

Regional and National Radiation Protection Activities in Egypt

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Abstract. Radiation Protection Activities in Egypt go back to 1957 where the Egyptian Atomic Energy Commission (EAEC) Law was issued.

Radiation protection and civil defense department was one of EAEC eighth departments. Ionizing radiation law was issued in 1960 and its executive regulation in 1962.

The main aim of the present work is to through some light on the current radiation protection activities in Egypt. This includes not only the role of governmental organizations but also to the non governmental organizations. Currently a new Nuclear Safety law is understudy. Regional activities such as holding the second all African IRPA regional radiation protection congress which was held in April 2007 and national training and workshops are held regularly through EAEC , AAEA and MERRCAC

1. Historical Introduction

History of radiation Protection activities in Egypt follows its program of the peaceful uses of Atomic Energy , it may be grouped in several sectors

- Sector 1: -pre 1957

Ionizing radiation sources were in use so that X-ray machines were in use at the medical centers and Radioactive sources were in use at Physics Departments of Egyptian Universities . Radiation Protection activities were carried out by Medical and University Staff

- Sector 2: 1957-1962

The Egyptian Atomic Energy Commission (EAEC) was established in 1957¹ aiming to use research reactor for isotope production and accelerator for Fundamental research and developments. The first Radiation protection department was established within EAEC. Due to the increasing use of ionizing radiation sources for research and applied purposes, the Ionizing Radiation (IR) law no 59 for 1960² was issued and its executive regulation was issued in 1962³. This IR law and its regulation regulates the use of ionizing radiation sources as well as protection against its hazard

- Sector 3: 1962- 1989 (Ministerial orders)

Several Egyptian ministerial orders were issued

- 1- List of facilities in which IR sources are in use (1972)⁴,
- 2- Health hazard of IR (1984)⁴,
- 3- Use of TLD (1985)⁴ and
- 4- Industrial Radiography requirements (1989)⁴

- Sector 4 : 1990-2000

Environmental law no 4 (1994)⁵ as well as its regulation (1995)⁶ were issued . In which materials emitting IR are considered as Dangerous materials as well as its wastes.

Several ministerial orders were also issued such as

- 1- Radioactivity in drinking water (1995)⁷
- 2- Updating Radiation Protection requirements for industrial Radiography (2000)⁷ and othes as well as
- 3- EAEC Petroleum rule - 1(2000)⁸.

- Sector 5: 2001-2005

- 1- Ministry of Health order of medical waste (2001)⁹
- 2- Updated Labor law (2003)¹⁰,

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- 3- Ministry of Electricity & Energy order for Air concentration(2004)¹¹,
- 4- Ministry of Electricity & Energy Exemption levels for U , Th materials as well as Building material(2004)¹¹, and
- 5- EAEA local regulations (2005)¹² based on IAEA Basic Safety Standards.
- 6- Ministry of Health order updated regulations regarding Dangerous Materials and waste , materials emitting ionizing radiation (2005)¹³.

- Sector 6 2006-2007

- 1-Nuclear Material law(2006)¹⁴,
- 2- Nuclear material ministerial orders¹⁵
- 3- EAEA Updated Petroleum rule(2006)¹⁶

- Sector 7 2008

As Egypt is planning to build several NPP plants in the near future a draft of nuclear safety and radiation control law(2008)¹⁷is under study.

2. Egyptian Societies ESNSA and IRPA Egypt

Radiation Protection activities were among the interest of the Egyptian Nuclear and Radiation Physicists. Prof K A Mahmoud was Egypt Pioneer radiation protection specialist.

The Egyptian Society for nuclear Sciences and Applications were established in 1965¹⁸ and its Journal was named as Arab Journal for Nuclear Sciences and Applications. Volume 42nd of its Journal was recently issued. The Society organizes conference every four years. Last conference ESNSA-9 was held at Feb. 2008 at Sharm El Sheikh.

Proceedings of the 9th ESNSA Conference was published electronically at www.esnsa.com.

Furthermore, one day seminars were held regularly.

Radiation Protection specialists are participating in ESNSA conferences and Seminars and they published scientific works in ESNSA Journal

Radiation Protection group (RPG) was formed in 1991¹⁹ within ESNSA as National Radiation Protection Society

RPG of ESNSA joined IRPA international in 1992 as IRPA affiliate society (IRPA EGYPT).

Activities of IRPA Egypt are corrently displayed at its website www.irpa-egypt.com²⁰.

3. Activities within IRPA

3-1) Since IRPA Egypt joined IRPA international

Egyptian delegates attended IRPA -9 Congress in Vienna in 1996. Egyptian radiation Protection specialists usually Participates in IRPA-10 congress (2000) and IRPA-11 congress (2004)

3-2) Regional congresses

IRPA Egypt co-organized the first all African IRPA regional radiation Protection congress held in South Africa in 2003 and

IRPA Egypt organized the second all African regional congress with several African IRPA affiliate societies .It was held in Ismailia , Egypt , April 2008.

3-3) Recently, East African radiation Protection Association is planning to organize Third All African regional IRPA radiation Protection Congress and IRPA Egypt agreed to co-organize it.

3-4) In the second All African IRPA Congress , several items were completed , these include

- Refresher courses,
- Eights Scientific sessions,
- Three Round Tables ,and

- Three General lectures.

The proceedings of the regional IRPA congress is currently displayed on the IRPA Egypt website (2008) www.irpa-egypt.com.

The Round Tables were organized in cooperation with IAEA.

3-5) IRPA-Egypt Supported Argentina to host IRPA-12(2004).

3-6) South Africa is planning to organize I(RPA-13) in 2012 with African Radiation Protection Societies as co-organizer IRPA-Egypt as African society is supporting South Africa in its bid .

4. Activities with IAEA

4-1) Radiation Protection Specialists were among IAEA experts in drafting Basic Safety standards

- 1- Safety series No 9, 1982
- 2- Safety series No 115 , 1996 (Arabic Version)
- 3- Updating International Basic Safety Standards 2007

4-2) Egyptian Radiation Protection Specialists participated in Technical cooperation projects such as Radiation Dosimetry after accidents (1972) and personnel dosimetry (1994).

4-3) Radiation Safety projects

Egypt participated in the Technical co-operation meeting held in Cairo in 2007 for several projects dealing with RP Infrastructure, occupational exposure as well as public exposure

4-4) Decommissioning Activities

Egyptian Specialists were among the decommissioning group formed by IAEA (2001-2005).

5. Arab Atomic Energy Authority (AAEA)

Radiation Protection experts were taking active parts in AAEA program through

- 1- Attending Experts meetings
- 2- Participating as lecturers in regional training programs
- 3- Organize Basic R P training program
- 4- Organize Nuclear and Radiation accident Training Program
- 5- Organize Transport of Radioactive material Training Program
- 6- Organize Radiation Protection in Nuclear Medicine and waste disposal Training Program
- 7- Research Reactors

6. MERRCAC

Among the main departments of Middle Eastern Regional Radioisotopes Center for Arab Countries (MERRCAC) Radiation Protection Department.

Several Training Programs are regularly carried out among it

- 1- Basic Radiation Protection
- 2- Medical management of radiation accidents
- 3- Radiation Control
- 4- Radiation Monitoring

7. Egyptian Atomic Energy Authority (EAEA)

7-1) Although the current structure of radiation Protection Departments (RPD) within EAEA includes four radiation Protection Departments in its four centers .

1-RPD of Nuclear Research center

To take account of Research reactors and accelerators as well as unsealed and sealed sources.

2- RPD of Hot Lab Center.

To take account of isotope production and waste managements.

3-RPD of Radiation Research and Technology Center

To take account of the irradiation units , linear accelerator and other sealed sources

4- RPD of Nuclear Safety and radiation control

To cover licensing, inspection and other regulatory body items

7-2) The very old RPD of Nuclear Research center with its main units. These units are

1- Radiation Control unit of all faculties ,

2- External Dosimetry unit,

3- Internal Dosimetry Whole body Counter unit,

4- Bioassay and internal contamination unit,

5- Transport, decontamination and waste unit,

6- Environmental Monitoring unit

Medical surveillance of radiation workers are within Medical Directorate

7-3) In general all workers are monitored regularly using Film or TLD .Three whole body counters are in use for monitoring persons working with open sources. Furthermore ,all personnel are regularly examined medically at least once a year . Radiation record keeping are kept electronically.

Record keeping includes Safe transport of radioactive materials documents.

8. Ministry of Health

As regulatory body and among the responsibility of the ministry of Health is to regulate the use of X-rays , accelerators and Sealed sources

These activities are carried following 1960 I R law through the Executive Bureau for Radiation Protection (EPRP) , EBRP duties cover licensing of the sites and inspection.

Personnel license is the duty of the directorate of the medical licensing of the Ministry of Health.

The IR committee is the main Board for all issues related to ionizing radiation

9. Ministry of Environment

According to Egyptian Environmental law (1994) and its regulation (1995) and its modification (2005).

Materials and waste emitting ionizing radiations are considered dangerous material with EAEA as the competent authority.

10. Other International activities

10-1) Egypt is member of UNSCEAR committee since its foundation

10-2) Egypt is active country in the AFRA Project, where radiation safety program includes

1- R P infrastructure

2- Selection of Personnel and Training

3- Occupational exposure

4- Public Exposure

5- Emergency

10-3) Radiation Protection Specialists are looking forward to play a role with ICRP.

10-4) Radiation Protection Specialists are taking part in Training and awareness programs locally and regionally.

10-5) Health physicists and radiation protection experts are advising users of ionizing radiations in all sectors and they are offering their expertise to Arab countries as well

Conclusions

History of Radiation Protection activities in Egypt indicates wealth of experience and continuous updating by training to cover peaceful uses of atomic energy locally and regionally

REFERENCES

- [1] Egyptian EAEC law, no 288, 1957.
- [2] Egyptian IR law, no 59.1960.
- [3] Egyptian IR regulation no 630, 1962.
- [4] Egyptian Ministry of Health ministerial orders no 444, (1972), 143(1984), 155 and 265(1989).
- [5] Egyptian Environmental law no 4, (1994).
- [6] Egyptian Environmental Regulations no.338 (1995).
- [7] Egyptian Ministry of Health orders 108 (1995) and 204(2000)
- [8] EAEA order (2000)
- [9] Ministry of Health 192 (2001),
- [10] Egyptian Labor law (2003)
- [11] Ministry of Electricity and energy orders 534,535(2004),
- [12] EAEA order (2005)
- [13] Ministry of Environment order (2005)
- [14] Egyptian Nuclear material law 152(2006)
- [15] Egyptian ministry of Electricity & energy orders regarding nuclear materials 419,420 and 421 (2006)
- [16] EAEA updated PET-1 order (2006)
- [17] Draft of Egyptian law regarding nuclear safety and radiation control (2008)
- [18] ESNSA website at www.esnsa.com .
- [19] RPG of ESNSA(1991)
- [20] IRPA Egypt website www.irpa-egypt.com (2007)