

NIGERIAN NUCLEAR REGULATORY AUTHORITY

REPORT OF TWO WEEKS BASIC TRAINING COURSE ON NUCLEAR SAFETY, RADIATION PROTECTION, AUTHORIZATION AND INSPECTION OF RADIATION SOURCES AND UPCOMING NNRA REGULATORS HELD IN THE SOUTH EAST ZONAL OFFICE, ENUGU, 17TH – 28TH JUNE 2019

1.0 Introduction

A Two-Week Basic Training Course on Nuclear Safety, Radiation Protection, Authorization and Inspection of Radiation Sources for upcoming NNRA Regulators was held in the Southeast Zonal Office, Enugu, from 17th to 28th June, 2019. The Training Course was organized by the Nigerian Nuclear Regulatory Authority (NNRA), Headquarter using the International Atomic Energy Agency (IAEA) training syllabus for Regulators in Industrial, Oil and gas, Diagnostic and Interventional Radiology. The Training was held in Residency Hotel, Independence Layout, Enugu.

2.0 Objectives of the Training Course

The Objectives of the Training Course were to:

- i. to meet the needs of NNRA Regulators, for initial training to acquire a sound basis in radiation protection and the safety of radiation sources
- ii. to provide both theoretical and practical training and technical bases of international recommendations and standards on radiation protection and their implementation
- iii. to present the requirements of the “International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources”
- iv. to provide basic training on Authorization and Inspection of Radiation Sources for new NNRA regulators
- v. to provide regulatory framework for the control of radiation sources in Medical, Industrial and other applications

3.0 Opening

The training Course was declared opened by the representative of the Ag.DG/CEO and the Course Director, Dr. Isa Sambo. In his address, he welcomed all participants and charged them to participate actively in the training course to draw lessons that will help them improve their career.

4.0 Participants

There were a total of Twenty Four (24) participants in the training course, made up of 22 Regulators, 1 Legal Officer and 1 ICT Officer.

4.1 Local Organizing Committee

- i. Charles Ajaero - Chairman
- ii. Zikrullah Ahmad
- iii. Philip O. Abumere
- iv. Ekene Efiemokwu
- v. Nnenna George
- vi. Daniel Eyetsemina
- vii. Ifeanyi Oji
- viii. Faith Ama
- ix. Uchenna Arinze
- x. Veronica Jakpa

4.2 Resource Persons

- i. Dr. Isa Sambo
- ii. Charles Ajaero
- iii. Philip O. Abumere
- iv. Ubong Effiong
- v. James Abbah
- vi. Vincent Uwechi

4.3 List of Participants

- i. Mrs. Gabriel Ujochukwu Adama
- ii. Miss Oluwatosin Atanda
- iii. Mr. Idoko ThankGod
- iv. Mrs. Okonkwo Esther Helen
- v. Mr. Effiom Orok Amanso
- vi. Mr. Enwerem Alexander
- vii. Mr. Otunomo Abayomi
- viii. Mr. Nwani, Emenike Marsceilus
- ix. Mr. Iyeghe O. Amarachi
- x. Mr. Ogomuo Kingsley U.
- xi. Mr. Umetietie Augustine
- xii. Mrs. Uzodinma Mariam E.
- xiii. Mr. Polycarp Ukachi
- xiv. Mr. Eko C. J. Ododo
- xv. Mr. Christian E. Nechi
- xvi. Mr. Daibo David
- xvii. Mr. Abu Ezekiel
- xviii. Mr. Akwo Christopher K.
- xix. Mrs. John-Akujuobi Ijeoma Esther

- xx. Mr. Bebenimibo Happy E.
- xxi. Mr. Arinze Uchechukwu Christian
- xxii. Mrs. Dim Ogechukwu Nwamaka C.
- xxiii. Mrs. Solomon Agatha Onyinyechi
- xxiv. Mr. Okoh Ogbuja Pius

5.0 Training Programme

The programme of the training Course consisted of Lectures, discussions, examination, evaluation of the training course. The following topics were covered during the technical sessions:

- Radioactivity;
- Interaction of Radiation with matter;
- Radiation Sources;
- Quantities and units;
- Overview of Radiation practices
- Practice specific regulations for medical exposures
- Feedback from inspection of radiology facilities in Nigeria;
- Shielding calculations;
- Occupational radiation protection;
- Biological effects of ionizing radiation;
- Principles of Radiation Protection and the international framework;
- Safety, security of sources, public exposure protection;
- Features of X-ray facility Design;
- Radiation Detectors;
- Radiation protection programme for radiology department;
- Individual Monitoring: External Exposure;
- Patient Dosimetry;
- Transport of Radioactive Materials: transport safety Regulations;
- Transport safety: Packages, Labeling, Placarding, Responsibilities;
- Emergency Preparedness: Emergency response Plan;
- Radiation sources and equipment in radiology: X-ray production, radiographic unit;
- Radiation sources and equipment in radiology: fluoroscopy, interventional radiology, CT scanner;
- Radiation sources and equipment in radiology: Mammography;
- Radiation sources and equipment in radiology: Dental x-ray;
- Etc.

5.1 Training Materials

The participants were provided with soft copies of all the presentations.

5.2 Examination

The participants were examined after the training course. The exam comprised of Sixty (60) Multiple Choice Questions (MCQs) to test the understanding of the participants and ascertain whether the objectives of the training course were met. After the exam, the scripts were marked and 21 out of 24 participants, representing 87.5% scored above 60%.

6.0 Observations

At the end of the Training Course, the following were observed:

- i. the participants indicated that the objectives of the Training Course were achieved and has further prepared them to perform their duties better as Regulators;
- ii. two-weeks training time was short with so much to cover;
- iii. there were no Practical sessions/Field Work in the Training programme
- iv. inadequate radiation detection and monitoring equipment such as contamination monitors, radioisotope Identifiers, PPEs, TLD badges and Pen dosimeters
- v. operations of the Zonal Office particularly in conducting inspections are hampered with delays in getting approvals
- vi. participation of the Regulatory Officers in the review of applications for authorization
- vii. delay or lack of enforcement action by the NNRA

7.0 Recommendations

In view of the observations made in Paragraph 6 above, the NNRA may wish to:

- i Carry out training needs assessment in order to identify gaps in individuals and develop a systematic training programmes in order to bridge the gaps
- ii Include practical sessions, demonstrations and field activities in the subsequent training courses
- iii Train staff in the Zonal Offices on review of applications for authorization for various practices and also train them on safety assessment
- iv Sustain the attachment programme of officers to industrial and medical facilities.
- v Initiate a programme for allowing Regulators at the Zonal Office to visit the Headquarter for at least two weeks to further learn on the job particularly on the authorization process
- vi Develop enforcement guidelines and send it to Zonal Offices for implementation
- vii Provide the Zonal Offices with radiation detection equipment basic in order to enhance their performance.

8.0 Closing

In his closing remarks, the course director, Dr. Isa Sambo, advised participants to open IAEA Nucleus accounts and take IAEA courses, to keep themselves abreast of developments and global trends in the nuclear industry as well as broaden their knowledge on nuclear safe practices.

9.0 Acknowledgement

The Course Director, the LOC members and staff of South-East Zonal Office, Enugu expressed their profound gratitude to the Ag. Director-General; Dr. Y.U. Idris and the Management of Nigerian Nuclear Regulatory Authority for the approval and support given to the training programme for Regulatory Officers in the SEZO.