charcoal scrubber of the 145 PT calibrator. The scrubber material had been changed. The PM10 monitor is still at NIS. It was supposed to be installed in April but the shelter was not prepared for it.

Suggested actions: The air condition needs maintenance. Install a table for the PM10 monitor and install the PM10 monitor.

IGSR: The station was visited 10 September. The station was clean. It is cleaned weekly. Cooling was good. Although none of the monitors had been cleaned inside since the installation 6 months ago very litle dust was found inside. The shelter is still full of leaks and water enters the shelter during rain. The CO monitor had an elevated zero level of 4 ppb. It is probably in good order and needs only to be recalibrated. The SO2 monitor measures very low SO2 concentrations (<1ppb) which is probably not correct. It responds to the daily zero/span check. The HC working standard gas cylinder used to perform automatic daily zero/span checks is almost empty. The PM10 monitor reports values in the order of 300 ugram/m^3. According to IGSR these are too high readings. They have measured only 200 ugram/m^3 TSP using their own high volume sampler. The Met. station looked good. The room for the data logger had been refurbished. There were too much dust inside the room. The TLOW temperature sensor fluctuated too much (+- 6 degrees).

Suggested actions: The leaks in the shelter must be closed before the winter. The CO monitor must be recalibrated. The SO2 monitor must be checked and recalibrated. A new HC working standard gas cylinder must be procured. It should be considered to switch from daily automatic zero/span checks of the HC monitor to a weekly manual zero/span check. The life time of the gas cylinder would increase from 6 months to maby as much as 3 years. The CO monitor is already checked only weekly to avoid possible leak of CO gas inside the shelter. The PM10 monitor must undergo a flow and mass calibration. If the values are still considered high a second PM10 monitor could be run in parallel.

The problem with the fluctuating TLOW values must be investigated. The junction box at the tower and all signal cables should be replaced by new ones.

G.3.2.d. EIMP

Air Quality Monitoring

Work Plan October November 1998

Date	Name	Task	Comments
		•	
98.10.07 Wednesday	RD	• Checked PM10 HiVol sampler at • storage to Nasr City • Transfer sequential samplers to Nasr City	Ok..
98.10.08 Thursday	RD	• **Nasr City:** Installing' • Train CEHM staff	installation and training
98.10.09 Friday			
98.10.10 Saturday			
98.10.11 Sunday	all	• Staff meeting • Weekly meeting at CHEM • Component meeting at EIMP	Arrival B Sivertsen
98.10.12 Monday	RD, BS HA RD	• Meeting BS, programme evaluation and planning • To storage for filters and dust fall collectors	
98.10.13 Tuesday	RD BS, HA	• Transfer sequential samplers from NIS to Tabbin South • **Tabbin South:** Installing • To CEHM, data collection and Chem lab. Chemicals	 Chemicals have to be ordered quickly, Okay!
98.10.14 Wednesday	RD, HA BS	• **Nasr City** inspection, fundation for HiVol, Continue calibration ? • Time schedules, planning meeting	
98.10.15 Thursday	BS RD HA	• To London, meeting EU, Urban air • **Storage** All filters and filter holders to CEHM • Clean and check meteorology sensors • Check electricity for Fum ElKhalig and Maadi. Telephone line status?	
98.10.16 Friday			
98.10.17 Saturday			
98.10.18 Sunday	all	• Staff meeting • Weekly meeting at CEHM • Component meeting at EIMP	 Oddvar Royset (OR) arrives
98.10.19 Monday	RD BS. OR all	• Install sampler at Tabbin South. • To CEHM at 12:00 • Meeting with Amr ElSoueini CTS	Check lab. Meet chemists
98.10.20 Tuesday	BS, OR RD	• Training wet chemistry starts at CEHM • Introduction seminar at CEHM • Check PM10 monitor to **Quolaly** • Install and calibrate PM10 monitor:	

Date	Name	Task	Comments
	BS	Check SO2 and NOx monitors and PT c • Data base specifications	
98.10.21 Wednesday	RD OR BS, HA BS, HA +	• To NIS, SO_2 monitor for Maadi, gas for Alex etc. • On-the-job training chemical anal SO_2 • 10:00 To Shoubra and to Abu Zabel (inspect site for samplers), leave passive samplers (doublicates) • 14:00 meeting Tarek/EIMP	
98.10.22 Thursday	RD OR BS, HA all BS	• Prepare Ozone and equipment for Alex • Chemical anal NO_2 theory and practical • CEHM system manager, data evaluation • 14:00 Air quality staff meeting at CEHM • Inspect shelter Alex.	shelter for Alex?
98.10.23 Friday			
98.10.24 Saturday			
98.10.25 Sunday	OR all all	• Chem. Anal NO_2 by IC • 10:00 Staff meeting • 12:00 To Alexandria	
98.10.26 Monday	OR all	• Passive sampling SO_2 and NO_2 theory • Alexandria site visits Abu Keir, Gheat-el Inab, EL Azafra, El-Max	
98.10.27 Tuesday	OR all	• Passive samples analyses by IC • **IGSR Alexandria:** • Check and calibrate SO_2, NOx, CO, HC and PM10 monitors and PT • check met. Station at IGSR • prepare shelter for ozone??	Low values - SO2 monitor High values - PM10 monitor CO monitor - High zero
98.10.28 Wednesday	OR BS, HA RD	• SO_2 practical exercises, data storage using spread sheets • data evaluation, reporting at IGSR • Calibrate and repair monitors	
98.10.29 Thursday	BS RD	• Continue training • Install Ozone at roof, IGSR II (backgr) • Return to Cairo in afternoon/evening	(If shelter is placed on roof)

Air Quality Monitoring
November 1998

Date	Name	Task	Comments
98.10.31 Saturday			
98.11.01 Sunday	OR all all	• High volume sampler, lead analyses? • 10:00 Staff meeting • 14:00Weekly meeting at CEHM • Component meeting at EIMP ??	
98.11.02 Monday	OR RD BS, HA BS	• Practical examples, perform analyses • NIS calibrating monitors? • Prepare monitors for Fum ElKhalig (Maadi ?) • Check and prepare data logger and accessories (travelling standards?) from CEHM • Passive samplers from • Abu Zabalnspect 6 October • Reporting	(check if HC is finished?) alt 2: Calibrate samplers
98.11.03 Tuesday	RD BS OR	• **Fum ElKhalig:** Installing • Data base specification presented? • Exercises, summarising training	
98.11.04 Wednesday	RD BS, HA OR	• **Fum ElKhalig:** Installing • Inspection 10 Ramadan • End of mission report	
98.11.05 Thursday	OR RD	• Return to Norway • **Fum ElKhalig:** Installing • Return trav. std. to CEHM	
98.11.06 Friday			
98.11.07 Saturday			
98.11.08 Sunday	RD all	• Holiday • 10:00 Staff meeting • 14:00 Weekly meeting at CHEM • Component meeting at EIMP?	
98.11.09 Monday	RD BS HA	• Holiday • Planning and reporting • Electricity and tele.lines for Alex?	
98.11.10 Tuesday	RD BS, HA	• Dust fall sampler from storage to **Abu Zabel:** Installing • Prepare instruments for Maadi • Reporting, data interpretation	
98.11.11 Wednesday	RD BS	• Install **Maadi** • • Annual report for CEHM	
98.11.12 Thursday	RD HA,BS	• Install **Maadi** • • Reporting and data presentation	
98.11.13 Friday			
98.11.14 Saturday			

Date	Name	Task	Comments
98.11.15 Sunday	all	• 10:00 Staff meeting • 14:00 Weekly meeting at CHEM • Component meeting at EIMP?	
98.11.16 Monday	HA,BS RD	• To Suez, Ismailia, • Finalise **Maadi** • Start calibrating monitors for Abu Keir at NIS	
98.11.17 Tuesday	HA,BS RD	• To Port Said • Data logger , accessories, PM10 HiVol sampler and Dust fall sampler for Abu Keir from storage to CEHM for assembly •	
98.11.18 Wednesday	RD	• Calibrate and check instruments and data logger for **Abu Keir** at CHEM	
98.11.19 Thursday	HA, BS RD	• Visit to Meteorological Service? • Prepare equipment for Alexandria	
98.11.20 Friday			
98.11.21 Saturday			
98.11.22 Sunday		• 10:00 Staff meeting • 14:00Weekly meeting at CHEM • Component meeting at EIMP	
98.11.23 Monday	RD, BS	• To **Alexandria** • SO2 and NOx monitors, accessories, data logger, PM_{10} sampler to Abu Keir	
98.11.24 Tuesday	RD BS	• **Abu Keir:** Install SO2 and NO2 monitors and PM10 HiVol sampler and Dust fall sampler • Data handling and reporting	
98.11.25 Wednesday	RD BS	• **Abu Keir:** Installing • Return to Cairo	
98.11.26 Thursday	RD BS, HA	• **El Max** , Install PM10 HiVol sampler and SO2 and NO2 sequential samplers and Dust fall sampler • Prepare 10 Ramadan, reporting	
98.11.27 Friday			
98.11.28 Saturday			
98.11.29 Sunday	BS,HA RD	• Staff meeting • **El Azafra** , Install SO2 and NO2 sequential samplers	
98.11.30 Monday	RD	• SO2 and NO2 sequential samplers for **Gheat El-Inab** , Install PM_{10} HiVol sampler and SO2 and NO_2 sequential samplers • Return to Cairo	

EIMP

Air Quality Monitoring
Work Plan December 1998

Date	Name	Task	Comments
98.12.01 Tuesday	RD HA, BS	• Calibrate and prepare SO_2 and NO_2 sequential samplers for 10 Ramadan • Status at Meteorological Institute??	
98.12.02 Wednesday	RD	• Install **10 Ramadan**	
98.12.03 Thursday		• NIS cont. calibrating SO2 and NO2 sequential samplers at NIS	
98.12.04 Friday			
98.12.05 Saturday			
98.12.06 Sunday		• 10:00 Staff meeting • Weekly meeting at CHEM • Component meeting at EIMP	
98.12.07 Monday	RD	• SO2 , NO_2 sequential samplers, PM_{10} HiVol to **6 October City** • Installing and checking instruments	
98.12.08 Tuesday	BS RD	• Leaving Cairo, Mission ended • Finalise **6 October City**	
98.12.09 Wednesday	HA	• Site in ElMinya prepared?	
98.12.10 Thursday		•	
98.12.11 Friday			
98.12.12 Saturday			
98.12.13 Sunday		• 10:00 staff meeting • 14:00 Air quality meeting	
98.12.14 Monday	HA	• Start checking sites in Delta	
98.12.15 Tuesday			
98.12.16 Wednesday			
98.12.17 Thursday			
98.12.18 Friday	RD	Christmas holyday, to Norway	
98.12.19 Saturday			
98.12.20 Sunday		• Staff meeting • Weekly meeting at CHEM	
98.12.21 Monday			
98.12.22 Tuesday			
98.12.23 Wednesday			
98.12.24 Thursday		**Merry Christmas!**	
98.12.25 Friday			
98.12.26 Saturday			

EIMP G.3.2.e.

Note

Subject Air Quality Monitoring

Date October 1998

To Heba Adly

Copy RD, LM, M Fathy

From B Sivertsen

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

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Tasks to be undertaken October-December 1998 by the Air Quality Monitoring EEAA counterpart

Several tasks will have to be undertaken by the Task Manager counterpart, Heba Adley during the fall 1998. These tasks contain a continuous training in air pollution monitoring and will also serve as a preparation of the installations of air quality monitoring and sampling instruments in Egypt.

1. The following sites will have to be prepared in the Greater Cairo area (in priority sequence): Fum El Khalig, Maadi, Abu Zabel, 10 Ramadan City, 6 October City, Meteorological Authority,.

2. The following sites have to be prepared in Alexandria:, Ozone at IGSR, Abu Keir College, ElMax, ElAzafra-ElAzhar Univ., Gheat El-Inab.

3. Follow up ordering of electricity where needed (Fum ElKhalig, Maadi ++)

4. Follow up ordering and installations of telephone lines.

5. Final clarifications/agreements with the Meteorological Authorities concerning use of their site as one of the EIMP/EEAA monitoring stations, and also a possible future agreement concerning co-operation. (ref: Ahmed A. El Seoud)

6. Shelters have to be prepared for a number of sites; Ozone Alex (IGSR II), ElMax, El-Azafra, Gheat El-Enab, Abu Keir. Heba follow up agreement with Nasar??

7. Gomhoriya station has to be prepared with AirCon, and instruments moved and re-calibrated (support by CTS). Check agreement with Arab contractors (Nasar)

8. Follow up operations and prepare reports at EEAA.

9. Prepare Diary as input to monthly status report for EIMP.

10. What happened to purchase of GPS (geopositioning) for Air Component

Note

Subject: **Air Quality Monitoring**

Date: 14 October 1998

To: RD, LM, HA

Copy: M Fathy

From: B Sivertsen

Environmental Information and Monitoring Programme

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A summary of the status of air quality monitoring was prepared at the arrival in Egypt. The following summary is based upon discussions with Rolf D, Heba A and Tarek ElAraby.

The sites

1. Quolaly
PM_{10} monitor is still at the storage, because of lack of long intake tubes. This will be installed in the near future.
SO_2 monitor need re-calibration (zero line changed?).
NOx monitor okay, but will be re-calibrated

2. Gemoroya street
The general status of the station is not good. Dusty room and lack of temperature control indicate that this station should be refurbished (changed).
The HC measurement problems are mainly due to power failures at this site.
UPS must be evaluated.
NOx monitor has been at CTS for repair (no report), questionable flow, unstable readings?.
CO monitor wrong zero level, has to be calibrated (fixed?)Not correct measurement of NO_2 . Has to be checked when the calibration gases are available.
PM_{10} okay.

4. Nasr City
SO_2 and NO_2 samplers started 9 October (station; Ahmed, CEHM)
PM_{10} high volume sampler not in operation, foundation has to be constructed.

6. Tabbin institute
The room hot and dusty. The site will be considered moved to shelter in the future.
SO_2 monitor okay
NOx monitor wrong NO_2 sata, error in converter? Must be checked and repaired.(CTS?)
PM_{10} monitor is okay, will be calibrated (flow calibration kit?)
Met station okay, sensor must be cleaned every week.

7. Tabbin south
Shelter installed at roof, power problems , measured 175 Volt.
Dust fall collector located at roof, Okay

SO_2 sampler not installed, will be installed in near future

8. Fum AlKhalig
Shelter installed
No power no telephone line (Heba checking situation)
Monitors (SO_2 ,NOx, HC, CO) at CEHM, ready for installation
PM_{10} sampler at storage, ready for installation

10. Shoubra el Kheima
SO_2 monitor okay, (earlier problems solved)
TSP sampler, problems with use of filters, will be checked by Oddvar R.
Portable met tower works. Need battery pack, and the time was incorrectly set.
Find error and re-programme (pass word from CTS on 13 oct.)

11. Giza Cairo University
NOx monitor (from EIMP) okay
SO_2 monitor okay
Ozone monitor okay
Odessa datalogger delivered to CEHM not in use! Data retrieved vie 486 PC
(the station should have a new data logger?)
Meteorlogical station working, but data are "hanging" and temperatures are decreasing occationally. Not explained, to be presented to CTS.
Precipitation installed (working?)

30. IGSR, Alexandria
CO monitor has a zero value which is off line. The monitor needs re-calibration.
SO_2 and NOx will be re-calibrated in October.
The temperature sensor at lower level in tower is wrong. Not needed for the air quality programme (use upper temperature).

33. Ozone background Alexandria
The ozone site will be moved from NIOF to IGSR roof top.
The site will be installed in October

Calibration

Several of the monitors need calibration. Due to lack permeation tubes for SO_2 and NO_2 , and travelling standards for NO, this calibration has not been fully undertaken.
Calibrator (145) at Tabbin problems in hot conditions.

Telephone lines

Tabbin working
Quolaly installed, will operate from ca. 20 October?
Gomhoryia street, problems ; Arab contractors refused to install new line, EIMP will get internal line (what is the status?? Nasar?)
Shoubra, Need money transfer to prepare contract, will be undertaken 15 October.
Maadi, negotiations?
FumAlKhalig, Heba is checking the situation parallel with power problem.

Station/System Manager

The station manager at Shoubra needs re-intallation. CTS should install new version.
Original software from CTS/EMC was requested, where is it?
The performance of the SM has not been improved or changed at all.
Retrieval of data from Tabbin to CEHM attempted on 13 October. Not succeeded. After power failure at Tabbin, the telephone can not reach the files/SM?
Error in files at station. Ali at CTS will change and correct the error this week!!

Shelters

The shelters in Maadi, Fum El Khalig are already installed, but electrical power and air condition is missing.
Nine new shelters is contracted to be developed by M Nasar. The large shelter will be increased 1 m in length, to give room for two Fan Units Air Con on the floor. The outside conditioning unit will be placed on the roof.
The shelters should have an outside roof for heat isolation.

EIMP 6.2.3.g.

Work Notes Okt 1998

98.10.01 Made fax to NILU, reiserekning. Went to City Center together with Anwar and Nasar. Looking for shelded 6 threded (or 8) wire and new boxes for conection of wires at met. Stations.

98.10.04 Dr Tarek at CHEM transferd rack with NOx and O3 monitors. PM10 High Volum and datalogger was allso transferd and innstalled at Congess Hall during the Weekend. It is reported by Nasar : Instruments are in good vorking order. Went to storage to look for Protection cover SO2 and NO2, none was found. Fax to LM today and ask BS to bring some for a start and the rest with LM and OR. Pepared filter for Nsar City (2 weeks, 8+7 filters). Waiting for table at station for several days.

98.10.05 Waiting for table, elektricety, and everything must come to and end if we are going to fullfill our aims in this prosjekt. When BS arrives we have to make a plan how to make it runs easier and pland ahead. Taked to BS and OR today and BS will bring yellow protection caps and NO2 scematics. OR will look in to the difference between glas fiber and quarts fiber filter for TSP and PM10 samplers.Storage: Started chek of PM10 sampler for Nsar City.

98.10.06 Not working day in Egypt.

98.10.07 Finnised chek of PM10 sampler at storage. Prepare for innstaling Nsar City.

98.10.08 Innstalling Nsar City. Fan missing, room dirty, roof full of sand. Not possible to innstall PM10 sampler, need concrate plate with 4 bolts to secure samler to the roof. **Last working day Dr. Nassar.**

98.10.09 Friday.

98.10.10 Saturday.

98.10.11 Staff meeting. Component meeting. Office work. Heba take over Dr Nasar`s work.

98.10.12 Meeting with Bjarne. Prepare equipment for Tabbin South.

98.10.13 Install Tabbin South, exept sequential sampler.Dust fall fastened on the roof of the shelter. Voltage 175 V.

98.10.14 Change filterpack on sequetial samplers SO2 and NO2 at Nsar City. Concreate platform for PM10 sampler not made. Platform will be made next week ????

98.10.15 Transferd all filter holders SO2 and NO2 glas sinter filter to CEHM,Cemistry Lab. Transferd SO2, CO, and HC with regulatores to NIS for calibrations (traveling standards). Controll of SO2 sampler in office (Tabbin South). Timer does not work.Replaced by spare from storage. Must get a new one from NILU Products, **warrenty.**

98.10.16 Friday.

98.10.17 Saturday.

98.10.18 Staff meeting.Office work. Made filter for Tabbin South.

98.10.19 Innstalled sequential sampler at Tabbin South. There is allso innstalled a 220 V stabelizer. Voltage at station only 175 V. Meeting with CTS. All innstuments with problems was gjennomgått.

98.10.20	Started PM 10 monitor sn 650-58033-315 at Qually station. 25 pins konector for analog output was missing and the key was broken in the keyhole. Analog konector will be supplied from CEHM unntill Anwar gets new konectors from local shops. Allso mannual was missing.
98.10.21	Prepare traveling gas standards for SO2, CO and HC at NIS. Forms for traveling gas and SO2 and NO2 was corrected at NIS. Traveling gas from NIS and O3 from CEHM transferd to storage.
98.10.22	Prepare O3 for Alexandria at storage. Component meting at CHEM. CHEM was asked to transfer Fum El-Khalig innstuments to station. Permiation Tubes in Shipment 2 arrived, 3 NO2 and 5 SO2.
98.10.23	Talked to Leif at NILU conserning the problems in making the O3 datalogger for Alex. Work.
98.10.24	Saturday.
98.10.25	Went to storrage to make the last preparation for Alex. Car loaded at 11:30 am and with O3 and traweling standards exept NO for Alex. Left Cairo at 1:00 for Alex. Brought all innstruments to IGSR for safe keeping til next day. Arrived at hotell at 5:30 pm.
98.10.26	Meeting with IGSR and started to calibrate the CO monitor. Zero was 5 ppm above zero. Span was 58 ppm insted of ppm. This was corrected and Mohammed Mamdoh was trained in calibration with traveling standards. Mohamed Rashad is no. 2 in responsebilyty of monitors. Started on HC monitor but did not finelised today.
98. 10.27	Site visits with Bjarne and Heba.
98.10 28	Calibrated SO2 and HC with traveling standards. Shelter arrived from Cairo at 2 pm. No crane to lift it to the roof.
98.10.29	Consentrated on PM10 monitor Flow is 10000 cc/m, standard is 18900cc/m. Chech PM10-innlet, all tubing and pump. Still flow of 10000 cc/min.Zero level corrected on CO by m Mamdoh as controll and part of training.Lift did not arrived today and I left Alex. For Cairo. Home at 8:45 pm.

EIMP

Work Notes Nov. 1998.

98.11.01	Staff meeting. Office work. Meeting at CEHM. Trawling standards to CEHM.
98.11.02	Made 9 sequential samplers ready for calibration at NIS.
98.11.03	Transfer 9 samplers to NIS. Technical meeting at NIS.
98.11.04	Install Fum El-Khalig.
98.11.05	Install Fum El-Khalig. Problems this week in understanding the procedure how CTS is checking out PM10-monitors regarding flow. SS tube is insert in the flow path. Why? No good answer from CTS yet.
98.11.06	Friday.
98.11.07	Saturday.
98.11.08	Holiday.
98.11.09	Holiday.
98.11.10	Prepare dust fall sampler Abu Zabel. Prepare dust fall collectors to CEHM.
98.11.11	Install dust fall sampler at Abu Zabel.
98.11.12	Install (cont.) Fum El-Khalig.
98.11.13	Friday.
98.11.14	Saturday.
98.11.15	Staff meeting, weekly meeting at CEHM. Office work. Transferred NO2 and SO2 monitors to NIS for calibration.
98.11.16	Training in calibration of sequential samplers at NIS (Basra). Installed 24 V trafo for magnetic valve and permeation tubes SO2 and NO2 at F Fum El-Khalig.
98.11.17	Prepare 10 folders (5x2) for Alexandria. Made arrangement for transferring SO2, NOx and rack to storage from NIS and CEHM.
98.11.18	Prepare folders (cont.) Sort storage for instruments to Alexandria. Rack and SO2 and NO2 monitors transferred from NIS and CEHM to storage.
98.11.19	3 NO2 sequential samplers from NIS to storage after calibration of gas meter. 3 SO2 sequential samplers will be calibrated on Saturday and ready on Sonya morning before departure to Alexandria. The 10 folders finalised and all equipment ready at storage and office for transfer to Alexandria.
98.11.20	Friday.
98.11.21	Saturday.
98.11.22	All equipment from storage and office loaded on long bedded truck and transferred to Alexandria.
98.11.23	O3 station Alexandria background started on top of IGSR. Started work on moves Meteorological Station to the same data logger as O3. The cables had to be changed.
98.11.24	Put up and finalised El Max Petrogas. Training to IGSR people included. Instruments at El Max Petrogas is SO2 sampler, NO2 sampler, PM10 high volume sampler and dust fall.

98.11.25	Put up and finalised Gheat El-Inab School. Continued with met.station at IGSR. Instruments at Gheate El-Inab School is SO2 sampler, NO2 sampler and PM10 high volume sampler.
98.11.26	Put up El-Azafra-El Azar University. Finalised moving of met. station at IGSR. Instruments at El-Azafra-El Azar University is SO2 sampler and NO2 sampler.
98.11.27	Friday.
98.11.28	Saturday.
98.11.29	Start installing Abu Quir Collage. Power line finished at 3 pm and I was working until darkness. There is a power switch on the wall of the building inside a steel box, unlocked?
98.11.30	Finalised Abu Quir Collage. Inventory List from all 5 stations sign by Dr. El Sayed Shallaby. Instruments at Abu Quir Collage is SO2 monitor, NOx monitor, PM10 sampler and dust fall.

EIMP G.5.2.

Environmental Information and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467

Memo

To: **Ahmed Abou ElSeoud**
Copy: **Mohammed Fathy, Heba Adly**
From **Bjarne Sivertsen**
Date: **9 November 1998**

Air pollution episodes in Cairo, October 1998

The greater Cairo area experienced an air pollution episode during the last week of October 1998. The following analyses indicate that the real cause for the high air pollution exposure, experienced by a millions of people, was a combination of specific late summer type weather conditions and several type of burning at the surface.

The situation has been analysed based upon data from the EIMP/EEAA air quality monitoring network operated by the Monitoring Laboratory at CEHM/Cairo University.

Originally complaints from Nasr City supported by measurements lead to a conclusion that the main source for the high air pollution episode might have been an open air waste burning area south west of Nasr City in the Kattamayia area.

A closer examination of the EIMP data has revealed that this conclusion only revealed a minor part of the problem, covering a major part of Cairo. Air pollution concentrations measured at El-Gomhoriya street in central Cairo, at Giza and at Tebbin indicate that there must have been wide spread sources of air pollution at the surface. Particle concentrations (PM_{10}) were observed at very high levels during night time hours from 23 October to 28 October.

The winds were blowing from around north during the whole period. At night the winds weakened to become almost calm conditions at the surface level. In addition cooling of the air at the surface gave rise to temperature inversions, which put a lid above Cairo, hindering air pollution to be diluted in the atmosphere.

During these relatively cool nights wide spread burning took place at the surface. Smoke was observed both from local waste burning, burning of rubbish, from various

type of fires and from small industries burning rubbish, tires and mazoot. Hundreds of small private industries contribute in this way to a undesirable high pollution level, giving rise to health impacts.

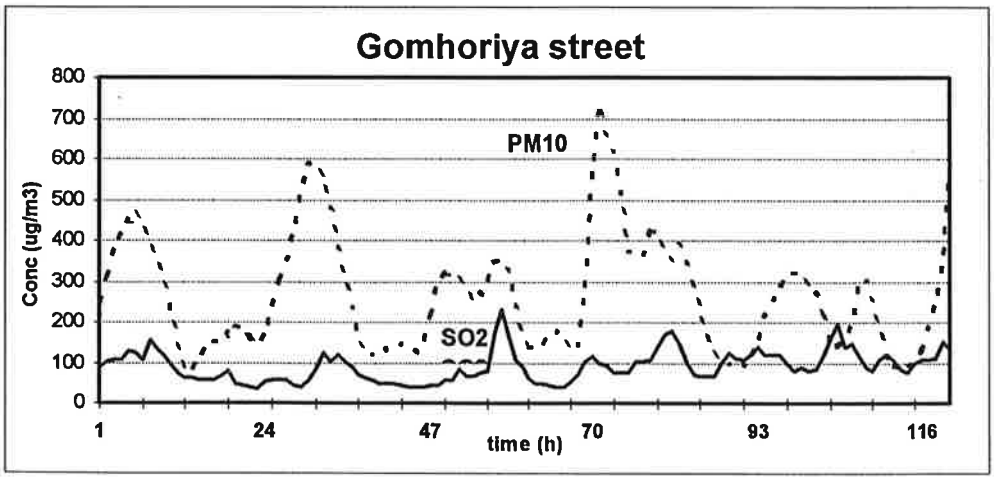
The one hour average PM_{10} concentrations at El-Gomhoriya street in the central part of Cairo, exceeded 500 microgram/m^3 almost every night in during this episode. The daily averages were about 300 microgram/m^3, which is almost 4 times more than the air quality limit given in Law no.4. At Nasr City the SO_2 concentrations exceeded the Air Quality limit values by more than a factor of 2. Also at Tebbin the PM_{10} concentrations were higher these days than normally observed during northerly winds at this site.

To reduce these air pollution episodes it will be necessary to regulate and reduce the open air burning. Burning of rubbish, old tires and mazoot in small enterprises without stacks or clean up equipment should be totally banned.

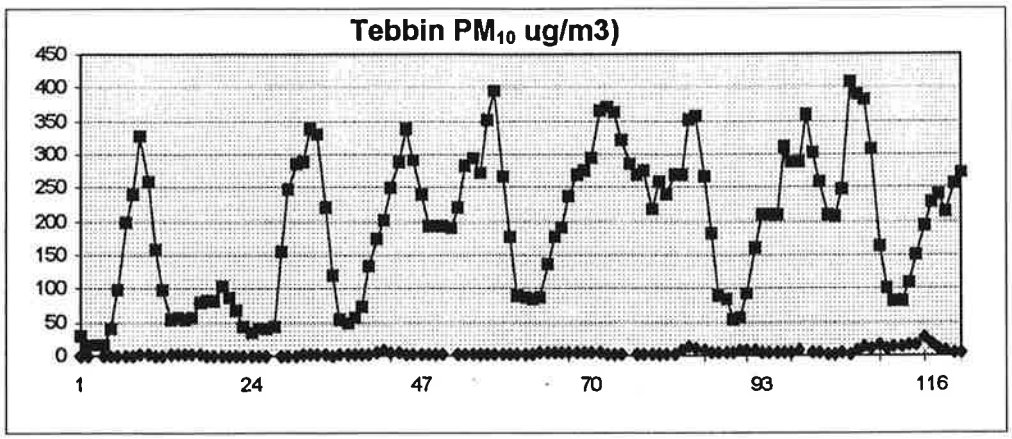
Various diesel driven vehicles; diesel buses, trucks and lorries with inadequate emission control, also contribute to these air pollution episodes during meteorological conditions described above.

Support for the discussions

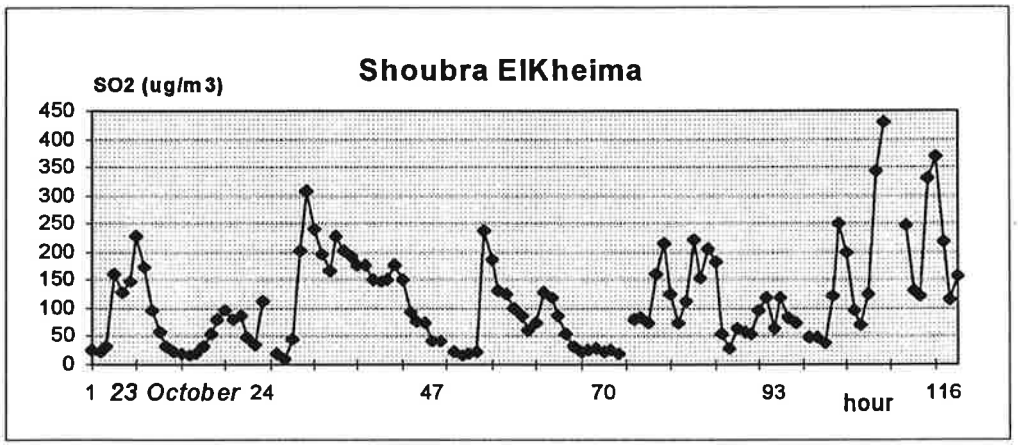
To illustrate the discussion above concerning the episodes, the following Figures illustrates the high concentrations recorded at several sites at night time and in the early mornings.



High concentrations of PM_{10} and SO_2 occurred at El-Gomhoriya street every morning. The PM_{10} concentration exceeded ten times the 70 ug/m^3 level, which is the 24 h average air quality limit value for Egypt. The daily averages were about 4 times the air quality limit value.



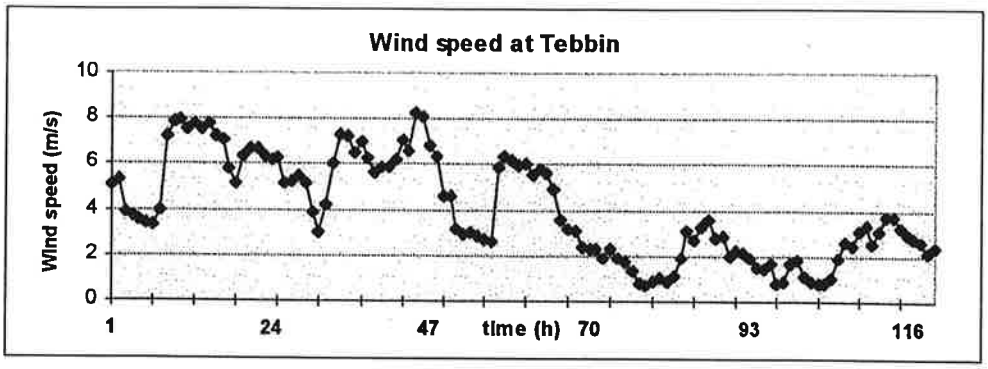
Also at Tebbin the PM_{10} concentrations show very high concentrations at night time at the early morning throughout the period. The 24 h average limits exceeded the air quality limit value of 70 ug/m^3, which is unusual for this site.

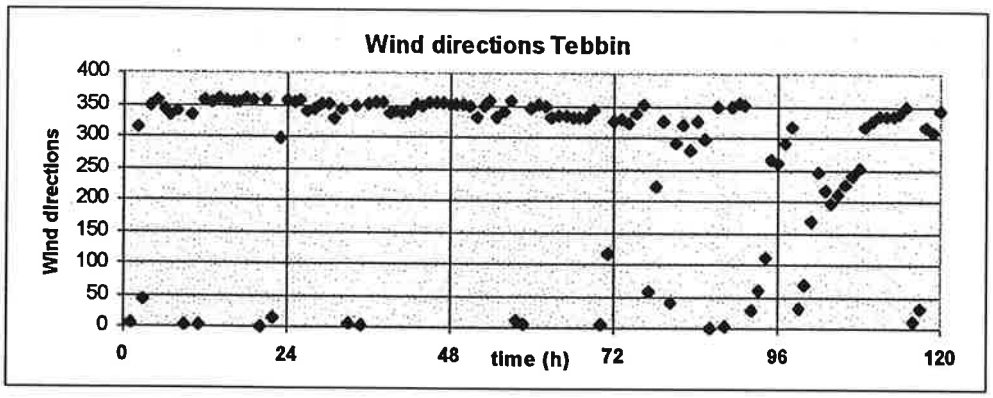


The same pattern as above was evident at Shoubra with very high SO_2 concentrations exceeding the air quality limit values for Egypt at several occasions.

To explain the variations meteorological conditions measured at Tebbin show that during the night time hours the wind speed dropped to low values. These measurements are taken at the roof about 35 m above the surface. At the surface it was reasons to believe that it was almost calm conditions, with a strong surface inversion suppressing all emissions of pollutants emitted at the surface.

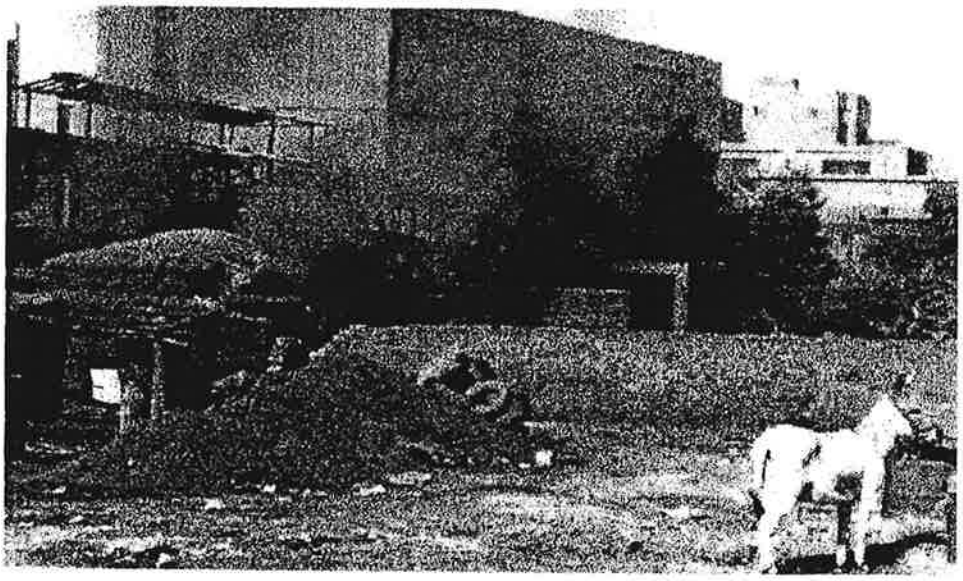
The wind was mostly blowing from the northerly directions. Only on 26 October it was varying and also blowing at very low wind speeds from other directions. This was the day with generally the highest concentrations, which again supports the assumption of a general air pollution episode linked to specific weather conditions.





The sources

The air pollution episodes in Cairo is normally linked to specific meteorological conditions and to emissions from numerous small sources at the surface.

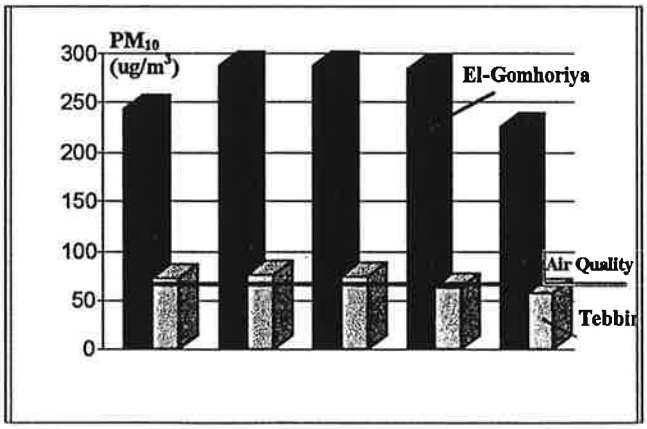


Thousands of small enterprises are burning mazoot, old tires and garbage as part of the production. In the above case black smoke is emitted at the surface from a foul factory in Shoubra.

Burning of garbage at the surface is another source for low level air pollution. These emissions will be trapped in stable air (inversions) during night time conditions with low wind speed.

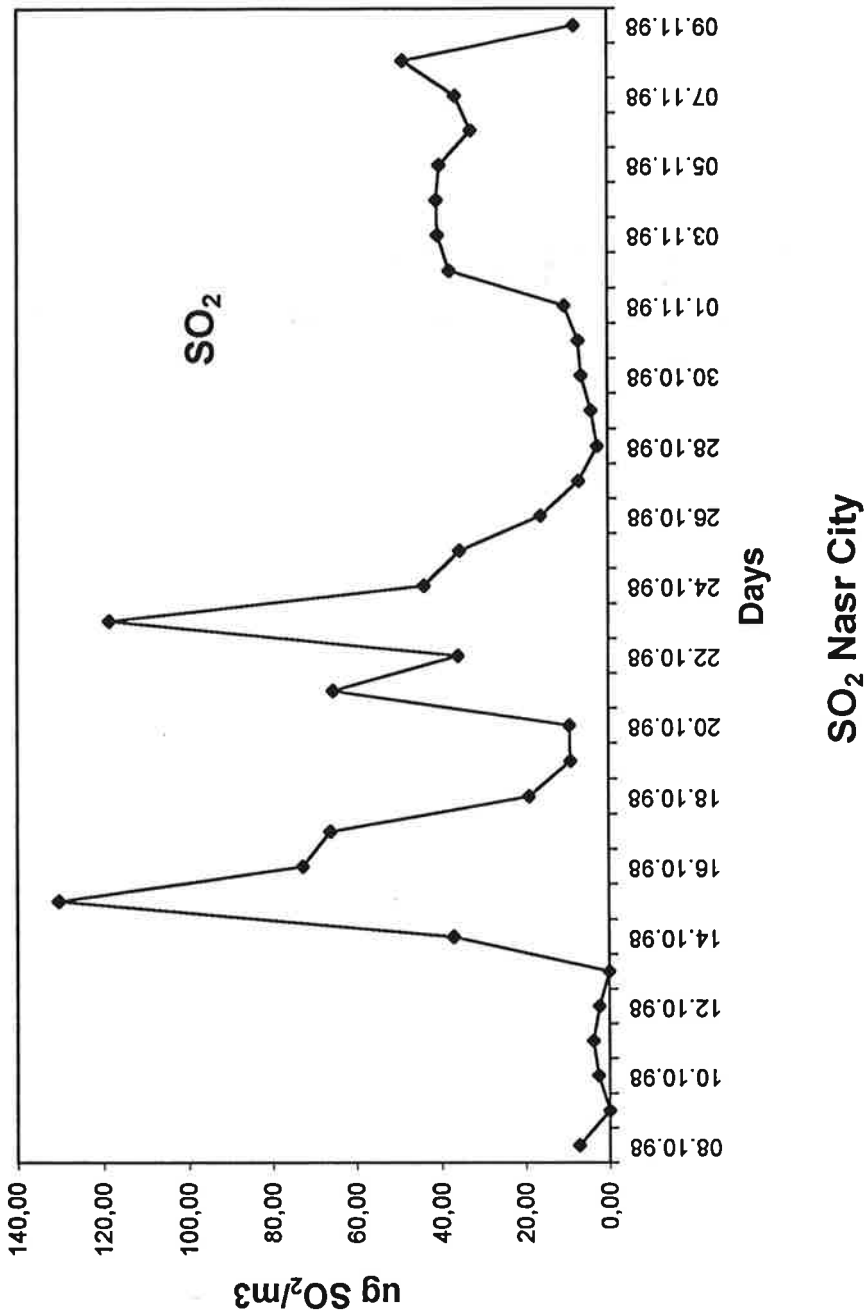
Large diffusive emissions of dust from various large industries also contributes to the air pollution episodes. These diffusive emissions are normally at low levels above the surface, and will also be trapped in the cold stable air.

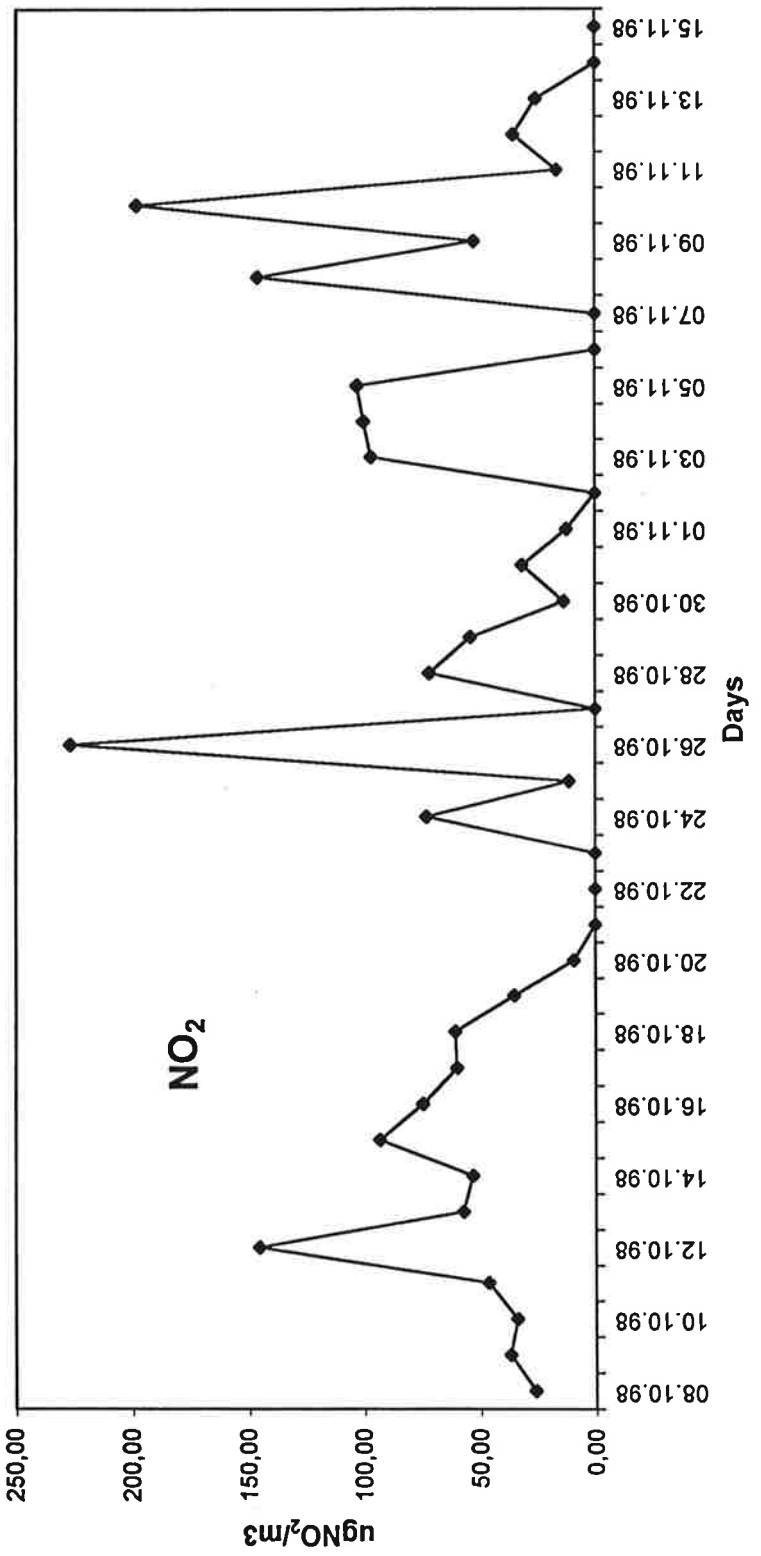
To summarise the levels measured during the episode, the 24 h average concentrations of PM_{10} are shown in the following Figure.
PM_{10} concentrations at El-Gomhoriya exceeded the air quality limit of Egypt (Law no.4) by a factor of 4 during four of the days.
Also at Tebbin the PM_{10} concentrations exceeded the air quality limit values 3 of the 5 days.



The SO_2 levels at Shoubra exceeded the limit values 2 days, and the one hour average concentration limit of 360 $\mu g/m^3$ was exceeded three times. Also CO concentrations at El-Gomhoriya exceeded the 8 h average limit value of 10 mg/m^3 on 17 October.

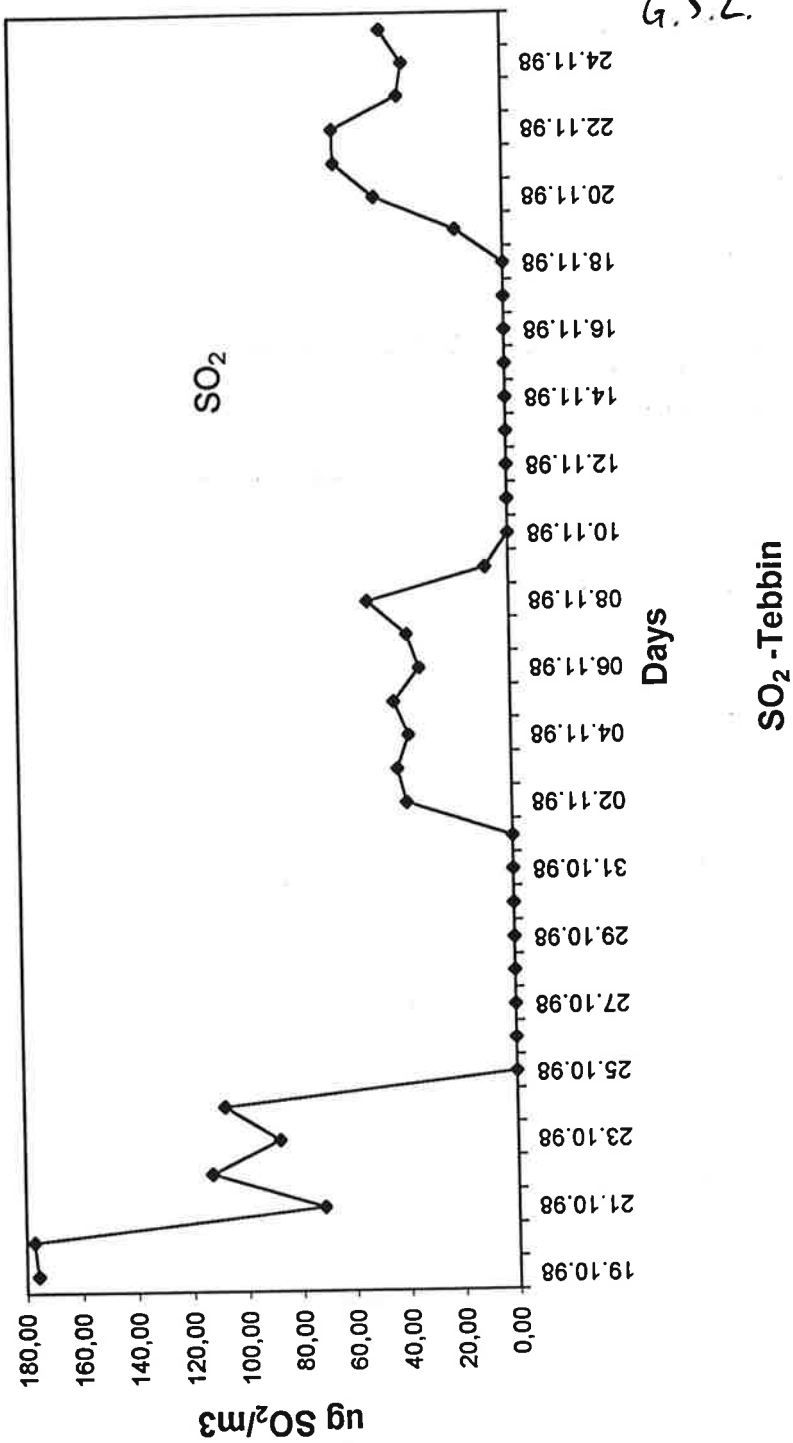
G. 5.2.b.


SO2
ug SO2/m3
140,00
120,00
100,00
80,00
60,00
40,00
20,00
0,00
08.10.98
10.10.98
12.10.98
14.10.98
16.10.98
18.10.98
20.10.98
22.10.98
24.10.98
26.10.98
28.10.98
30.10.98
01.11.98
03.11.98
05.11.98
07.11.98
09.11.98
Days
SO2 Nasr City



NO_2-Nasr City

G.5.2.


SO2
ug SO2/m3
180,00
160,00
140,00
120,00
100,00
80,00
60,00
40,00
20,00
0,00
19.10.98
21.10.98
23.10.98
25.10.98
27.10.98
29.10.98
31.10.98
02.11.98
04.11.98
06.11.98
08.11.98
10.11.98
12.11.98
14.11.98
16.11.98
18.11.98
20.11.98
22.11.98
24.11.98
Days
SO2 -Tebbin

6.6.3.

EIMP Passive sampling programme

	Site name	Area type	Month for taking samples				Passive		Other		
	Cairo										
3	Meteorological Inst	Urban / Res.	Jan	April	July	Oct	NO2	SO2			
5	Maadi EEAA	Residential	Jan	April	July	Oct	NO2	SO2			
7	Tabbin south	Industrial	Jan	April	July	Oct	NO2	SO2			
9	Abu Zabel	Industry/res	Jan	April	July	Oct	NO2	SO2			
10	Shoubra el Kheima.	Industrial	Jan	April	July	Oct	NO2	SO2			
12	Gizapyramid	Monument	Jan	April	July	Oct	NO2	SO2			
	Sakkara	Monument	Jan	April	July	Oct	NO2	SO2			
	Tahrir Sq. Museum	Urban	Jan	April	July	Oct	NO2	SO2			
	Shoubra (Kamela)	Residential	Jan	April	July	Oct	NO2	SO2			
	Helwan (Maher)	Residential	Jan	April	July	Oct	NO2	SO2			
	Nasr City (Tarek)	Residential	Jan	April	July	Oct	NO2	SO2			
	Heliopolis (Tarek)	Residential	Jan	April	July	Oct	NO2	SO2			
	AinShams (Ahmed)	Residential	Jan	April	July	Oct	NO2	SO2			
	Canal area										
	Suez industrial	industrial/res.	Jan	April	July	Oct	NO2	SO2			df
16	Port Said	Residential	Jan	April	July	Oct	NO2	SO2			p
17	Ismailia	urban/resid	Jan	April	July	Oct	NO2	SO2			p
	Upper Egypt										
18	El Fayum	urban	Jan	April	July	Oct	NO2	SO2			df
19	El Minya	Res./ Industrial	Jan	April	July	Oct	NO2	SO2		p	df
21	Assyut 2	residential/urba	Jan	April	July	Oct	NO2	SO2		p	df
22	Naga Hammadi	industrial/res	Jan	April	July	Oct	NO2	SO2			
	Luxor, Karnak	monument	Jan	April	July	Oct	NO2	SO2			
	Luxor, Temple	monument	Jan	April	July	Oct	NO2	SO2			
24	Edfu	Industry/urban.	Jan	April	July	Oct	NO2	SO2			df
25	Kom Ombo	industrial	Jan	April	July	Oct	NO2	SO2			p
26	Aswan	urban/residenti	Jan	April	July	Oct	NO2		p	df	M
	Sinai Area										
	Sharm ElSheik	city, tourist	Jan	April	July	Oct	NO2	SO2			
27	Sharm ElSheik	background	Jan	April	July	Oct	NO2			O3	df
	Alexandria										
33	IGSR, Background	Urban regional	Jan	April	July	Oct	NO2	SO2		O3	M
	AlAzafra (Shallaby)	Residential	Jan	April	July	Oct	NO2	SO2			
	Roman theatre	Monument	Jan	April	July	Oct	NO2	SO2			
	Delta Area		Jan	April	July	Oct					
40	Kafr Dawar	Industrial	Jan	April	July	Oct	NO2	SO2		p	df
34	Damanhur	industrial/res	Jan	April	July	Oct	NO2	SO2			
	Kafr el Zayet south	industrial	Jan	April	July	Oct	NO2	SO2		p	
36	Tanta	urban	Jan	April	July	Oct	NO2	SO2		p	
39	Domyat	resid	Jan	April	July	Oct	NO2	SO2		p	df

Instruments

Monitors: S (SO2),N (NO2),O3, M (met)

Samplers: s,n,p,pp(passive), df (dustfall)

Environmental Information and Monitoring Program G.7.1.a.
(EIMP)

EEAA
Egyptian Environmental
Affairs Agency

Danida
Danish International
Development Assistance

I

G

S

R

Quarterly Report

No. 2

AIR QUALITY IN EGYPT BASED UPON EIMP DATA

(Alexandria and Nile Delta)

Institute of Graduate Studies and Research
University of Alexandria

June, 1998

Contents

Table (20): Correlation Coefficient for SO_2, NO_2, CO, NMHC and PM_{10} at IGSR station, Alexandria, June 1998.

Pollutant	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	NMHC (ppm)	PM_{10} ($\mu g/m^3$)
NO_2 ($\mu g/m^3$)	1.00	0.36	0.72	0.76	0.44
SO_2 ($\mu g/m^3$)	0.36	1.00	0.27	0.43	0.49
CO (mg/m^3)	0.72	0.27	1.00	0.70	0.37
NMHC (ppm)	0.76	0.43	0.70	1.00	0.55
PM_{10} ($\mu g/m^3$)	0.44	0.49	0.37	0.55	1.00

Table (21): Correlation Coefficient for SO_2, NO_2, CO, NMHC and PM_{10} at IGSR station, Alexandria, 1 April - 30 June 1998.

Pollutant	NO_2 ($\mu g/m^3$)	SO_2 ($\mu g/m^3$)	CO (mg/m^3)	NMHC (ppm)	PM_{10} ($\mu g/m^3$)
NO_2 ($\mu g/m^3$)	1.00	0.52	0.50	0.71	0.41
SO_2 ($\mu g/m^3$)	0.52	1.00	0.15	0.50	0.46
CO (mg/m^3)	0.50	0.15	1.00	0.03	0.20
NMHC (ppm)	0.71	0.54	0.03	1.00	0.45
PM_{10} ($\mu g/m^3$)	0.41	0.46	0.20	0.45	1.00

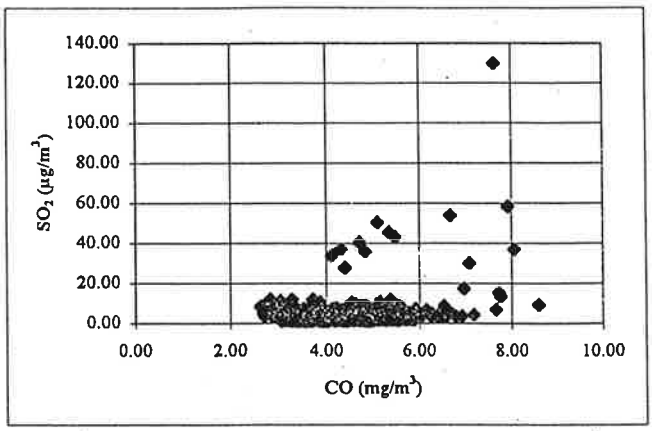


Figure (53.c): SO_2 ($\mu g/m^3$) vs. CO (mg/m^3) during June 98, at IGSR station, Alexandria. (Correlation Coefficient = 0.27).

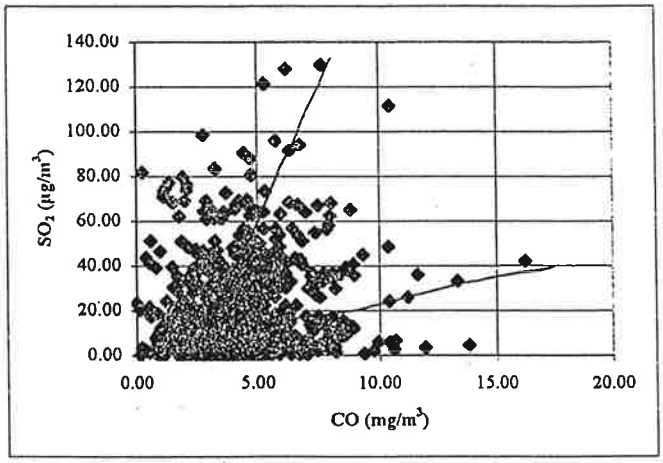


Figure (53.d): SO_2 ($\mu g/m^3$) vs. CO (mg/m^3) during the period from April to June 98, at IGSR station, Alexandria. (Correlation Coefficient = 0.15).

6.7.1.6. EIMP

**Environmental Information
and Monitoring Programme
EEAA - Danida - COWI
30 Misr-Helwan Str. Maadi, Cairo, Egypt
Tel: 202 525 6442, Fax: 202 525 6467**

Memo

To: Mohammed Fathy
Copy: Ahmed Abou ElSeoud, Heba Adly
From Bjarne Sivertsen
Date: 6 December 1998

Time for submitting annual reports from Monitoring

I realised to day that CEHM and IGSR in their contracts is requested to deliver an annual report latest one month after the end of the calendar year. This is practically IMPOSSIBLE.
As far as I know no air quality monitoring and sampling systems in the world can require an annual summary report with quality assured data and statistical results within this short time. We normally deliver the ANNUAL report 6 months after the end of the year.
The programme contains samples that have to be transported from the field sites to the lab (this may take up to one month). The samples have to be analysed, fed into the data base and quality controlled (these operations may take another 3 weeks). Then the quarterly reports have to be prepared, presented, discussed and approved (which may take another 1-2- months).

How can the Monitoring Laboratories be requested to present the annual report before after 3 months???

These clauses has to be modified, and they will be changed for the next year's contract. EIMP/EEAA also will have to consider these facts when evaluating the performance and paying the quarterly and annual fees.

Appendix H

Reference lab. responsibilities

A.1 People and colleagues
A.2 Job descriptions

EIMP

Note

Subject: REFERENCE LABORATORY

Date: Samplers fro Ref.Lab. Air

To: 26 Oct 1998

Copy: BS

From: UOL

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

30 Misr-Helwan Street
Maadi, Cairo, Egypt

Tel.: (+202) 525 6439/42/ 47/ 52
Fax: +202 525 6467

E-mail: eimp@intouch.com

Bjarne!

In the spring we agreed that NIS could borrow a complete set of samplers until you needed them to go into the last station on your programme. However, I need written confirmation from you to get them out of the store. Therefore, will you please confirm that a set of samplers can be sent to NIS as a loan until needed by the Air Monitoring Programme? I do not know the exact names of all samplers. Would you therefore please write the names below and sign?

It is hereby confirmed that the following samplers can be sent to the Reference Laboratory - Air as a loan until required by EIMP:

EIMP

Note

Subject: REFERENCE LABORATORY
Division of responsibilities within quality assurance in the air monitoring network

Date: 5 Nov 1998

To: BS

Copy: MEA, HA

From: UOL

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

30 Misr-Helwan Street
Maadi, Cairo, Egypt

Tel.: (+202) 525 6439/42/ 47/ 52
Fax: +202 525 6467

E-mail: eimp@intouch.com

The division of responsibilities for steps in quality assurance in the air monitoring network was discussed between LM, RD, MEA and UOL on 8 September 1998, and the attached activities agreed upon.

I suggest that we communicate this to our respective institutions at a suitable early opportunity.

Quality control and external quality assessment in the EIMP air monitoring network				
	Monitoring Institution	**Reference Laboratory**	**Establishing traceability**	
Monitors			**Outside Egypt**	**In Egypt**
SO_2, NO_x, CO, HC (hydrocarbons)	multipoint calibration annually (and for new monitors or after repair)	verification of multipoint calibration of 15-20% of monitors annually	calibration of mass flow controllers of Ref.Lab. multipoint calibrator bi-annually	Calibrate mass flow controllers of Ref.Lab. multipoint calibrator annually using traceable flow meters Compare Monit.Inst calibrator against Ref.Lab. calibrator
	on-site two point re-calibration (travelling gas standard) quarterly	on-site performance audit (similar to proficiency test) annually	Ref.Lab. purchase certified reference materials from NIST or similar supplier	
	zero/span check of calibration automatic (permeation tubes) daily and manually (working gas standard) weekly	supply and calibration of travelling and working gas standards (gas cylinders)	Ref.Lab. purchase certified reference materials from NIST or similar supplier	
O_3	multipoint calibration annually (and for new monitors or after repair)	verification of multipoint calibration of 15-20% of monitors annually	calibration of Ref.Lab. photometer of ozone calibrator bi-annually	Compare Monit.Inst calibrator against Ref.Lab. calibrator
		on-site performance audit by parallel monitor measurement annually		re-calibration of Ref.Lab monitor before and after each performance audit
	zero/span check of calibration automatic, daily			

Quality control and external quality assessment in the EIMP air monitoring network				
	Monitoring Institution	**Reference Laboratory**	**Establishing traceability**	
PM_{10}*	check of flow by foil on-site calibration of flow quarterly	on-site performance audit of flow annually	calibration of Ref.Lab. wet gas meter bi-annually	
Samplers			**Outside Egypt**	**In Egypt**
High-volume, PM_{10} Sequential	calibration of flow quarterly on-site calibration of flow quarterly	on-site performance audit of flow annually calibration of flow annually	calibration of Ref.Lab. wet gas meters bi-annually calibration of Ref.Lab. flow meters bi-annually	calibration of Monit.Inst. flow meters annually calibration of Monit.Inst. flow meters annually
Samples				
Pb, SO_2, NO_2	internal quality control and participation in proficiency tests	perform proficiency tests bi-annually	Ref.Lab. participate in international proficiency tests	
TSP, PM_{10}	Quality control of balance	re-weighing of 5-10% of exposed filters		Calibration of Ref.Lab. and Monit.Inst. balances

Note

Subject: REFERENCE LABORATORY

Standard gases for Monitoring Institutions and Reference Laboratory

Date: 12 Nov 1998

To: BS

Copy: RD, Dr Samir Lawandy

From: UOL

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

30 Misr-Helwan Street
Maadi, Cairo, Egypt

Tel.: (+202) 525 6439/42/ 47/ 52
Fax: +202 525 6467

E-mail: eimp@intouch.com

Ref Lab

	Gas	Concentration	Quality	Volume	
Primary calibration gas for multipoint calibrator	SO_2	100 ppm	SRM or PRM	10 or 20 litre	1
	NO	100 ppm	SRM or PRM	10 or 20 litre	1
	CO	5000 ppm	SRM or PRM	10 or 20 litre	1
	$CH_4 + C_3H_8$	200 ppm each	SRM or PRM	10 or 20 litre	1
Working gas standard	CO	500 ppm	Scott gas	20 litre	1
	$CH_4 + C3H_8$	20 ppm each	Scott gas	20 litre	2
Travelling gas standard	SO_2	0.8 ppm		10 litre	5
	NO	0.8 ppm		10 litre	5
	CO	50 ppm		10 litre	1
	$CH_4 + C_3H_8$	2 ppm each		10 litre	2

Consumables and spare parts

Item	Part. No.	#	Comments
SO2 gas 0.8 ppm inkl. regulator		5	Traveling standard. 10 l. cyl.
NO gas 0.8 ppm inkl. regulator		5	Traveling standard. 10 l. cyl.
CO gas 50 ppm inkl. regulator		2	Traveling standard. 10 l. cyl.
CH4 2 ppm + C3H8 2ppm, inkl. regulator		2	Traveling standard. 10 l. cyl.
CO 500 ppm CO		1	Working standard.
CH4 20 ppm+ C3H8 20 ppm		2	Working standard.
The above gases are made by Scott Spcial Gases. 98.09.28 Rolf Dreiem.			

Note

Subject: REFERENCE LABORATORY

Date: Loan of samplers for NIS

To: 18 Nov 1998

Copy: AAZ

From: BS

UOL

Environmental Information and Monitoring Programme

EEAA - Danida - COWI

30 Misr-Helwan Street
Maadi, Cairo, Egypt

Tel.: (+202) 525 6439/42/ 47/ 52
Fax: +202 525 6467

E-mail: eimp@intouch.com

Dr Anwar

Bjarne and I have agreed that NIS can have, as a loan, one of each of the following samplers:

- sequential sampler for SO_2
- sequential sampler for NO_2

Furthermore one high volume sampler will be transferred from CEHM as a loan. BS will inform CEHM of this.

The samplers are at the NIS laboratories as a loan which will terminate when the samplers will be needed for installation on a station, approximately in May 1999.

The samplers must be in working order when delivered back to EIMP at the end of the loan and any repair to be performed for the duration of the loan must be covered by NIS.

Appendix I

Co-ordination and meetings

I.2.1. a) Meeting with Meteorological Authority
b) Data availability/payment reductions
c) CEHM matters (meeting)
d) Air Quality staff meeting
e) EIMP staff meeting

EIMP I.2.1.c.

Fax Transmission

To NILU

Fax no.

Attention Bjarne Sivertsen

No. of pages 1 (incl. this page)

Environmental Information and Monitoring Programme

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Date
27 Jul 1998

Our ref.

Dear Bjarne,

Referring to my fax to you dated 26 July 1998 concerning the arrangements for co-operation between EEAA and the Meteorological Authority and the preparation of a protocol for that.

Today a team from EIMP, EEIS and NOSCP (including myself) made another visit for the Meteorological Authority and had meetings with Dr. Sherif Hammad a general manager and Dr. Abd El Raoef Badry general manager for scientific research.

Here are some more information that I collected in these meetings about the Meteorological Authority:

* The Meteorological Authority has 105 meteorological stations distributed all over Egypt.
* All meteorological measurements for the air surface layer are done in all of these stations every 6 hours.
* Wind speed, wind direction and temperature measurements are made for the upper air layers at a height 1.5 km above sea level only in 4 stations out of the105 stations. These stations are located in Marsa Matrouh, El Areesh, Helwan & Aswan and measurements are done every 12 hours.
* The Meteorological Authority receives satellite images showing the clouds movement and temperature up to a height of 16 km above sea level. They use these images together with their 4 stations measurements for the high air layers to prepare their forecasting up to 4 days in ahead.

* The Meteorological Authority has 6 air pollution monitoring stations their locations and the measured parameters are as follows:

Serial No.	Location	Measured paramcters
1	Kobry El Kobba / Cairo	SO_2, surface and total O_3, TSP, PM_{10}, Turbidity, CO_2
2	Marsa Matrouh	total O_3 & total SO_2
3	Sidi Barrani on the Medi - terranian sea between Al - exandria & Marsa Matrouh	SO_2, surface and total O_3, TSP, PM_{10}, Turbidity, CO_2
4	Hurghada	SO_2, surface O_3, NO_x, TSP, Black Carbon, Turbidity & CO_2
5	Siwa	Turbidity
6	Aswan	total O_3

* The Meteorological Authority has several point sources gas emissions models for chemical transformation, sizing of particles, dispersion and deposition but they don't have the data for using these modules.

Looking forward for you quick reply before the 29 of July.

With my best regards,

Mohamed Fathy

cc: Mr. Morten Andersen, Eng.Ahmed Abu El Seoud, Dr.Mohamed Nassar & Dr.Ulla Lund

EIMP I.2.1.6.

Cairo University, Center for Environmental Hazard Mitigation
Dr. Tarek El-Araby, Project Manager
P.O.Box. 453 Al Orman
Giza

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Date
12 Aug 1998
Our ref.
27776/MCA/mca

Data Availability for EIMP Air Quality Monitoring Network

Dear Dr. Tarek

According to CEHM's last Progress Report (covering second quarter of 1998) data availability for a total of 17 monitors (counting one met. station as a monitor) shows an average of 42.5%. This figure is calculated as a pure arithmetic average of the figures given in your report for the individual monitors.

Data availability of 42.5% is considered unsatisfactorily low and you will recall that we discussed this issue at a meeting in our office on 04 August 1998.

A similar network operated by NILU in Norway is running with a documented data availability of 95-98%. Once the EIMP network is fully established (by mid-1999) we expect a data availability in the order of 85% giving due considerations to the following factors:

- Power failures and voltage fluctuations occur more frequently in Egypt
- The agreement with CTS for repair visits is set at 72 hrs whereas NILU is operating their network themselves
- The climatic conditions in Egypt with high temperatures and dust levels will cause more frequent monitor malfunctions.

We realise that the current data availability i.a. is hampered by the lack of on-line telephone connection to the individual stations which would allow early detection of monitor malfunction. We would therefore expect a data availability of 77.5% for the first quarter of 1999, 70% for the fourth quarter of 1998 and 60% for the third quarter of 1998.

As of 01 August EIMP will start paying for maintenance and spareparts (stated in the contract as 4% of the equipment value). For the third quarter of 1998 (2 months only) this amount will be some LE 6,800 and for the fourth quarter LE 10,300 with the current equipment value. The equipment value will increase as installation progresses and the payment for maintenance and spareparts will increase accordingly. This payment will allow CEHM to engage all resources

(incl. technicians) necessary for increasing the data availability and to take full responsibility for appropriate operation and maintenance of the network.

Should CEHM fail to meet the data availability targets given above we will have no other option than to reduce the payment to CEHM according to the following schedule:

$$\frac{\text{Actual data availability} \times 100}{\text{Target data availability}} = \text{payment \%}$$

This means that a data availability for the third quarter of 1998 of e.g. 42.5% against a target of 60% would lead to a payment % of 70.8 of the relevant invoice's grand total. No additional bonus will be payable if actual data availability exceeds the target.

I trust that you will find this schedule of payment reasonable since it will provide a clear incentive for CEHM to operate the EIMP air monitoring network as efficiently as possible and at the same time will give EIMP a guarantee that we only pay for actual data produced.

As a final note I wish to add that a low % of data availability (even when resulting in payment adjustments) is unacceptable to the EIMP in a medium- to long-term perspective. The above measures for adjustment in payments should be seen as an incentive for a highly necessary improvement in data availability.

Sincerely yours

Morten C. Andersen

EIMP Project Manager

EIMP I.2.1.c.

Minutes of Meeting **Ambient air monitoring**

Subject:	**CEHM/EIMP matters**
Date:	21 Oct 1998
Place:	EIMP
Participants:	T. El Araby, Hesham ElAraby (Cairo Univ.), M Fathy, Ahmed A ElSeoud (EIMP/EEAA), H Adly, B. Sivertsen (EIMP)
Prepared by:	B Sivertsen
Distribution:	T. El Araby, M. Fathy, A A ElSeoud, H Adly

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The meeting was called to clarify various matters concerning the contract and the work undertaken by the Monitoring Laboratory, CEHM at Cairo University. The following conclusions were agreed upon.

1. The **CEHM monitors** at the station named "Giza, Cairo University" has been purchased and is owned by CEHM. They have been added to the EIMP network and will supply data to the network.

   The NOx monitor is out of operation and has been sent to CTS for repair. The responsibility for this repair and the cost of getting the monitor in operation is at CEHM. As part of the EIMP programme, as long as the instrument supports data to the network, EIMP will support the expenses for maintenance of instrument.

2. **Data availability** was discussed based upon the memo (Fax) produced by EIMP on 12 August 1998. The definition of data availability has to clearly be stated as a bases for any reductions in payment.

   The availability will be estimated and presented in all quarterly reports based upon the following:
   Estimate the percentage of available data collected during the period of operation of the instrument (included calibrations, minor failures and power breaks). Power break and missing data due to incidents outside the control of the Monitoring Laboratory (Force Majeure) will be specified in the report, documented and the percentage of these occurences will be added to the "final availability number" (in %)

   The memo of 12 August was modified by adding a statement about Force Majeure.

3. **Transport expenditures** had been added to the contract assuming the use of one car and motor bikes. For the future, the total expenditures for transportation, in addition to the use of the EIMP car, will be part of the spread sheet to be developed as part of the invoice input.

   In the next year contract transport expenditures will have to be evaluated

based upon the actual activity of the Monitoring Laboratory at CEHM. In the mean time CEHM will receive 200 EL per month for the various transportation to sites in Cairo.

4. **Costs for maintenance and spare parts** was discussed based on the contract. During the instrument warranty period, EIMP assumes that all repair due to malfunctions of instruments will be taken care of by the supplier (CTS).

   As from 1 August 1998 EIMP will pay to CEHM 4 % of the running equipment value, for the Monitoring Laboratory to take care of maintenance, repair and spare parts.
   Maintenance costs will be accumulated in time and if, by experience, it turns out that 4% will not be sufficient for maintenance and spare parts, this percentage will be negotiated and reflected in the contract.

5. **Consumables** as gases, filters, etc.. has not clearly been reflected in the contract. The EIMP air quality experts will together with CEHM evaluate these expenditures, and include them in the new version of the contract. A first input to this item will be presented in the first week of November.

EIMP E.2.1.d.

Minutes of Meeting	Ambient air monitoring
Subject:	Weekly planing meeting
Date:	98.11.01
Place:	CEHM (Cairo University)
Participants:	B. Sivertsen, Rolf, Oddvar (EIMP), T. El-Araby, H. El-Araby, A. Soliman, A. Taher, Ahmed, Maher, Yassin, Essam, Ashraf (Cairo University)
Prepared by:	TM
Distribution:	T. El Araby, B. Sivertsen, H. Adly, M. Fathy, M. Anderson, and Ahmed A. El Seoud

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Next meeting: Sunday 8 November 14:00 at CEHM

		Init.
1.	**New installations** To assure correct operation and that all-necessary bits and pieces are transferred from storage, all instruments except for the met. Towers will be assembled, Tested and calibrated at the Mon. lab. Before transportation to stations. **Tebbin:** Finalised Wednesday 22 October 97. **Monitoring Laboratory:** Finalised October 97. **El Gomhoriya street:** Finalised Tuesday 23 December 97. **Cairo University station:** Finalised December 97. **Shoubra El-Kheima:** Finalised 1 May 98. Met Tower Finalised 25 June 98. **El-Kolaly:** Finalised 23 May 98. PM_{10} finalised 27 October 98. There is a complete power failuers. **Nasr City:** Finalised Thursday 8 October 1998. PM_{10} not fixed, EIMP will fixed. Find out reasons for power failures? **Tebbin South:** Finalised Monday 19 October 1998. TSP not installed. **Abu Zabal:** Passive sampling start on Wednesday 21 October. **Shoubra El Kheima:** Finalised Thursday 30 April 98. The lock for Fum El-Khalg will be changed and the locks in the future will be Italian type strong locks.	✓ ✓ ✓ ✓ ✓ ✓ ✓

2.	**Status Instruments**	
	To avoid possible damage of instrumentation all instruments using 220 Volts should be equipped with German type electrical plug. We need more plugs and sockets.	Anwar
	NOx monitor from Cairo University Station: Transferred to CTS for repairing on 1 Jun 98? Waiting for quotation.	CTS
	NOx monitor from Tebbin Station: Measure zero NO_2. Valve must be replaced as soon as possible. Its warranty period will expired by the middle of October.	CTS
	CO monitor at El-Gomhoriya: reads constant readings for hours	CTS
	Check of instruments at Storage: CTS will check all instruments at storage before the warranty period expires. A certificate will be provided for each instrument. Still PM_{10} and NMHC instruments, not finished.	CTS
	NOX monitor at storage: record low flow.	CTS
	145 at Tebbin and El-Gomhoriya: must be checked	CTS
	PM_{10} monitor: Long intakes will be provided at the cost of transportation. OK at storage.	
	Flow Calibrator for PM_{10} must be returned back to Cairo University. Probably at storage, new one will be bought as soon as possible.	CTS-TM
	PM_{10} sampler at Tebbin: read very low values, must be checked	CEHM
	Portable met. Tower: Installed at Shoubra. Battery missing.	CTS
	Met. Towers: Most towers will be only 6m on roofs. A ladder and safety belt is sufficient to maintain the sensors. Cairo Uni. has found a man who can do the job. MN checks ladder and safety belt. 2 sensor lifts are needed. Will be ordered later.	
	Silica gel: we need to buy 10 kg	Anwar
	Balance at Mon. Lab: The stand for weighing the filters is too small. MN will make a tray. Temperature and Humidity sensor are necessary.	HA/Ulla
3.	**Status Stations**	
	Computer Centre: EMC visited CTS and installed a new System Manager. It looks like it is working. Original diskettes missing. Station Manager original diskettes missing.	CTS
	Unable to load zip-files from Station Manager when the file(s)	

	cover more than one diskette.	
	Telephone lines: Shoubra, contract finalised. El Gomhoroya St waiting for Arab Contractor approval. Tebbin – Cairo Uni. - El Kolaly finalised	HA
	Tabbin: NOx monitor, still no NO2 reading. Needs repair (Valve replacement).	CTS
	145 must be checked.	CTS
	Monitoring Laboratory: Manifold blower not working good. Will be replaced as warranty. Status	CaiUni
	Network card necessary for printouts.	CaiUni
	El Gemhoroya street: The station will be moved to the ground floor. Installation will be done by Cairo Uni. (and CTS if necessary).	✓
	HC monitor turned off after each power failure. UPS must be installed on all HC monitor	HA/ Anwar ✓
	NOx monitor report low flow. Must be checked	CTS ✓
	145 must be checked.	CTS
	CO monitors gives constant readings for hours. Must be checked	CTS ✓
	Cairo University station: NOx monitor has probably had PMT voltage failure since CTS installed it. Still not fixed.	CTS
	Rain gauge installed. Not tested yet.	CTS
	Shoubra: portable Met. Tower battery missing	CTS
	Kolaly: the power is disconnected. Prepare a contract for the station.	HA ✓
	Nasr City: PM10 sampler not installed yet. The foundation will be prepare by EIMP.	EIMP
	Power failure problems affect the sampling procedures.	
	South Tebbin: Power failure problems affect the sampling procedures. A new lock must be installed.	✓
	Power stability: All stations should be equipped with power stabilisers and the HC monitors and H2 generators should be equipped with UPS. 1 UPS for HC monitor at EL-Gomhoriya ordered. Status.	HA ✓
	Data collection and validation	
	Data is now being collected into the System Manager via disk-	

	ettes. Excel is still used to visualise data. The daily check on the monitors is not possible due to missing some telephone lines and permeation tubes.	
4.	**Training** Training of chemical analysis has been performed, continued and supported on January.	
5.	**Other matters** The draft of third quarter will be represented to EEAA today.	

Minutes of Meeting Ambient air monitoring

Subject: Weekly planing meeting

Date: 98.11.22

Place: CEHM (Cairo University)

Participants: B. Sivertsen, H. Adly (EIMP), T. El-Araby, H. El-Araby, Ahmed, Maher, Yassin, Kamla, Essam, Ashraf (Cairo University)

Prepared by: TM

Distribution: T. El Araby, B. Sivertsen, H. Adly, M. Fathy, M. Anderson, and Ahmed A. El Seoud

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Next meeting: Sunday 29 November 14:00 at CEHM

		Init.
1.	**Tebbin Station**	Maher
	NO_x monitor read very low values of NO_2. CTS check it. Valve must be replaced. Waiting for spear parts. Will be repaired on Monday 23.	CTS
	SO_2 read low values without any clear reason. Need Calibration. Calibration will be performed on Monday 23.	
	Permeation tubes already installed. There is no conc. Coming out from it. Probably 145 malfunction, CTS will check it on Monday 23.	
2.	**El-Gomhoriya Station**	Ahmed
	145 not working. Checked by CTS on 17 & 14 November. Need repairs as soon as possible	CTS
	NOx reports low flow (sometimes). Flow range has been changed	CTS
	CO records constant reading for some time periods. Need calibration (according to CTS)	
	UPS must be installed with NMHC to avoid short power failures.	EIMP
	Daily two-point calibration for CO and NMHC were not performed due to station location.	
	New room will be build and transfer the station on February 1999	
	An internal telephone from Arab Contractors will be used after 15:00 each day	

OK will take it for repair

3.	**Cairo University Station**	Yassin
	Rain gauge not checked yet.	CTS
	Problems when downloading data (Computer Hanging). Yassin Call CTS. Waiting for a date.	
	NOx monitor at CTS for repairs (PMT). Will be returned on Monday 23.	
4.	**Shoubra El-Kheima Station**	Kamla
	Passive sampling for both SO2 and NO2 started on Tuesday 17.	CTS
	A leader will be constructed inside the room.	EIMP
	A large amount of condensation occurred in the air intake	
5.	**El-Kolaly Station**	Yassin
	No power at the station. Waiting for routine procedures.	Heba
6.	**Nasr City Station**	Ahmed
	A lot of problems with power failures (only 3 samples/week). A private power line is needed	
	PM_{10} will be fixed on Tuesday 24.	Nassar
7.	**Tebbin South Station**	Maher
	A new shelter lock is needed. Will be installed on Thursday 26	Nassar
	TSP not installed yet.	
	Passive sampling for both SO2 and NO2 started on Thursday 19	
8.	**Abu Zabal Station**	Kamla
	Passive sampling for both SO2 and NO2 will started on 1 December for two weeks	
9.	**Fum El-Khalig Station**	Kamla
	Alarm System will be installed and the lock will be changed.	EIMP
	NMHC and its requirements still at NIS.	
	Temperature inside the station must be controlled (a lot of problems occurred)	
10.	**El-Maadi Station**	Maher
	Will be installed in a room in first floor at EEAA building. Starting on first December	

Minutes of Meeting Ambient air monitoring

Subject: Weekly planing meeting

Date: 98.11.08

Place: CEHM (Cairo University)

Participants: B. Sivertsen, Rolf, H. Adly (EIMP), T. El-Araby, H. El-Araby, Ahmed, Maher, Yassin, Kamla, Essam, Ashraf (Cairo University)

Prepared by: TM

Distribution: T. El Araby, B. Sivertsen, H. Adly, M. Fathy, M. Anderson, and Ahmed A. El Seoud

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Next meeting: Sunday 15 November 14:00 at CEHM

		Init.
1.	**Tebbin Station**	Maher
	NOX monitor read very low values of NO2. CTS check it. Valve must be replaced. Waiting for spear parts.	CTS
	SO2 read low values without any clear reason.	
	Permeation tubes will be installed this week.	
2.	**El-Gomhoriya Station**	Ahmed
	145 not working. CTS must check it with Permeation Tube.	CTS
	NOx reports low flow (sometimes).	
	CO records constant reading for some time periods.	CTS
	UPS must be installed with NMHC to avoid short power failures.	EIMP
	Daily two-point calibration for CO and NMHC were not performed due to station location.	
	New station location must be inspected.	Heba
	An approval to install a telephone inside the Arab Contractor Building is needed.	Heba
3.	**Cairo University Station**	Yassin
	Rain gauge not checked yet.	CTS
	Problems when down loading data (Computer Hanging)	
	NOx monitor at CTS for repairs (PMT). Waiting for an official	

	quotation	
4.	**Shoubra El-Kheima Station**	Kamla
	Station Manager not upgraded.	CTS
	Lab Top for Met. Tower needed.	Anwar
	Telephone line finalised.	
5.	**El-Kolaly Station**	Yassin
	No power at the station. Waiting for a stamp.	Heba
	PM10 connection to data logger taken from monitor lab. And installed. Monitor initialisation is not done yet.	
	Telephone line finalised.	
6.	**Nasr City Station**	Ahmed
	A lot of problems with power failures (only 3 samples/week). A private power line is needed	Heba
	PM10 is not fixed yet.	
7.	**Tebbin South Station**	Maher
	A new shelter lock is needed.	EIMP
	TSP not installed yet.	
8.	**Abu Zabal Station**	Kamla
	Passive sampling already done (started 21 October)	
	Dust fall collector installed on 11 November	
9.	**Fum El-Khalig Station**	Kamla
	Alarm System will be installed and the lock will be changed.	
	Power distributor from solenoid valve to data logger missed.	
	NMHC and its requirements still at NIS.	
10.	**Other matters**	
	A CD read/write driver is needed to provide EIMP with electronically recorded report.	
	CEHM invoice sent to EIMP today	

Minutes of Meeting

Subject: Ambient air monitoring

Date: Weekly planing meeting

Place: 98.11.15

Participants: CEHM (Cairo University)

Prepared by: B. Sivertsen, Rolf, H. Adly (EIMP), T. El-Araby, H. El-Araby, Ahmed, Maher, Yassin, Kamla, Essam, Ashraf (Cairo University)

Distribution: TM

T. El Araby, B. Sivertsen, H. Adly, M. Fathy, M. Anderson, and Ahmed A. El Seoud

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Next meeting: Sunday 22 November 14:00 at CEHM

		Init.
1.	**Tebbin Station**	Maher
	NO_x monitor read very low values of NO_2. CTS check it. Valve must be replaced. Waiting for spear parts.	CTS
	SO_2 read low values without any clear reason. Need Calibration.	
	Permeation tubes already installed. There is no conc. Coming out from it	
2.	**El-Gomhoriya Station**	Ahmed
	145 not working. CTS will check it on Tuesday 17 November.	CTS
	NOx reports low flow (sometimes).	
	CO records constant reading for some time periods.	CTS
	UPS must be installed with NMHC to avoid short power failures.	EIMP
	Daily two-point calibration for CO and NMHC were not performed due to station location.	
	New station location will be inspected on Wednesday 18.	Heba
	An approval to install a telephone inside the Arab Contractor Building is needed. Wednesday 18.	Heba
3.	**Cairo University Station**	Yassin
	Rain gauge not checked yet.	CTS
	Problems when downloading data (Computer Hanging). Yassin	

	Call CTS	
	NOx monitor at CTS for repairs (PMT). Waiting for an official quotation and set-up a meeting date.	
4.	**Shoubra El-Kheima Station**	Kamla
	Station Manager not upgraded. Tuesday 17.	CTS
	Lab Top for Met. Tower needed.	Anwar
	Passive sampling for both SO2 and NO2 will started this week	
5.	**El-Kolaly Station**	Yassin
	No power at the station. Waiting for a stamp. Heba & Yassin will finalise that on Wednesday 18.	Heba
	PM10 connection to data logger taken from monitor lab. and installed. Monitor initialisation is not done yet.	
6.	**Nasr City Station**	
	A lot of problems with power failures (only 3 samples/week). A private power line is needed	Ahmed
	PM_{10} is not fixed yet.	Heba
7.	**Tebbin South Station**	Maher
	A new shelter lock is needed.	EIMP
	TSP not installed yet.	
	SO2 sequential Sampler record low flow (150-155)	
	Passive sampling for both SO2 and NO2 will started this week	
8.	**Abu Zabal Station**	Kamla
	Passive sampling already done (started 21 October)	
	Dust fall collector installed on 11 November	
	Passive sampling for both SO2 and NO2 will started on 1 December for two weeks	
9.	**Fum El-Khalig Station**	Kamla
	Alarm System will be installed and the lock will be changed.	
	Power distributor from solenoid valve to data logger missed. Will installed Monday 16.	
	NMHC and its requirements still at NIS.	

10.	**El-Maadi Station** Will be installed in a room in first floor at EEAA building. Starting on Sunday 29 Monday 30.	Maher
11	**Other matters** A CD read/write driver is needed to provide EIMP with electronically recorded report. 9 copies of the final form of the third quarterly report (after correction) delivered to EEAA today. 4 extra copies of the second quarterly report delivered to EEAA today.	

EIMP I.2.1.

Minutes of Meeting Ambient air monitoring

Subject: Weekly planing meeting

Date: 98.11.29

Place: CEHM (Cairo University)

Participants: B. Sivertsen, Lief, H. Adly (EIMP), T. El-Araby, H. El-Araby, Ahmed, Maher, Yassin, Kamla, Essam, Ashraf (Cairo University)

Prepared by: TM

Distribution: T. El Araby, B. Sivertsen, H. Adly, M. Fathy, M. Anderson, and Ahmed A. El Seoud

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Next meeting: Sunday 6 December 14:00 at CEHM

		Init.
1.	**Tebbin Station** NO_x monitor repaired on Monday 23. Will be transferred to NIS for multipoint calibration after NIS finish SO2 monitor. SO_2 transferred to NIS for calibration on Monday 23. (NIS received it on Wednesday 25) Permeation tubes already installed. Looks ok. Rate of change for temperature sensors will be returned back to 2 and the input channels will be changed to find out the problem.	Maher
2.	**El-Gomhoriya Station** 145 not working. Checked by CTS on 17 & 14 November. Need repairs as soon as possible. Will transferred to CTS NOx reports low flow (sometimes). Flow range has been changed. Must be returned back to 0.5 l/min. CO records constant reading for some time periods. Need calibration (according to CTS). Will be transferred to CTS later. Input channels will be changed to find out the problem. UPS must be installed with NMHC to avoid short power failures. Daily two-point calibration for CO and NMHC were not performed due to station location. New room will be build and transfer the station on February 1999 An internal telephone from Arab Contractors will be used after	Ahmed CTS EIMP Helen

4 days. Open connection →

	15:00 each day	
3.	**Cairo University Station**	Yassin
	Rain gauge will be checked.	
	Problems when downloading data (Computer Hanging). Yassin Call CTS. Waiting for a date.	
	NOx monitor at NIS for calibration after repair (Wednesday 25)	
4.	**Shoubra El-Kheima Station**	Kamla
	Passive sampling for both SO2 and NO2 already done for one week.	
	A leader will be constructed inside the room.	EIMP
	A large amount of condensation occurred in the air intake	
5.	**El-Kolaly Station**	Yassin
	Working with a temporarily power connection.	
6.	**Nasr City Station**	Ahmed
	A lot of problems with power failures (only 4 samples/week). A private power line is needed	
	PM_{10} already fixed.	
7.	**Tebbin South Station**	Maher
	A new shelter lock is needed. Will be installed on Monday 30	Nassar
	TSP not installed yet.	
	Passive sampling for both SO2 and NO2 already done for one week	
8.	**Abu Zabal Station**	Kamla
	Passive sampling for both SO2 and NO2 will started on 1 December for two weeks	
9.	**Fum El-Khalig Station**	Kamla
	Alarm System will be installed and the lock will be changed.	EIMP
	NMHC and its requirements still at NIS.	
	Temperature inside the station must be controlled (a lot of problems occurred)	

30.Nov. PM_{10}

NO_x alarm
SO_2 alarm
heating inside.

10.	**El-Maadi Station** Will be installed in a room in first floor at EEAA building. Starting on first December	Maher
11	**Other matters** An agreement must be done with NIS for a maximum of one week for instrument calibration	EIMP

~~Aaa~~ 10 Run Kamela.
6 Oct.

Down loading Tubes 1h for one day
— need one minute averages for ship charts

EIMP I.2.1.c.

Minutes of Meeting		Environmental Information and Monitoring Programme EEAA - Danida - COWI 30 Misr-Helwan Street Maadi, Cairo, Egypt Tel.: (+202) 525 6439/42/ 47/ 52 Fax: +202 525 6467 E-mail: eimp@intouch.com
Subject:	**STAFF MEETING # 66**	
Date:	**1 November 98**	
Place:	**EIMP Office**	
Participants:	**Ahmed Abou El Seoud (AAE), Anwar Ahmed (AZA) Bjarn Sivertsen (BS), Ayman El Maazawy(AEM), Heba Adly (HA), Lydia Kiriakos (LSK), Liz Rasmusssen (LR), Mohamed Fathy (MF), Mohamed Zaki (MZ), Naglaa Darwish (NMD), Ole Haslund (OH), Rolf Dreiem (RD)**	
Prepared by:	**LSK**	
Distribution:	**EIMP Staff (incl. Dr. Mohamed El Zarka)**	

Component	Task Description	Time	Person
1- Institutional Support	• Enhance on line Information for the CW on our web site.	This Week	MZ & AEM
	• Handing over a computer to CEHM Chemistry lab.	This Week	MZ
	• Follow up and install the back up system at CEHM.	This Week	NMD
	• Follow up the development of CWMDB version 1.1 with RITSEC.	This Week	MZ
	• Visit RITSEC regularly for the follow up of the development of the CWMDB version 1.1	Till the mid of December	AEM
	• Follow up with the computers supplier to deliver the remaining 2 computers	This Week	MZ
Procurement	• Preparation of documents requested by EEAA, and Customs Administration for EIMP released shipments.	This week	AZA
	• Follow up with EEAA to issue cheques covering the services fees due to Customs.	This Week	AAE
	• Purchase of small items (voltage regulators, UPS)for Air monitoring Stations.	This Week	AZA
	• Continue inspection of monitors & Samplers that will be installed in Alex.	This week	AZA, CTS & CEHM

	• Installation of shelves at EIMP store	This week	AZA
	• Check with A/C supplier the possibility to control the temperature inside shelters.	This week	AZA
	• Order a new computer for CEHM + upgrade and provide a CD drive for IGSR.	This week	AZA
	• Send Fax to NIOF to expedite issuing the Permanent Registration Certificate for the Zodiac boats.	This week	AAE
2- Coastal Water Monitoring	• Visit NIOF Suez	Nov. 16th	MF & AAE & OH
	• Visit NIOF Hurgada	Nov. 18th	MF & AAE & OH
	• Have a meeting with RITSEC to discuss the development of CWMDB	This week	MZ & OH
3- Air Pollution Monitoring	• checking Shoubra and El-Gomhoriya street.	Before 17th of Nov	CTS
	• Shelters for Alex had been placed at correct positions. Only the site at Gheat ElEnab needs final approval from Governer.	Before Nov.23rd	HA
	• Finished the Data base specifications	Nov.16th	BS
	• Still expecting the contract comments from the monitoring institutions	Before Nov. 17th	BS & HA
	• Visit to Suez to get the final approval to place a big shelter on a Governerate building this week.	Nov. 16th	HA & BS
	• Final approval of using EEAA lab as Maadi site . Installation at Maadi will start after finalizing Alex. installation.	Dec. 15th	RD

	• Prepare invitations to CHEM, IGSR & NIS for the seminar held at EEAA on understanding and using the QA/QC system for air monitoring. • Begin the installation of all the sites in Alexandria on 23rd of November	Dec. 6th finished Nov. 30th	LM & BS & HA RD
4- Reference Laboratories	• Visit IGSR to follow up the development of the Quality System	This week	MEA & UOL
5- Point Sources Database & Monitoring	• Submit the iron & Steel monitoring report	This week	TIMS

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Subject:	STAFF MEETING # 55	
Date:	8 November 98	
Place:	EIMP Office	
Participants:	Ahmed Abou El Seoud (AAE), Anwar Ahmed (AZA), Bjarn Sivertsen (BS), Ahmed Megahed (AMG),Ayman El Mazaawy(AEM) Dina El Badramani (DRB) Heba Adly (HA), Lydia Kiriakos (LSK),Mai Ahmed (MEA) Mohamed Fathy (MF), Mohamed Zaki (MZ), Naglaa Darwish (NMD), Ole Haslund (OH), Ulla Lund (ULO.)	
Prepared by:	LSK	
Distribution:	EIMP Staff (incl. Dr. Mohamed El Zarka)	

Component	Task Description	Time	Person
1- Institutional Support	• Follow up with RITSEC the development of CWMDB version 1.1	This week	AEM
	• Finalizing the maintenance Contract for the server.	This week	MZ
	• Setup the new computers and users support.	Today	NMD
	• Continue the development of CWMDB on the web site.	This week	AEM
	• Send a computer to IGSR.	This week	AAE
Procurement	• Continue inspection of Kontram second shipment.	Two weeks	AZA, CTS, CEHM
	• Purchase of safety items for Reflab water.	Within two days	AZA
	• Order of small items as benches & chairs for the air stations.	This week	AZA
	• Getting quotations for the supply of three water purification systems + accessories.	This week	AZA
	• Preparation of documents requested by EEAA and the Customs Administration for EIMP shipments.	Two weeks	AZA
	• Protection of A/C compressor units and installation of door alarm system at shelters.	Ten days	AZA

2- Coastal Water Monitoring	• Have a meeting with NIOF new director to discuss the evaluation of the new proposed team that will undertake the sampling of Biota and Sediments.	This week	MF & AAE &OH
3- Air Pollution Monitoring	• NILU will provide filters for the sequential samplers.	Before Nov. 10th	BS
	• Prepare a memo to buy some more UPSs for some monitors and samplers.	Nov. 15th	BS. AZA
	• Prepare a Diploma/Certificate for the personnel guarding or being locally responsible for the sites.	Dec 1998	HA
	• Final approval to place Maadi air monitoring station in EEAA building.	Nov. 10th	AAS
	• Final approval for the sites in Alex.	Before Nov. 13th	HA & AAE
	• Arrange a meeting with Amr El Soueini	Before Nov. 15th	BS
	• Purchasing a car for IGSR to operate and maintain the air stations in Alex & Delta.	Before Dec. 1998	MF
4- Reference Laboratories	• Finish preparing a report on the situation at each of the visited laboratories for the selection of a Microbiology Reference Laboratory.	This week	UOL & MEA
5- Point Sources Database & Monitoring	• Finish all the monitoring activities in Alex.	This week	TIMS
	• The monitoring report for the Iron and Steel Company to be delivered to EIMP.	This week	TIMS
	• Power feed for Fum El Khalig station to be on a direct line.	Before Nov. 12th	HA

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Subject:	STAFF MEETING # 67	
Date:	22 November 98	
Place:	EIMP Office	
Participants:	Ahmed Abou El Seoud (AAE), Anwar Ahmed (AZA) Bjarn Sivertsen (BS), Ayman El Maazawy(AEM), Dina El Badramani (DRB), Heba Adly (HA), Lydia Kiriakos(LSK), Mohamed Fathy (MF), Mohamed Zaki (MZ), Mai Ahmed (MEA), Naglaa Darwish (NMD), Shabrawy Ibrahim (SMI)	
Prepared by:	LSK	
Distribution:	EIMP Staff (incl. Dr. Mohamed El Zarka)	

Component	Task Description	Time	Person
1- Institutional Support	• Upgrade and deliver one computer to IGSR/Air.	This week	MZ & AZA
	• Follow up the development of CWMDB with RITSEC.	This week	AEM
	• Prepare report about Quality Report Formats.	This week	MZ
	• Study the Air Data Base specifications prepared by Bjarne.	This week	MZ & NMD
Procurement	• Continue inspection of Kontram second shipment at EIMP store.	This week	AZA & CTS & CEHM
	• Complete a registry file for EIMP equipment.	This Week	AZA
	• Negotiating UltraTech to obtain rock bottom prices for IC auto sampler.	This Week	AZA
	• Pick up of CO monitor repaired by CTS.	This week	AZA
	• Technical and commercial evaluation of quotation delivered by Kontram for the supply of standard gases.	This week	AZA & RD
	• Follow up with A/C supplier install external thermostat to control the temperature.	This week	AZA
	• Assist the preparation of storing formalities for EIMP exempted equipment.	This week	AZA
2- Coastal Water Monitoring	• Meet Dr. Ekram, NIOF Director to discuss different issues concerning CWMP 2nd phase.	This week	AAE, MF & OH
3- Air Pollution Monitoring	• Prepare a letter for the final approval of placing a big shelter on the top of a Governorate building.	Dec.6th	HA

	• Start the installation of all the sites in Alexandria on November 23rd	Finished Nov. 30th	RD
	• Installation of the station in EEAA building.	Dec. 15th	RD
	• Visit the new site at Kafr El Dawar.	Nov. 26th	BS & HA
	• Feed back on the Air Data base specifications that was prepared by Bjarne.	Nov.29th	MF, AAE &MZ
	• For El-Gomhoriya station the Arab Contractors will prepare a room at the ground level after receiving an official letter from EEAA.	By the End of the year	HA
	• Prepare a Diploma/Certificate for the personnel hosting the air stations.	Dec 98	BS & HA
	• Check if the power supply for the Quolaly station is via a dedicated line and is stable or not.	asap	HA
	• Discuss the preparation of the annual report with IGSR.	Dec 98	BS &HA
	• Prepare invitations to CHEM, IGSR & NIS for the seminar held at EEAA on Understanding and Using the QA/QC System for Air Monitoring.	Dec.6th	BS & HA & LM
4- Reference Laboratories	• Ask Dr. Mawaheb to send somone to participate in the on-job- training of the proficiency test.	This week	MEA & UOL
5- Point Sources Database & Monitoring	• Complete the monitoring activities at Misr El Ameria Company.	This week	TIMS
	• Finish the monitoring report of Rakta for Papers Company.	This week	TIMS

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Subject:	**STAFF MEETING # 68**	
Date:	**29 November 98**	
Place:	**EIMP Office**	
Participants:	**Anwar Ahmed (AZA), Bjarn Sivertsen (BS), Ole Haslund (OH) Ayman El Maazawy(AEM), Dina El Badramani (DRB), Heba Adly (HA), Lydia Kiriakos(LSK), Mohamed Fathy (MF), Mohamed Zaki (MZ), Mai Ahmed (MEA), Naglaa Darwish (NMD), AlShabrawy Ibrahim (ASI)**	
Prepared by:	**LSK**	
Distribution:	**EIMP Staff (incl. Dr. Mohamed El Zarka)**	

Component	Task Description	Time	Person
1- Institutional Support	• Reallocation of the computers.	This week	MZ
	• Follow up with RITSEC the development of CWMDB version 1.1	This week	AEM
	• Prepare report about Quarterly Report Formats.	This week	MZ
	• Test the new computers.	This week	MZ
Procurement	• Follow up with Shiraz placing an order and fixing the delivery time for Standard Gases.	This week	AZA
	• Install thermostat controller at Fum El Khalig station.	This Week	AZA
	• Push Etamco to send Quotation for water samplers.	This Week	AZA
	• Send cheques covering service dues to customs administration.	This week	AZA
	• Push Shiraz to get quotation for Reflectometer and PM10 calibration kit.	This week	AZA
	• Pickup CO monitor from CTS.	This week	AZA
	• Continue inspection of Kontram second shipment at EIMP store.	This week	AZA
2- Coastal Water Monitoring	• Resubmit NIOF proposed new team for the execution of Phase 2 of CWMP.	This week	Dr. Ekram
3- Air Pollution Monitoring	• Arrange with the local authorities at Kafr El Dawar for the installation of the air station.	Dec.10th	BS & HA
	• Inspection of the new sites in Ismailia, Port said and El Mansoura.	Dec.2nd	HA & BS

	• Install Maadi Station in EEAA building. • Prepare a logo for the shelters. • Follow up Arab contractors preparations for the new room and an official letter has to be prepared by EEAA • Prepare for a seminar on Understanding and Using the QA/QC System for Air Monitoring. • Draft of the new contracts has to be prepared	2nd -15th Dec. Dec.6th By the End of the year Dec.3th Dec.10th	RD BS & HA HA BS & HA & LM BS & HA
4- Reference Laboratories	• Waiting for response from the institutions • Continue the training at Ain shams university for the proficiency Tests. • Have a progress meeting with Dr Saad Hassan.	Till the 3rd of Dec This week Dec.29th	MEA & UOL Jill UOL & MEA & Jill
5- Point Sources Database & Monitoring	• Complete the monitoring report of the Egyptian Copper Works Company. • Visit El Nasr Coke Company.	This week This week	TIMS TIMS

Notes for Minute of staff meeting 29 Nov 1998

	When	Who
The installations in Alexandria were successfully finalised last week. More filter holders to ensure continuous operations have to be purchased	Des 98.	AZA
Installations at Maadi has started and will be finalised within one week, depending upon other important tasks.	Finished 15 Dec.	RD
New contract with Monitoring Laboratories are being prepared. Unit prices and common input should be discussed between components.	10 Dec.	BS HA
A "LOGO" for the shelters have been prepared. It remains to be produced and installed at the shelters.	Dec 98	HA
Arab Contractors preparations for new room has to be followed up. Telephone lines are urgently needed	end of year	HA
A Diploma/Certificate for the personnel guarding or being locally responsible for the sites will be prepared	Dec 1998	HA
New sites in Ismailia, Port Said and ElMansoura were inspected. Contracts have to be prepared.	Dec. 98	HA
The seminar on "Understanding and using the QA/QC system for air monitoring" was held on 3 Dec. Parts of the seminar will have to be repeated for NIS experts who did not participate.	1999 ?	LM, UOL
The first data from FumElKhalig look interesting and promising. The station will be important for Cairo city, and will have to be closely followed up. Air condition systems have to work properly, and monitors etc. will have to be carefully inspected and maintained.	future	RD, HA, AZA

EIMP I.2.1.f.

Status report Air Pollution Monitoring October1998

Institutional support
Heba Adly became the new counterpart for Air Pollution Monitoring after Mohamed Nassar.

Procurement
Preparations were made for obtaining missing instruments; simple battery operated particle samplers, various chemical laboratory equipment and smaller parts for completing the air quality monitoring programme. Also agreements for constructing of shelters to be installed at all sites were needed were signed.

Data management
The System Manager and some of the Station Managers were still was not operating hundred percent. Some of the upgrading of Station Managers were performed, but this work will have to be continued.

Generally the data management undertaken by the Monitoring Laboratories is now in routine and according to instructions.

Training
Personnel at the Monitoring Laboratories in Cairo continuously received training in the use of monitoring instruments. The training in chemical analyses started at the laboratory at CEHM with participants from Cairo Univerity and Ain Shams (Ref.Lab).

QA/QC
Standard Operational Procedures (SOP) is still being developed and is being used by the institutions. New SOPs for chemical analyses and preparations of filters was presented at CEHM.

Monitoring

Tabbin:
Monitors and samplers operated on a routine bases. Problems reported on the NOx monitor.
Gomhoryia street:
Monitors operated and data were retrieved weekly on diskettes. Minor problems reported on CO, NMHC does not function properly.
Giza, Cairo University:
The SO_2 and the ozone monitor was operating in good condition. The NOx monitor originally installed had been changed to the one originally installed in the Monitoring Laboratory. This operated good. The Meteorological measurements were of good quality.
Shoubra ElKheima
The station operates adequately with high SO_2 concentrations.

El Quolaly
The Quolaly site near Ramses square was installed in May 1998. The monitors were operated satisfactory. The PM_{10} monitor was started in October.
Tebbin South
The sequential SO_2 sampler was installed at Tabbin South. Dust fall collector started at the roof of the shelter. Due to low voltage (175 V) a stabilisator was installed here..
Shelter for the sampling station, to be shared with Cairo Air Improvement Project, was started in April, and was finalised in May.
Nasr City
Nasr city site installations of samplers was finalised except for PM_{10} sampler. Some problems in power supply was recorded in October. This must be solved in the future.

IGSR, Alexandria
Initial malfunctions on the IGSR monitoring station have been corrected. Air quality and meteorological data were collected and reported. Most of the data were good quality but check and calibrations had to be undertaken during the visit of air monitoring expert in October. He calibrated SO_2 , CO and HC with travelling standards, and checked all monitors. PM_{10} monitor is still not functioning perfectly. This will have to be repaired by CTS.

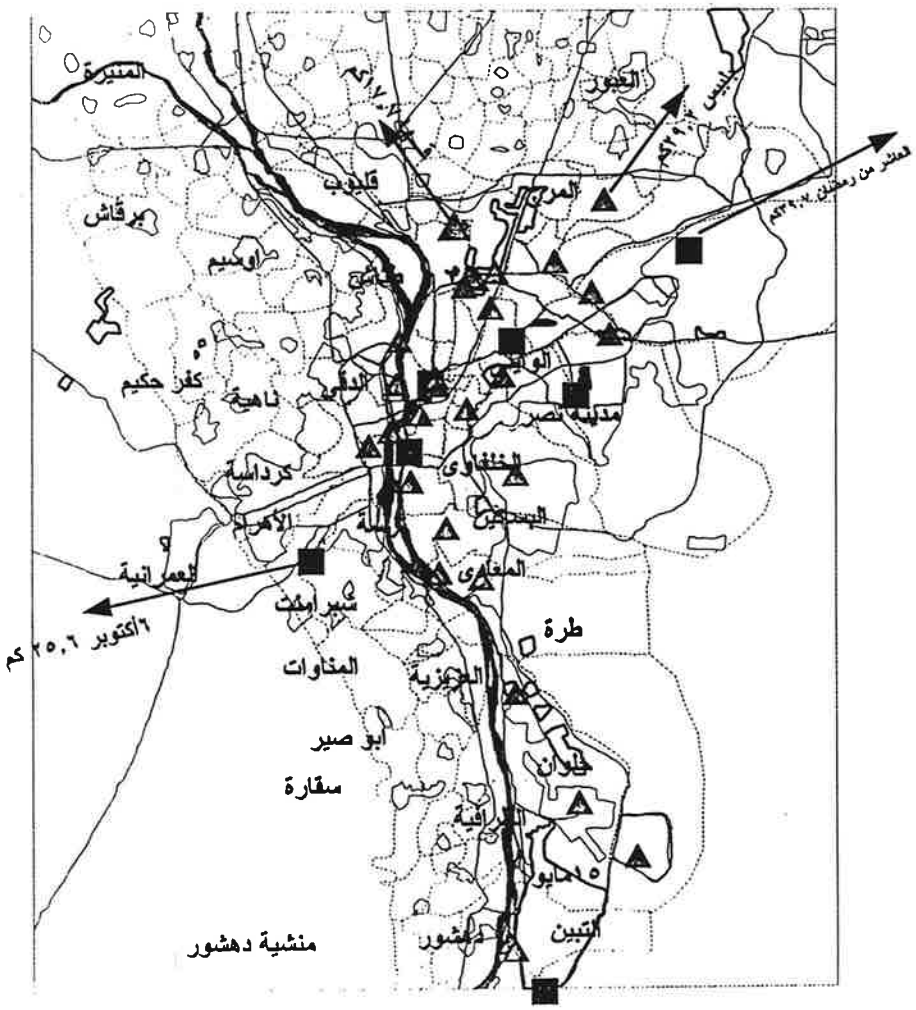
IGSR, Background station
The shelter for ozone monitoring at the background station in Alexandria arrived from Cairo on 27 Oct. but no crane was available to lift it to the roof. Installation of this monitor had to be postponed.

All new sites in Alexandria were inspected, modified and agreed upon. New contracts with site owners is under development.

Reporting
Quarterly reports for June-September 1998 from the two Monitoring Laboratories at CEHM and at IGSR have been developed and discussed. The reports are being finalised.

جمهورية مصـــر العربيـة
وزارة الدولة لشئون البيئة

محطات رصد نوعية الهواء بالقاهرة الكبرى



List of Abbreviations

A-GOSD	Alexandria General Organisation for Sanitary Drainage
APMWG	Air Pollution Monitoring Working Group
AQ	air quality
AWS	automatic weather station
BOD	biological oxygen demand
CAIP	Cairo Air Improvement Project, a new USAID project with EEAA, to start January 1997 (consultant not yet selected).
CCC	Cairo Central Center, central EEAA laboratory located in Maadi, sponsored by JICA Minilab project.
C-GOSD	Cairo General Organisation for Sanitary Drainage
CIDA	Canadian International Development Agency
CLEQM	Central Laboratory for Environmental Quality Monitoring, a new environmental laboratory being built at the NWRC, sponsored by the CIDA RNPD II project, to be opened in mid-1997.
COWI	COWI Consulting Engineers and Planners AS, Denmark, lead consultant for the EIMP project (The word COWI is derived from the initials of the founders of the company).
CTS	Chemical and Technical Services
CWMWG	Coastal Water Monitoring Working Group
Danida	Danish International Development Assistance
DRI	Drainage Research Institute, NWRC
ECEP	Energy Conservation and Environment Project, a USAID project with FEI and TIMS.
ECRI	Environment and Climate Research Institute, NWRC
EEA	European Environment Agency
EEIS	Egyptian Environmental Information System, a CIDA-sponsored project in EEAA, to start November 1996, with Canadian consultant Roche/UMA/INTELEC.
EETP	Environmental Education and Training Programme
EEAA	Egyptian Environmental Affairs Agency, Cabinet of Ministers.
EIC	Environmental Information Center, a department in EEAA.
EIMP	Environmental Information and Monitoring Programme, Danida sponsored project at EEAA, with Danish consultant COWI, 1996-2000.
EIS	environmental information system
EITS	Environmental Information Technology and Systems, a department within RITSEC.

EMOHC	Environmental Monitoring and Occupational Health Center, Ministry of Health, at Embaba. The ambient air quality monitoring institution under EIMP. Also known as "Embaba Lab".
EP3	Environmental Pollution Prevention Project, a USAID project with FEI and TIMS, with Hagler Bailly Consulting, Inc. as consultant.
EPAP	Environmental Pollution Abatement Project, a World Bank project in EEAA, 1995-
ESA	Egyptian Survey Authority
ESI	Egyptian Standardization Institute
EU	European Union
FEI	Federation of Egyptian Industries, Ministry of Industry
GEMS	Global Environmental Monitoring System
GOFI	General Organization for Industrialization, Ministry of Industry
GOSD	*see* C-GOSD or A-GOSD
GWRI	Groundwater Research Institute, NWRC
HADSERI	*see* NRI
ICES	International Council for the Exploration of the Sea
IDSC	Information and Decision Support Center, Cabinet of Ministers
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
ISAG	Information System for Waste and Recyclable Material
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau, a German international financing institution, sponsor of the "Environmental Facility for the Public Sector Industry" financing programme in EEAA-TCOE, started May 1996. (associated with Friedrich Ebert Stiftung).
LFA	logical framework approach
MEDPOL	
MOH	Ministry of Health
MPWWR	Ministry of Public Works and Water Resources.
NILU	Norwegian Institute for Air Research, Norway, sub-consultant to COWI in the EIMP programme (NILU is the abbreviation in Norwegian for the name of the institute: Norsk Institutt for Luftforskning).
NIOF	National Institute for Oceanography and Fisheries, Alexandria, the coastal waters monitoring institution under EIMP.
NIS	National Institute of Standards
NOPWASD	National Organisation for Potable Water and Sanitary Drainage
NRC	National Research Center. The institution hosting the EIMP reference laboratory for quality control and standardisation.

NRI	Nile Research Institute, NWRC
NWRC	National Water Research Center, Ministry of Public Works and Water Resources
NWSRU	National Water Strategy Research Unit, RNPD II, NWRC
ODA	Overseas Development Administration, Great Britain.
OECD	Organisation for Economic Cooperation and Development
OECP	Organization for Energy Conservation and Planning, Ministry of Petroleum and Ministry of Electricity.
OSP	Organisation Support Programme, a Danida-sponsored technical assistance programme at EEAA.
PM_{10}	particulate matter smaller than 10 micrometers
PSMWG	Point Source Monitoring Working Group
RBO	Regional Branch Office
RITSEC	Regional Information Technology and Software Engineering Center, sponsored by UNDP (UN Development Programme and AFESD (Arab Fund for Economic and Social Development), hosted by IDSC.
RNPD II	River Nile Protection and Development Project, Phase II, a CIDA-sponsored project with the NWRC, with Canadian consultant SNC Lavalin Inc., 1993-1997.
SEAM	Support for Environmental Assessment and Management, an ODA project in EEAA-TCOE, with Entec as consultant, 1994-1997.
TCOE	Technical Cooperation Office for the Environment, a special department in EEAA, sponsored by several international development agencies.
THC	total hydrocarbons
TIMS	Tabbin Institute for Metallurgical Studies, Ministry of Industry
TNA	training needs assessment
TOR	terms of reference
TSP	total suspended particulates
UNEP	United Nations Environment Programme
UPS	uninteruptable power supply
USAID	United States Agency for International Development
VKI	Water Quality Institute, Denmark, sub-consultant to COWI in the EIMP programme (VKI is Danish abbreviation for the name of the institute: Vandkvalitets Institut).
VOC	volatile organic compounds
WB	World Bank, also known as International Bank for Reconstruction and Development (IBRD).
WHO	World Health Organisation
WMRI	Water Management Research Institute, NWRC

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Environmental Information and Monitoring Programme (EIMP). Air Quality Monitoring Component Mission 9 Report	Bjarne Sivertsen NILU PROJECT NO. O-96013
AUTHOR(S) Bjarne Sivertsen and Rolf Dreiem	CLASSIFICATION * A CONTRACT REF.

REPORT PREPARED FOR:
COWI/EIMP
EEAA Building, 30 Misr Helwan Street
Maadi, Cairo, Egypt

ABSTRACT
The ninth mission to Egypt on the DANIDA EIMP programme included installations, detailed planning, training and reporting. Quarterly air quality data reports were discussed and finalized from the two Monitoring Laboratories. Training was specifically given for sample preparations and analyses..

NORWEGIAN TITLE
Overvåkingsprogram for luftkvalitet i Egypt

KEYWORDS		
Air Quality	Monitoring	Siting

ABSTRACT (in Norwegian)

* *Classification*
- *A Unclassified (can be ordered from NILU)*
- *B Restricted distribution*
- *C Classified (not to be distributed)*