



12- Hazardous Substances and Waste Management

Introduction

Hazardous materials and waste management is a priority issue for Ministry of State for Environmental Affairs (MSEA) due to the high risks they pose to public health and the environment.

1. Hazardous Wastes

During 2006, MSEA gave special attention to some hazardous wastes types: namely electronic and medical wastes.

a. Electronic Wastes

Wastes from local electronic and electrical industries are hazardous wastes due to their hazardous content such as:

- Phosphorous used for painting computer screens;
- Barium used in the front board of the

- screen for protection against radiation;
- PVC plastics and flameproof material limiting fire spread in plastic materials;
- Lead used in screens ranging from 2 to 4 kg, according to screen size, as well as that used in circuits of printed circuits which are covered by lead;
- Cadmium used in electronic integrated circuits (ICs), resistors, and condensers in electrical appliances
- Mercury used in flat screens, electric and electronic equipment, and cell phones.

Handling e-wastes faces some problems, at the top of which are the following:

Ministerial Decree 770/2005 of the Import Regulations of the Customs Law allows importing used computer sets and assistant hardware provided that their production date is not later than ten years, which results in importing computer sets with lifetime almost at end. This burdens the envi-

ronment on the short term in the absence of high-tech industrial entities to recycle main elements as an alternative to safe burial in landfills; a highly costly option. Unsafe disposal of these wastes, either by burial or burning, causes many diseases such as osteoporosis, neural diseases, memory weakness, and progeria.

The only measure taken during 2006 to handle these wastes is:

- A mobile operator collected consumed cell phone batteries from the Egyptian market to be recycled in the United Kingdom in cooperation with Phone Back Company.
- The operator also collected used parts of copiers and printers (Xerox) and re-sent them to the headquarters abroad.

b. Medical Waste Safe Management

Safe management of medical wastes from healthcare facilities is one of the most important issues in which MSEA is specifically interested, due to their hazards to Egyptians' health and environment. Accordingly, MSEA took the initiative to develop a strategy to address this problem for coordination with all stakeholders, taking into consideration legislative systems, technical standards, and the comprehensive development process requirements.

The problem is currently handled in Egypt through (MSEA) coordination with Ministry of Health and Population (MoHP) and Ministry of Local Administration (MoLA) to control the comprehensive system (segregation at source, collection, transfer, and final disposal processes) dealing with approximately 50,000 tons/year of medical wastes (according to MoHP estimates).

Incineration systems (common) and sterilization are used in Egypt for the disposal of medical wastes. Table (12.1) shows the distribution of incineration, mincing, and sterilization units in health care facilities till the end of 2006. MSEA contributed purchasing 28 incineration units provided in cooperation with the military production sector.

Table (12.1): Number and locations of treatment units (incinerators, sterilizers) in governorates till the end of 2006

Governorate	Incinerators			Mincing and Sterilization Equipment
	Governmental Hospitals	University Hospitals	Private	
Cairo	6	3	1	9
Qaliubeya	6	1	0	1
Giza	8	0	0	2
Sharqeya	5	0	1	0
Gharbeya	3	0	1	0
Monofeya	3	0	1	0
Daqahleya	6	0	0	0
Behera	3	0	0	1
Kafr el-Sheikh	3	0	0	0
Damietta	5	0	0	0
Marsa Matrouh	3	0	0	0
Ismailia	1	0	0	0
Port Said	1	0	1	0
Suez	0	0	1	0
New Valley	1	0	0	0
Beni Soueif	3	0	0	0
Minya	4	0	0	0
Qena	1	0	0	0
Aswan	1	0	0	0
North Sinai	1	0	0	1
South Sinai	2	0	0	0
Red Sea	2	0	0	0
Luxor	0	0	0	0
Fayoum	2	0	0	0
Alexandria	1	0	0	0
Sohag	1	0	0	0
Assiut	2	0	0	0

Source: MoHP 2007 Report

As a result of the expansion in incineration systems, MSEA validated and set maximum limits for emissions from medical waste incineration units and published them in the amended copy of the Executive Regulations of Law 4/1994 to avoid air pollution.

MSEA makes efforts to encourage and facilitate national and foreign private sector contribution to the medical waste safe management system. Ambitious proposals have been presented by some experienced and pre-qualified Arab investors to carry out a comprehensive project of medical waste management using state-of-the-art mincing and sterilization technologies.

Within this framework, the number of private companies working in the integrated medical waste management system is currently 4 in Greater Cairo, the largest source of medical waste amounts in Egypt (about 55 tons/day). Table (12.2) shows the amounts generated daily in Greater Cairo.

Table (12.2): Amounts of medical wastes generated in Greater Cairo

Governorate	Hospital #	Bed #	Health-care wastes (kg/day)
Cairo	423	31844	35028
Giza	239	10155	11170
Qal-iubeya	98	8536	9090
Total	760	50535	55288

These amounts are handled by a group of private companies which submitted their project EIA studies on using mincing and sterilization systems to MSEA which, in turn, reviewed the systems used and their compliance with applicable technical requirements and standards of mincing and sterilization units. These companies are operating through contracting with local administration within Greater Cairo:

Northern Zone – Ama Arab Environment Company:

- Treatment unit location (El-Wafaa wal-Amal)
- Treatment system: vapor sterilization

Southern Zone – EcoConserve Company

- Treatment unit location (15th of May City)
- Treatment system: outsourced vapor sterilization and incineration (Cairo University hospital incinerator)

Eastern Zone – Spanish Company

- Treatment unit location (El-Wafaa wal-Amal)
- Treatment system: vapor sterilization

Western Zone - Ama Arab Environment Company:

- Treatment unit location (El-Wafaa wal-Amal)
- Treatment system: vapor sterilization

EEAA follows up custom releases of imported hazardous wastes to ensure banned hazardous wastes do not enter the country. 208 custom releases were studied during 2006.

Project for Establishing Central Units for Treatment and Final Disposal of Hazardous Wastes in Free Zones and Accumulated Port Wastes

This project is planned to be executed through investors by promoting it to local investors and at the regional and international levels. A proposal was received from a Saudi company partnering with an American joint company specialized in safe management of hazardous wastes for implementing a port-accumulated hazardous waste disposal project and establishing an integrated system of hazardous industrial waste management in Egyptian industrial cities and utilizing such wastes in energy production in 10th of Ramadan city as a start. An MoU has been signed by MSEA and the mentioned company, by virtue of which MSEA shall coordinate with stakeholders to facilitate the procedures of issuing licenses and approvals required to start project execution.

Integrated Hazardous Industrial Waste Management Project in Alexandria in Cooperation with the Finnish Government

The second phase of this project was completed as an example to be followed in developing hazardous industrial waste management in Egypt. Until now, the project has surveyed industrial facilities producing

hazardous wastes in Alexandria. A landfill for these (solid inorganic) wastes has been located. A (chemical-physical) treatment unit of liquid inorganic industrial wastes has been established.

2. Hazardous Material

In 2006, MSEA adopted the following procedures:

- a. Preparation and distribution of hazardous material record guidelines among various industrial sectors in Shubra El-Khayma to make an inventory of used chemicals and their amounts.
- b. Ministry of Industry (Trade and Industry) hazardous material list was modified by adding 35 new chemical substances to the list issued in 1999.
- c. Inventory of polychlorinated biphenyl (PCB) in 8 transformer stations, Shubra el-Khayma Power Station, 4 major factories, and 3 petroleum companies under "Environmental Management Improvement Project", of the Integrated Hazardous Waste Management Component funded by JICA.
- d. Preparation of a plan for raising environmental awareness of pollutants and their health impacts to be executed in cooperation with factories and NGOs.

Table (12.3): Hazardous material lists issued by line ministries

Ministry	List (A)	List (B)	Remarks
Health	7	52	In addition to list (B) All kinds of detergents and disinfectants of high concentration Insecticides used in public health. Pharmaceuticals
Electricity & Energy	-	184	A paragraph on natural materials is attached to the list
Industry	-	145	
Petroleum	-	48	
Interior	-	75	
Agriculture	172	-	

3. The Problem of Mines in Egypt

Egypt suffers from land anti-personnel (AP) and anti-tank (AT) mines spread over vast areas in the North Coast and Sinai. World War II has left in Alamain, south of the Northern Coast through Western Egyptian borders, around 17.5 million mines over more than quarter a million of arable feddans. Egyptian-Israeli wars have left about 5.5 million mines in Sinai and the Eastern Desert. According to official statistics, Egypt currently contains around 21,800 million mines out of 23 million, thanks to Armed Forces' success in sweeping some 1,200 million mines since 1995.

a. Negative Impacts of Mines in Egypt

Undoubtedly, the existence of such huge number of mines hinders development as follows:

The Eastern Desert:

- Obstruction of many tourist development projects at Red Sea and Sinai Beaches and high cost of projects established in this area due to increased cost of mine sweeping.
- Obstruction of industrial development processes and establishing new urban communities, besides enormous costs of clearing areas planned to be developed.

- Obstruction of agricultural development processes in Sahl el-Tineya, Balooza, and North Sinai areas.
- Disruption of petroleum exploration processes.

The Western Desert:

- Disruption of cultivating vast arable areas despite water availability in areas such as Hammam and Almain.
- Disruption of development projects in the North Coast and some areas in Marsa Matrouh.
- Disruption of Qattara Depression project as a large one for electricity generation due to mines interception of the channel road.
- Petroleum exploration.

b. Problems and Obstacles of Mine Sweeping in Egypt

- (1) Variation of AP and AT mines planted by the Allied and the Axis Powers in the Western Desert during World War II.
- (2) Mine movement from their original locations because of sand dunes and climatic changes over half a century.
- (3) Mine sensitivity to explosion as a result of because of oldness and meteorological factors.
- (4) Disappearance or absence of mine maps.
- (5) Absence of paved ways to mine areas.
- (6) Unavailability of modern technologically advanced equipment to be used in mine sweeping.

- (7) The financial cost of removing about 23 million mines.
- (8) Huge human burdens related to mine sweeping, and absence of sufficient experts.
- (9) Egypt is not listed on the international mine action map.

Efforts made to sweep mines in Egypt

- (1) During Geneva 1996 Conference on Disarmament, Egypt demanded from the countries which planted mines in its lands to bear the responsibility of mine sweeping.
- (2) In March 1998, the Egyptian Minister of Defense met his German counterpart where Germany expressed its willingness to provide technological and financial aid to sweep mines. In October, 1998, Germany presented 110 mine detection sets to Egypt.
- (3) During UN General Assembly Meetings in 1993, Egypt demanded, through UN Ambassador, that countries which planted mines in its lands bear responsibility and submit maps and registers of mine fields and locations.
- (4) Ministry of Defense published a book "*Iron Killers*" as a means of international awareness of the problem of mines in Egypt.
- (5) Introducing Egypt mine issues during the People's Assembly's Education and Scientific Research discussions.
- (6) The Egyptian Ministry of Foreign Affairs contacted countries concerned, Britain and Germany, and demanded the provision of aids, equipment and training on mine sweeping.

Egypt Attitude to Ottawa Treaty

Although Egypt, in December 1997, did not sign Ottawa Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Anti-Personnel Mines and on their Destruction, she supported the treaty in principle. Egypt participated in all preliminary phases preceding signing the treaty.

During expert meetings to discuss the treaty draft in Oslo, September 1997, Egypt demanded more international pressure to urge the countries which participated in WWII battles on Egyptian territories to submit mine maps and provide more support to sweep them.

Human catastrophes resulting from mines have become more expounded. With information flow, now available for all and expressive of the volume of human losses due to these mines, international movement has become decisive and active in facing this issue. This information has generated wide international concern about mines and combating methods worldwide, as until recently, the world has been completely ignorant about this issue or not interested in it. The international campaign to ban mines began in 1991, followed by UN involvement with its magnitude and capacities since 1994 to discuss radical solutions to this problem. International concern about this issue brought forth the ratification of 135 states on an international convention banning the use of land mines. All these have become a justification to meet the international community's dire need of international, regional, and local effort collaboration to achieve this ban and put an end to the problem.

Reviewing worldwide land mine problems, mine sweeping should be done through the following:

- Cooperation among all war parties responsible for mine plating, notwithstanding land ownership;
- Activation of international cooperation according to rules of international law and conventions;
- Establishment of an effective mechanism coordinating and following up mine sweeping and planting monitoring operations during conflicts and wartime;
- Activation of international, regional, local, and specialized non-governmental organizations' roles and providing them with proper support to carry out their role perfectly.

References

- (1) Law 4/1994 and the amended Executive Regulations thereof
- (2) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal; Basel Convention
- (3) MoHP Report on the Number of Hazardous Waste Incinerators in Health Facilities for 2007.
- (4) State Information Service Report on Mines in Egypt.