Task Order No. 832
USAID Contract No. PCE-I-00-96-00002-00

Egyptian Environmental Policy Program
Program Support Unit

WORK ASSIGNMENT REPORT
Tranche 1, Objective 4

A Review of Existing Air Emission Standards, Egyptian Environmental Law 4/1994

Dr. Mahmoud M. Nasralla

July 2000

PSU-18

for
U.S. Agency for International Development–Cairo

by
Environmental Policy & Institutional Strengthening
Indefinite Quantity Contract (EPIQ)

A USAID-funded project consortium led by International Resources Group, Ltd.

Task Order No. 832
Contract No. PCE-I-00-96-00002-00

Egyptian Environmental Policy Program
Program Support Unit

WORK ASSIGNMENT REPORT
Tranche 1, Objective 4

A Review of Existing Air Emission Standards, Egyptian Environmental Law 4/1994

Dr. Mahmoud M. Nasralla

July 2000

PSU-18

for
U.S. Agency for International Development – Cairo

by
Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ)

A USAID-funded project consortium led by International Resources Group, Ltd.

Fact Sheet

USAID Contract No.:	PCE-I-00-96-00002-00 Task Order No. 832
Contract Purpose:	Provide core management and analytical technical services to the Egyptian Environmental Policy Program (EEPP) through a Program Support Unit (PSU)
USAID/Egypt's Cognizant Technical Officer:	Holly Ferrette
Contractor Name:	International Resources Group, Ltd.
Primary Beneficiary:	Egyptian Environmental Affairs Agency (EEAA)
EEAA Counterpart:	Eng. Dahlia Lotayef
Work Assignment Supervisor:	Harold van Kempen
Work Assignment Period:	June 2000

Preface

Through competitive bidding, the U.S. Agency for International Development (USAID) awarded a multi-year contract to a team managed by International Resources Group, Ltd. (IRG) to support the development and implementation of environmentally sound strategic planning, and strengthening of environmental policies and institutions, in countries where USAID is active. Under this contract, termed the Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ), IRG is assisting USAID/Egypt with implementing a large part of the Egyptian Environmental Policy Program (EEPP).

This program was agreed-to following negotiations between the Government of the United States, acting through USAID, and the Arab Republic of Egypt, acting through the Egyptian Environmental Affairs Agency (EEAA) of the Ministry of State for Environmental Affairs, the Ministry of Petroleum's Organization for Energy Planning, and the Ministry of Tourism's Tourism Development Authority. These negotiations culminated with the signing of a Memorandum of Understanding in 1999, whereby the Government of Egypt would seek to implement a set of environmental policy measures, using technical support and other assistance provided by USAID. The Egyptian Environmental Policy Program is a multi-year activity to support policy, institutional, and regulatory reforms in the environmental sector, focusing on economic and institutional constraints, cleaner and more efficient energy use, reduced air pollution, improved solid waste management, and natural resources managed for environmental sustainability.

USAID has engaged the EPIQ contractor to provide Program Support Unit (PSU) services to EEPP. The PSU has key responsibilities of providing overall coordination of EEPP technical assistance, limited crosscutting expertise and technical assistance to the three Egyptian agencies, and most of the technical assistance that EEAA may seek when achieving its policy measures.

The EPIQ team includes the following organizations:

- Prime Contractor: International Resources Group
- Partner Organization:
  - Winrock International
- Core Group:
  - Management Systems International, Inc.
  - PADCO
  - Development Alternatives, Inc.
- Collaborating Organizations:
  - The Tellus Institute
  - KBN Engineering & Applied Sciences, Inc.
  - Keller-Bliesner Engineering
  - Conservation International
  - Resource Management International, Inc.
  - World Resources Institute's Center For International Development Management
  - The Urban Institute
  - The CNA Corporation.

For additional information regarding EPIQ and the EEPP-PSU, contact the following:

United States of America:
EPIQ Prime Contractor
International Resources Group, Ltd
1211 Connecticut Ave, NW
Suite #700
Washington, DC 20036
Telephone: (1-202) 289-0100
Facsimile: (1-202) 289-7601
Contact: Douglas Clark
Vice President

Egypt:
EEPP-PSU
International Resources Group, Ltd
21 Misr Helwan Agricultural Road
Office 62, 6th Floor
Maadi, Cairo 11431
Telephone: (20-2) 380-5150
Facsimile: (20-2) 380-5180
Contact: Harold van Kempen
Chief of Party

Contents

INTRODUCTION

Emission standards and their enforcement are an inherent part of air pollution programs. Using these standards has become a worldwide practice.

Emission standards for mobile and stationary sources are one of the most significant developments in the field of air pollution. Control of emissions from mobile sources is now recognized as one of the most important elements of air pollution control. For example, using these standards can result in significant reduction of excessive smoke emissions into the Egyptian urban atmospheres. Moreover, ozone formation, which was one of the key elements in Cairo air pollution episode, October 1999, can be greatly controlled through using these standards to limit the emission of hydrocarbons from vehicle exhaust. The objective of using emission standards is to help achieving the desired air quality. Stationary source emission standards include standards for buffer zones, stack heights, equipment design and level composition and those that directly limit the amount or concentrations of the pollutant emitted from a source. They may be derived from process and equipment consideration, air quality consideration or both. Emission standards also may reflect economic, social and political considerations and in addition to that is technology.

In Egypt, Law 4/1994 set air quality standards for the common air pollutants in urban areas and emission standards for several air pollution sources. The current air quality standards are mainly copied from the WHO guidelines without consideration of the nature of the problem in Egypt. Moreover, the current emission standards included in the executive regulations of Law 4/1994 are mainly selected from the emission standards of various countries around the world. In fact, the absence of air pollution control strategy makes it very difficult to set a realistic emission standards. Moreover, because it was the first time to set emission standards in Egypt, the process used to develop such standards is not clear and several legislative issues are missing. Furthermore, at the time of setting these standards, data on air quality and information on emissions from pollution sources were very sparse. Consequently, the limitation of information, the absence of the control strategy and the unclear process used for standards development led to the formulation of the current standards which are facing several constrains. This report reviewed these difficulties through consultations and interviews with key persons in EEAA (Attachment 1). Difficulties facing the implementation of emission standards according to the discussions with key persons in EEAA can be subdivided into institutional, legal, administrative, public awareness, technical and financial reasons.

REVIEW OF IMPLEMENTATION DIFFICULTIES

Legal/Regulatory Issues

Legislation and administration are means of realizing the air pollution control strategy. Therefore, legislation has to be framed so that it becomes an effective instrument for carrying out this strategy. Consequently, the principal feature of air pollution control strategy should be decided on before the legislation and its administrative machinery is given their final shape. The preparation of air pollution control strategy includes:

1. The setting of goals
2. The formulation of plans for attaining these goals and
3. The introduction of a system of supervision

The elements to be used for reaching the goals are mainly:

1. Air quality standards
2. Emission standards
3. Permits, registration and general provisions
4. Air quality control regions
5. Controls on the use of fuel
6. Supervision, and

Enforcement

It seems that the formulation of the existing executive regulations of Law 4 did not pay much attention to goals or the important elements to reach some defined goals through using of such legislation.

One of the other important points is that the objective of the legislation, which is the reduction of concentrations of pollutants in the air to values below tolerable limits, should be clearly stated in the legal regulations. Moreover, the emission standards should be attainable technically and without undue economic hardship. The Law should have some degree of flexibility that must be left in the law in order to be able to deal in the best possible way with the various problems that arise (e.g. using high sulfur fuel needs arrangements in the law to ensure supplies of alternative fuels), as far as possible, for cities most affected by pollution e.g. Cairo.

Emission standards have been considered in the regulations of Law 4/1994 for mobile sources, stationary combustion sources and industrial establishments. Some of the articles of the executive regulations are inconsistent with definitions in the law; others are inconsistent in addressing the sources they are directed for, e.g. articles 37 and 42.

(a) In the case of mobile sources, diesel and petrol engines standards are not separately addressed. Other vehicles e.g. motorcycles have not been considered. In fact, this issue is inconsistent in the law. This makes the article 37 difficult to interpret.

(b) Combustion processes are not clearly stated. Consequently, different interpretations can be made for various sources. Incineration of solid waste is another example where article 42 considered fuel burning. This article considered, in some cases, to cover emissions from hospital incinerators. However, the medical solid waste, incineration is covered by article 28, which subjectively deals with hazardous waste. This confusing matter in the current regulations is recommended for discussion during this consultation with EEAA kep persons dealing with inspections.

One of the other confusing articles is article number 36 (Annex 6) concerning the industrial establishments where emission standards are given for pollutants with reference to gases. Interpretation of these standards for various industries and operations is not an easy task. Consequently, it is suggested to give detailed standards for each industrial activity and for each operation according to its size within the establishment.

The number of emitted pollutants to be measured can be reduced where indicators can be used in some cases. For example, smoke cn be used as a good indicator for emissions from boilers and firebricks industry. This can help the execution of measurements and the implementation of the standards.

The compliance of sources in some regions coupled with bad air quality was one of the objections against the present emission standards. However, this problem not only arises because of the unclear process used to derive the standards, but it can be related to several other reasons and the air control program as a whole. Consequently, it may be seen that the process of derivation of the emission standards has been recognized through the present consultation.

The relation between emissions and air quality has been considered as one of the most important issues to be considered. More stringent emission standards to meet the required air quality were one of the mentioned points. These debatable issues can be answered on the basis of the control program as a whole and the process used to derive the emission standards. This is an unclear matter in the current executive regulations of Law 4/1994. This process should be clearly identified. This may include process and equipment consideration, consideration of air quality standards or a combination of both. Recommended processes will be fully discussed in the final report of this consultation. Moreover, these standards can be derived for national scale and/or regional scales for different geographical locations.

Some specifications are given in the executive regulations of Law 4 for fuel burning processes. These specifications should be further improved. Moreover, discharge points in the case of industrial establishments should be clearly specified. One of the most serious problems facing the implementation of Law 4 is the fugitive emissions from various pollution sources (combustion processes, industrial work, quarrying, storage of materials, disposing industrial solid waste.... etc). All of these important pollution sources in the Egyptian urban and industrial areas should be addressed in the modified regulations.

Another important issue that has been raised during the present consultation is the use of 'permit system'. In fact, air pollution can be regulated differently according to the nature of sources. One of the most effective ways to control air pollution from stationary sources is a "permit system". Under this system prior approval of plans, specifications and other data for new constructions or alternatives is required. Approval is then given if controls to be provided are adequate to meet the air quality and emission requirements. In fact this system requires a prior air pollution control strategy. Permit system also requires EEAA to publish the criteria that will be used for approval and impose the necessity for skilled engineering staff who can execute such work. Consequently, it seems that it is too early to give a solid recommendations on this matter.

Institutional/Administrative Constraints

In most countries, initial and periodic inspections are conducted by the control agency or authorized laboratories. EEAA should at least be capable of making occasional inspection or having them made under contract. The administration machinery at EEAA for the management of air needs to be improved and their capabilities strengthen. Inspection is mainly conducted by EEAA through central and regional levels. However, this administrative machinery lacks coordination, as well as previously prepared inspection program for periodic inspection, trained personnel, equipment and other capabilities. Furthermore, it seems that there is much attention given for the working environment rather than the air pollution emission problem. Here, it is also recommended to separate between the teams dealing with these different issues since each of them necessitates various instrumentation and different experience.

Improvement of the inspection machinery in EEAA may include imposing realistic environmental records (registers) and self-monitoring in the industrial establishments for continuous inspection. Other requirements for such improvement should include establishment of inspection on central, regional and local levels with clear responsibilities, coordination between different levels of inspection, approved programs of inspection, using capable laboratories on contract, improving the capabilities through intensive training courses, equipment, finance, enforcement ...etc.

The system of supervision for stationary sources should include:

1. Initial inspection to ensure compliance with standards.

2. Continuous checks on emissions by plant personnel (self-monitoring).

3. Routine periodic inspection to ensure continuous compliance with regulations (at least every 6 or 12 months).

4. Occasional inspections to investigate complaints.

The issue of source control priorities and consequently their emission standards has been raised during the present consultation. This is a very important issue. For example giving a priority for complete combustion processes can result in energy saving and reduce pollutant emissions. Priorities can also be given for certain areas.

The regulations should be quite clear on the power of enforcement and punitive measures available to EEAA, but such action should be used sparingly and cautiously. An intensive

public education program can do much to secure cooperation and voluntary compliance with regulations.

Technical Issues

Procedures for Source Testing.

The existing executive regulations did not specify several important issues such as:

1. Engineering procedure.
2. Approved methods of testing the concentrations of pollutants.
3. Averaging time of pollutant concentrations in the discharge flue.

These are very important items to be included in the legislation.

Other Problems

Many other technical problems have been recognized. These should be addressed by the executive regulations. Examples are:

- Fugitive emissions.
- The old technology used in several cases which hindered the applications of the standards e.g. lime productions, some of the foundries...etc. These need to be stated clearly that they have to be upgraded. Locations, stacks...etc should be reviewed.
- Problems with measurements due to:
    - Process carried out without chimney to discharge flue gases.
    - Some of the stacks are very difficult to be measured.
    - Chimneys are not prepared for measurements.

Financial Issues

The financing of the supervision system has to be made clear in the regulations of the law. The continuing check (environmental register and self-monitoring) as well as the periodic inspection can be considered as a part of the control program and the owners of the companies should pay the cost.

Public Awareness

One of the difficulties facing the implementation of the law is the absence of awareness about the problem, the legislation and the benefits of air pollution control program. Measurements of emissions faced severe problems when executed in the industrial establishments. Here, it should be noted that the law should be enforceable. This implies that the legislation is wanted by the public, although it may go further than might have been wished. Basically, However there must be agreement in principle between the legislators and those for whom they are

legislating. Consequently, a roundtable discussion and a workshop are recommended to be held in EEAA where stakeholders will be invited to discuss the current legislation and to consult on the necessary changes to improve the regulations. Furthermore, an intensive public education program is highly recommended to secure cooperation and voluntary compliance with regulations.

CONCLUSIONS

In conclusion, implementation of the current executive regulations (Law 4/1994) faces several constrains. These are mainly due to:

- Absence of the strategy, and consequently the absence of the process of standards derivation to achieve the final goal.
- Inconsistency of the articles dealing with air emissions such as articles 28,36, 37 and 42.
- The current regulations missed important issues such as fugitive emissions, engineering procedures, source tasting methods ...etc.
- Lack of public awareness and consequently the cooperation to implement the emission standards.
- Institutional and financial reasons as well as lack of capabilities to conduct the periodic inspection regularly and objectively.
- Technical problems such as old technology used in some of the industrial processes, unprepared stacks for measurements, sometimes stacks are impossible to be prepared, and other many difficulties that face the inspection teams.

Therefore, it is recommended to hold a seminar for EEAA key personnel followed by a round table discussion and the proposed workshop for stakeholders to further discuss the problems of standards implementation and to discuss the process of standards derivation and the machinery for implementation.