



National Nuclear Security Administration



**Office of
Nonproliferation
and International
Security (NIS)**

www.nnsa.doe.gov

**INSEP Cooperative Programs in QA/QC
and Laboratory Best Practices with
North African Countries**

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-  **Safeguard** nuclear material to prevent its diversion for dual use.
-  **Control** the spread of WMD-related material, equipment, technology and expertise.
-  **Verify** nuclear reactions and compliance with international nonproliferation treaties and agreements.
-  **Develop** and implement nonproliferation and arms control policy.



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Overview



- **Overview of the International Nuclear Safeguards and Engagement Program (INSEP) Collaborations**
- **Brief Note on Quality Management System**
- **Assistance offered by INSEP on QA/QC and Laboratory Best Practices**
- **Wrap Up**



International Engagement

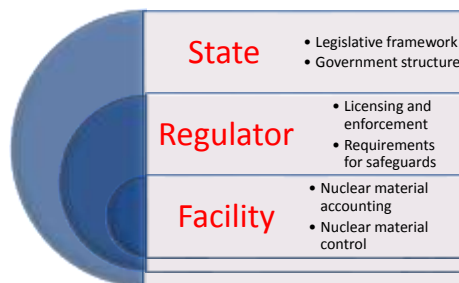
Collaborate with international partners to strengthen safeguards at all stages of nuclear power or civil nuclear research development.

- Build indigenous safeguards infrastructure to support new nuclear power programs or active nuclear research.
- Support universal implementation of the Additional Protocol (AP) through technical cooperation program.
- Provide training on best practices that develop the organizational culture necessary for effective domestic safeguards.

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- Establish long-term relationships with key organizations and individuals in nuclear-developing states.
- Support development of indigenous capacities for international and domestic nuclear safeguards.
- Promote best practices consistent with international norms and standards.



Fostering the Components of an Effective State Systems of Accounting for and Control of Nuclear Material

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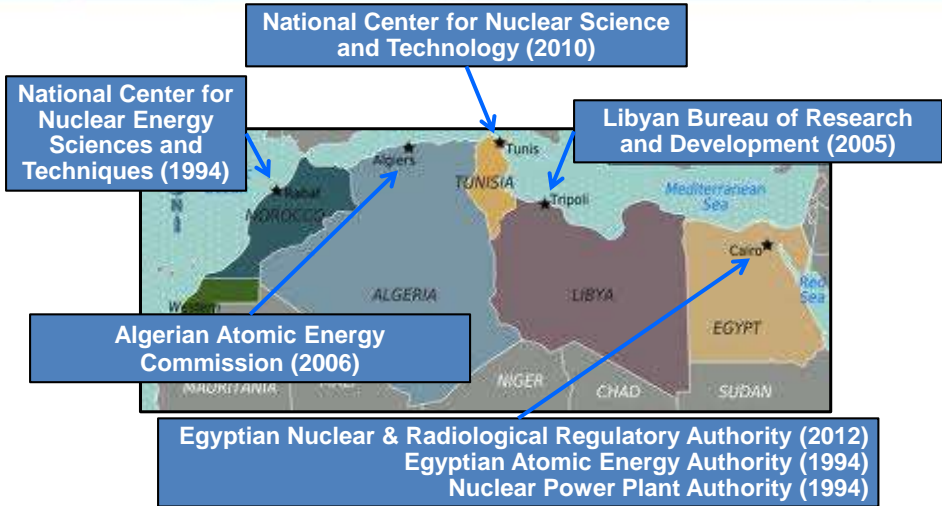
Office of Nonproliferation and International Security (NIS) **Global Partnerships**



Over 85 Active Projects with 19 Partners

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Office of Nonproliferation and International Security (NIS) **Partners in North Africa Region**



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Support for Safeguards Good Practices



- **Regulatory Development and Support for Safeguards**
 - Safeguards regulation development, review and implementation.
- **Technical Safeguards Cooperation**
 - Implementation of nuclear material accounting and control requirements and Additional Protocol obligations.
- **Safeguards Supporting Activities**
 - Sustainable operations and effective safeguards implementation at facilities.

Toolbox of Activities

<ul style="list-style-type: none"> • Seminars for policy makers • Technical training of primary operator staff • Training for regulator staff • Technical training for inspectors • Train-the-trainer workshops 	<ul style="list-style-type: none"> • Safeguards and nonproliferation fundamentals • Consultations • Facility tours • Safeguards regulation review and preparation 	<ul style="list-style-type: none"> • Instrumentation training • Safeguards curriculum development • Short-term lab visits
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Safeguards Supporting Activities



- **Research Reactor Operations**
 - Share best practices in reactor operation, maintenance, and utilization for experimental and commercial activities.
- **Radiation Protection**
 - Strengthen indigenous technical capacity in nuclear radiation safety, radiation control, radiation dosimetry, and health physics.
- **Quality Assurance and Quality Control**
 - Provide training in application of internationally recognized QA/QC practices to improve operations of the partner organization.
- **Low- and Intermediate-Level Radioactive Waste Management**
 - Assist in evaluating and updating capabilities in LILW management pertaining to nuclear and radiological activities in country, but excluding high-level waste from reactors.
- **Environmental Radiological Monitoring**
 - Strengthen indigenous capabilities to ensure that nuclear and radiological facilities are operating without risk to the environment or public.

Why establish a sound & robust Quality Management System (QMS)?



- Helps an organization achieve a high level of quality in its products, services, and processes
- Provides a common operating framework for everyone to work in:
 - Enhances communications
 - Clarifies roles and responsibilities
- Provides a baseline to measure, sustain, and enhance an organization's success and level of quality
- Provides a logical path and link from an organization's objectives to its working level practices
- Provides controls based on project, work, and design risks
- Results in more efficient and effective allocation and use of resources

It is the right thing to do... It's just "good business".

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A Quick Note on what is Quality, QM, and QMP?



- Quality means how well a laboratory meets, anticipates, or exceeds the requirements and expectations of its customers and employees. *Frequently, a lab's sponsors rely on that laboratory to define their expectations.*
- QM = All planned and systematic actions for achieving quality in services, products, and processes. *A laboratory's deliverables include services, products, and work processes for designing, creating and delivering these services and products.*
- QM Plan = Describes a lab's quality objectives and QM system. *A QM system is designed and functions like any other scientific or engineering system. As such, it has functions, inputs, outputs, components, controls, and checks and balances.*

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We assist partner countries with establishing & implementing *ISO 9001 QMS Elements & Processes



BASIC REQUIREMENTS

MANAGEMENT

1. PROGRAM
2. PERSONNEL
TRAINING &
QUALIFICATION
3. QUALITY
IMPROVEMENT
4. DOCUMENTS &
RECORDS

PERFORMANCE

5. WORK
PROCESSES
6. DESIGN
7. PROCUREMENT
8. INSPECTION &
ACCEPTANCE
TESTING

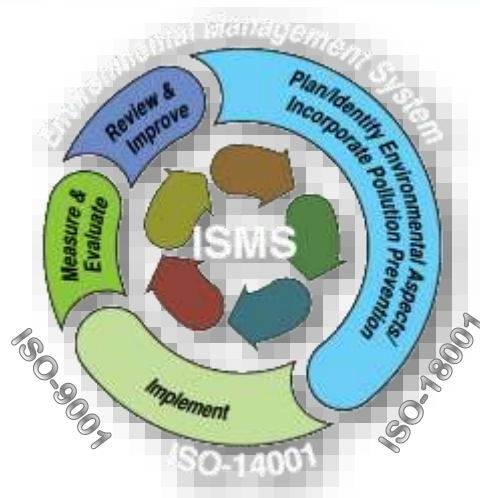
ASSESSMENT

9. MANAGEMENT
ASSESSMENT
10. INDEPENDENT
ASSESSMENT

*ISO 9001, 4th Edition, 2008-11-15, "Quality
Management Systems — Requirements

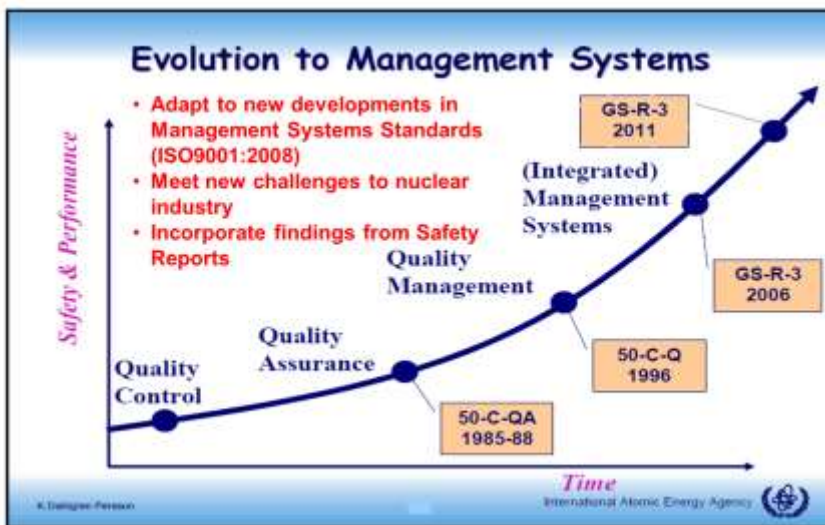
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Immersion at DOE National Labs for observation of Integrated Quality Management System in Action

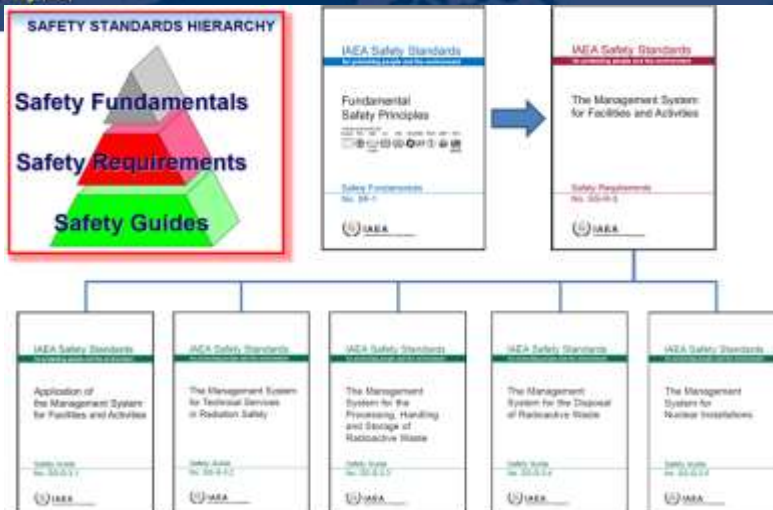


- **ISO-9001:** Quality Management Systems
- **ISO-14001:** Environmental Management System
- **ISO-18001:** Occupational Health & Safety Management System
- **ISMS:** DOE's Integrated Safety Management System
- **IAEA GS-R-3:** Integrated Management System (the "Safety Culture")

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Download documents from: <http://www.iaea.org/NuclearPower/ManagementSystems/>

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Perform or Provide Training on Conducting Audits & Self- Assessments



- Certified Lead Auditor or Auditor training on ASME NQA-1-2008, “*Quality Assurance Requirements for Nuclear Facility Applications*”.
- Training on auditing using guidance criteria and requirements of ISO 9001, 14001, 18001, and 17025
- Exercises on auditing using the various modules of the U.S. Department of Energy Consolidated Audit Program (DOECAP) – *for environmental analytical laboratories*
- Exercises on auditing using the various modules of the U.S. Department of Energy Laboratory Accreditation Program (DOELAP) – *for radiobioassay, industrial hygiene, & personnel dosimetry*

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Examples of Units we have Ongoing Collaborations with Partner Countries



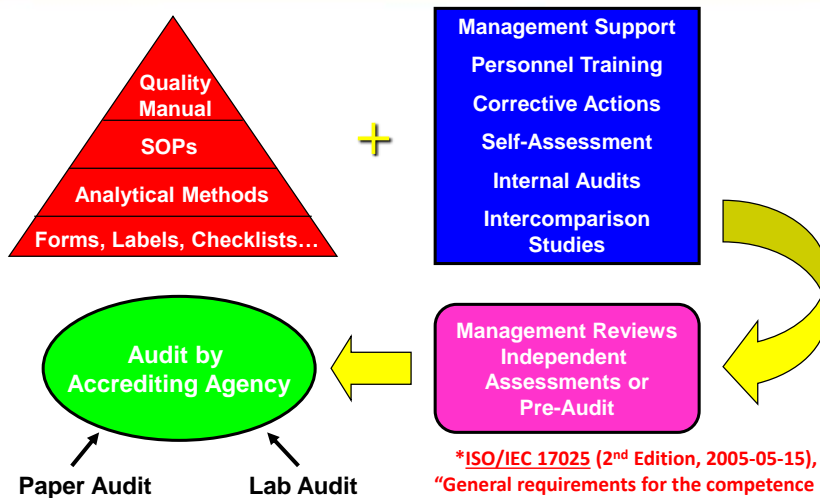
- Flow down of QMS policies and procedures from the institutional level to departments to division to specific laboratories
- Safeguards Laboratory (nondestructive assay and destructive assay)
- Secondary Standard Dosimetry Laboratory (SSDL)
- Environmental Monitoring Laboratory
- Radiation Protection & Industrial Hygiene Laboratory
- Radiopharmaceutical & Radioimmunoassay Services
- Nondestructive Testing Centers

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- **Participation in Inter-laboratory Exercises & Proficiency Testing**
 - *IAEA's Performance Evaluation Program (environmental radiochemistry, mixed fission products, neutron activation analysis)*
 - *DOE's MAPEP (hazardous & radioactive materials)*
 - *DOELAP (bioassay personnel dosimetry)*
 - *U.S. Environmental Protection Agency's Performance Testing Program*
 - *U.S. National Institutes of Science and Technology's Neutron Activation Analysis Intercomparison Studies*
- **Review of results and implementation of corrective action plans**

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Office of Nonproliferation and International Security (NIS) **Assistance with defining needs and requirements for a laboratory information management system (LIMS)**



Office of Nonproliferation and International Security (NIS) **To wrap-up...**

Our collaboration on technical assistance on QA/QC and laboratory best practices is tailored to the current state of the partner country following a joint assessment of existing capabilities, indigenous resources, priority requirements and critical needs.

WE WORK HAND-IN-HAND and LEARN TOGETHER!



Questions ?