REGULATORY CONTROL OF RADIOACTIVE SOURCES IN NIGERIA

BY

MOYOSOLA B. ABUBAKAR

CONTENTS

- INTRODUCTION
- REGULATORY CONTROL REGIME
- OBJECTIVE OF REGULATORY CONTROL OF RADIOACTIVE MATERIALS
- USES OF RADIOACTIVE SOURCES IN NIGERIA
- PRINCIPLE OF SAFETY AND SECURITY
- CONCLUSIONS
- CHALLENGES

LEARNING OBJECTIVES

- INCREASED UNDERSTANDING OF REGULATORY CONTROL REGIME
- UNDERSTANDING OF SAFETY AND SECURITY PRINCIPLES
- UNDERSTANDING OF RADIOACTIVE SOURCES TRANSPORTATION IN NIGERIA
- EXPLAIN CHALLENGES INVOLVES IN REGULATING RADIOACTIVE SOURCES IN NIGERIA

INTRODUCTION

THE NIGERIAN NUCLEAR REGULATORY AUTHORITY (NNRA) WAS ESTABLISHED IN 2001 BY THE NUCLEAR SAFETY AND RADIOLOGICAL PROTECTION ACT 19 OF 1995.

- 2003 - THE **N**IGERIAN **B**ASIC **I**ONIZING **R**ADIATION **R**EGULATIONS (**NIBIRR**)

IN 2006;

- NIGERIAN TRANSPORTATION OF RADIOACTIVE SOURCES AND
- NIGERIAN SAFETY AND SECURITY OF RADIOACTIVE SOURCES REGULATIONS

- FIVE OTHER PRACTICE-SPECIFIC REGULATIONS

RESPONSIBILITIES OF NNRA

- REGULATING THE POSSESSION AND APPLICATION OF RADIOACTIVE SUBSTANCES AND DEVICES EMITTING IONIZING RADIATION;

- ENSURING PROTECTION OF LIFE, HEALTH, PROPERTY AND THE ENVIRONMENT FROM THE HARMFUL EFFECTS OF IONIZING RADIATION, WHILE ALLOWING BENEFICIAL PRACTICES INVOLVING EXPOSURE TO IONIZING RADIATION;

POWERS OF NNRA

- CATEGORIZE AND LICENSE ALL ACTIVITIES INVOLVING EXPOSURE TO IONIZING RADIATION, IN PARTICULAR, THE POSSESSION, PRODUCTION, PROCESSING, MANUFACTURE, PURCHASE, SALE, IMPORT, EXPORT, HANDLING, USE, TRANSFORMATION, TRANSFER, TRADING, ASSIGNMENT, TRANSPORT, STORAGE AND DISPOSAL OF ANY RADIOACTIVE MATERIAL, NUCLEAR MATERIAL, RADIOACTIVE WASTE, PRESCRIBED SUBSTANCE AND ANY APPARATUS EMITTING IONIZING RADIATION;

POWER OF NNRA

- REVIEW AND APPROVE SAFETY STANDARDS AND DOCUMENTATION;
- PROTECT THE HEALTH OF ALL USERS, HANDLERS AND THE PUBLIC FROM THE HARMFUL EFFECTS OF IONIZING RADIATION;
- ALL SOURCE OR PRACTICE INVOLVING EXPOSURE OF MAN TO IONIZING RADIATION SHALL BE AUTHORIZED THROUGH A SYSTEM OF APPLICATION NOTIFICATION, REGISTRATION OR LICENSING

OBJECTIVES OF REGULATORY CONTROL REGIME

THE OBJECTIVE OF REGULATORY CONTROL IS TO ENSURE PROTECTION OF :

- ENVIRONMENT
- WORKERS
- PUBLIC AND; ENSURE
- SECURITY OF RADIOACTIVE SOURCES

- USE

- STORAGE

- AND TRANSPORTATION

USES OF NUCLEAR TECHNOLOGY IN NIGERIA

- RADIOLOGICAL APPLICATIONS
- NUCLEAR APPLICATIONS
  - NON-POWER NUCLEAR APPLICATIONS
  - POWER APPLICATIONS

SECTORAL USES OF RADIATION SOURCES IN NIGERIA

- PETROLEUM INDUSTRY
- HEALTH SECTOR
- AGRICULTURE AND FOOD PRESERVATION
- CONSTRUCTION INDUSTRY
- MANUFACTURING SECTOR
- EDUCATION AND RESEARCH
- SECURITY INSPECTION
- WATER MANAGEMENT

PRACTICES USING RADIATION SOURCES IN NIGERIA

- DIAGNOSTIC RADIOLOGY
- NUCLEAR MEDICINE
- RADIOTHERAPY
- INDUSTRIAL RADIOGRAPHY
- NUCLEAR WELL-LOGGING
- NUCLEAR GAUGING
- URANIUM MINING AND MILLING
- NUCLEAR RESEARCH REACTORS
- NUCLEAR POWER REACTORS

REGULATORY CONTROL REGIME

- REGULATIONS AND GUIDANCE
- AUTHORIZATION (LICENSING, REGISTRATION, PERMIT)
- OVERSIGHT FUNCTIONS (INSPECTION, ENFORCEMENT)
- EMERGENCY PLANNING AND RESPONSE
- ANCILLARY FUNCTION (TRAINING, WORKSHOP, SEMINARS)

REGULATIONS AND GUIDES

- NIGERIAN TRANSPORTATION OF RADIOACTIVE SOURCES REGULATIONS 2006:

- SCHEDULE 14 (1); "A CONSIGNOR, CARRIER AND CONSIGNEE MUST HAVE A VALID LICENCE, AND MUST NOTIFY THE AUTHORITY PRIOR TO DELIVERY, TRANSPORT AND RECEIPT OF RADIOACTIVE SOURCE"
- SCHEDULE 14 (2); "CARRIERS OF RADIOACTIVE MATERIALS IN NIGERIA MUST SEEK SECURITY CLEARANCE FROM DEPARTMENT OF STATE SERVICE."
- SCHEDULE 14 (3); "FOR SHIPMENT BY ROAD, THE VEHICLE MUST BE DEDICATED FOR THE PURPOSE OF TRANSPORTATION OF RADIOACTIVE MATERIALS ONLY"

REGULATIONS AND GUIDES

- NIGERIAN SAFETY AND SECURITY OF RADIOACTIVE SOURCES REGULATION 2006:
- - SCHEDULE 17: ALL LICENSEES PROSPECTIVE OF IMPORTING OR EXPORTING RADIOACTIVE SOURCES SHALL PROVIDE:
- "AN EXPORT LICENSE FROM THE REGULATORY BODY OF THE COUNTRY OF ORIGIN IN CASE OF LICENSE TO IMPORT RADIOACTIVE SOURCES
- A WRITTEN AGREEMENT FROM SOURCE MANUFACTURER OR HANDLER THAT THE SOURCE SHALL BE ACCEPTED BACK WHEN IN A STATE OF DISUSE OR SPENT.
- AN IMPORT LICENSE FROM THE REGULATORY BODY OF THE COUNTRY OF ORIGIN IN THE CASE OF APPLICATION TO EXPORT RADIOACTIVE SOURCE
- SCHEDULE 18: "EXPORT OF SCRAP METAL SHALL BE DONE ONLY THROUGH DESIGNATED PORTS WHERE PORTAL MONITORS ARE PROVIDED.

PRINCIPLE OF SAFETY AND SECURITY OF RADIOACTIVE SOURCES

- **THE *SAFETY PRINCIPLE* IS PRIMARILY: THE PREVENTION OF HARM AND PROTECTION OF HEALTH, PUBLIC AND THE ENVIRONMENT FROM HARMFUL EFFECTS OF IONIZING RADIATION.**

- **THE *SECURITY PRINCIPLE:*** *PROTECTION OF INFORMATION CONFIDENTIALITY, VULNERABILITY OF NUCLEAR AND RADIOACTIVE MATERIALS*

IMPORTANCE OF CONTROL RADIOACTIVE SOURCES

PREVENT, DETECT AND RESPONSE TO,

- **THEFT**
- **SABOTAGE**
- **UNAUTHORIZED ACCESS,**
- **ILLEGAL TRANSFER OR OTHER MALICIOUS ACTS**

INVOLVING NUCLEAR MATERIAL, RADIOACTIVE SUBSTANCES OR THEIR ASSOCIATED FACILITIES

GRADED APPROACH

LEVEL OF REGULATORY CONTROL IS COMMENSURATE WITH THE RISKS ASSOCIATED WITH THE RADIOACTIVE SOURCE (CATEGORIZATION);

- LICENSING
- REGISTRATION
- PERMIT

CHALLENGES

- THEFT OF TRANSPORT CONTAINERS
- SCRAP METAL YARD
- LEGACY SOURCES
- NORM

CONCLUSIONS

- FROM SECURITY POINT, RADIOACTIVE SOURCE PROTECTION DEPEND ON

– ENERGY AND TYPE OF RADIATION (ALPHA, BETA AND GAMMA)

– HALF LIFE

– PHYSICAL FORM

– SHIELDING

– VULNERABILITY (EXPLOITABLE WEAKNESS OR DEFICIENCY IN SECURITY SYSTEM)

Thank You for Your Attention