Lovelace Respiratory Research Institute

UNSCEAR REQUIREMENTS FOR OCCUPATIONAL DOSE DATA

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UNSCEAR 2008 Report

www.LRRI.org

IAEA – ORP CONFERENCE
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OCCUPATIONAL EXPOSURE
UNSCEAR EVALUATION

- UNSCEAR evaluation has been conducted since 1975:
  - UNSCEAR Global Survey – 194 UN Member States
  - Literature (published peer reviewed articles, reports, etc);

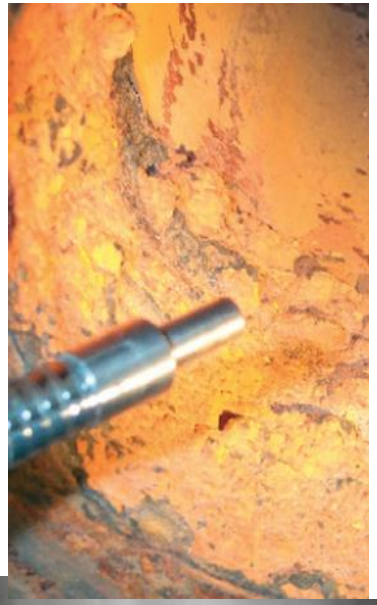
- Early years the main focus was on man made sources of radiation;
- More recently, exposure to natural sources of radiation is receiving greater attention from regulatory bodies:
  - Implementation of the International Basic Safety Standards (BSS 115);
  - UNSCEAR 2008 Report:
    - 60% workforce exposed to natural sources of radiation;
    - Average effective: 2.4 mSv (7 times higher than average for man made sources of radiation).

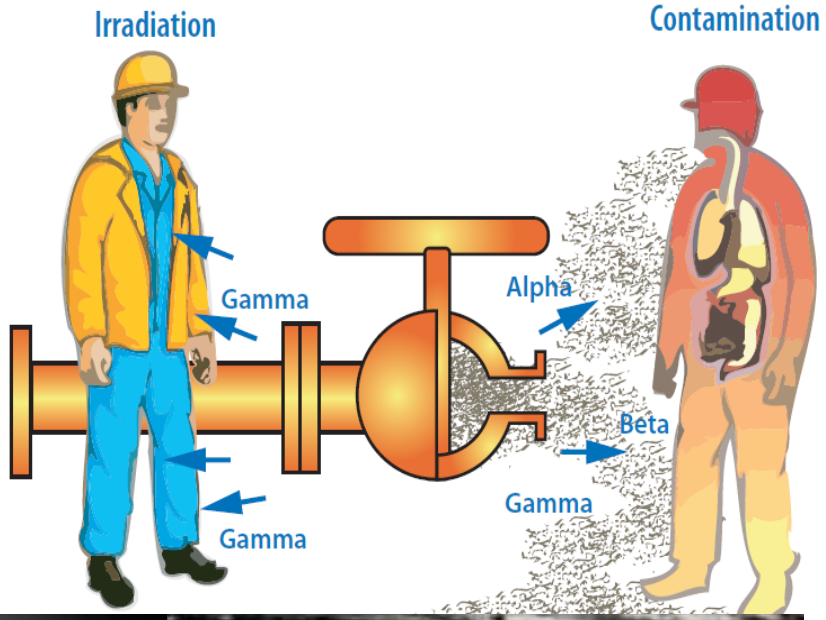
OBJECTIVES

- Provide a reliable and comprehensive estimate of worldwide occupational dose distributions and trends;
- Provide insight into the main sources of exposure, the most significant exposure situations and the main factors influencing dose distributions and trends;
- Facilitate evaluation of the impact of new techniques or technologies, of regulatory changes and of risk management programmes;
- Identify emerging issues and opportunities for improvement that may warrant more attention and scrutiny;
- Provide insight into the reliability of the evaluations and identify areas for future research.

NATURAL SOURCES OF RADIATION

Extractive industries



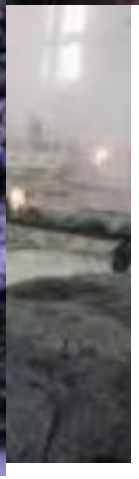


NATURAL SOURCES OF RADIATION

- **Extractive industries**
- **Ore Processing Industries**

NATURAL SOURCES OF RADIATION

- Extractive industries
- Ore Processing Industries
- Radon in workplaces other than mineral extraction industries



NATURAL SOURCES OF RADIATION

Extractive industries

Ore Processing Industries

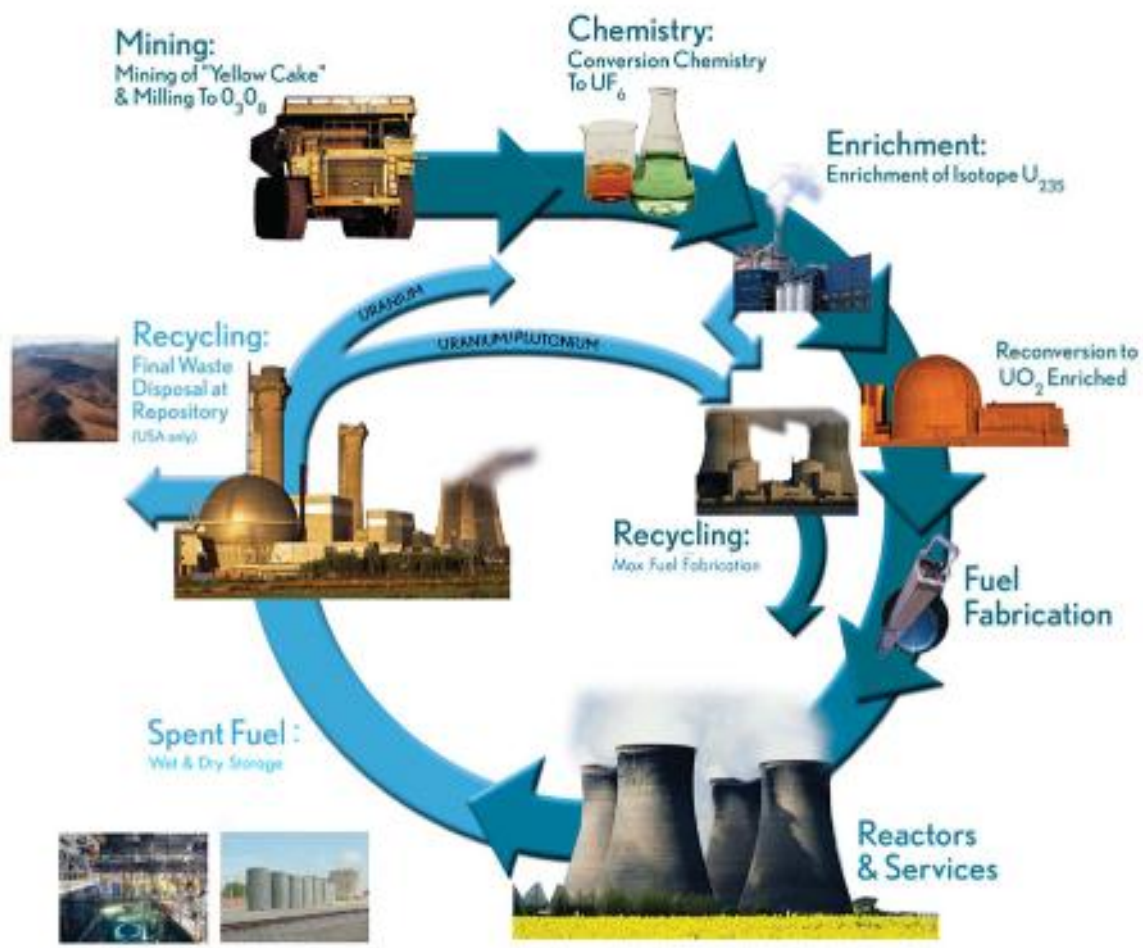
Radon in workplaces other than Mineral Extraction Industries

Civil Aviation

MAN MADE SOURCES OF RADIATION

Nuclear Fuel Cycle

NUCLEAR FUEL CYCLE



MAN MADE SOURCES OF RADIATION

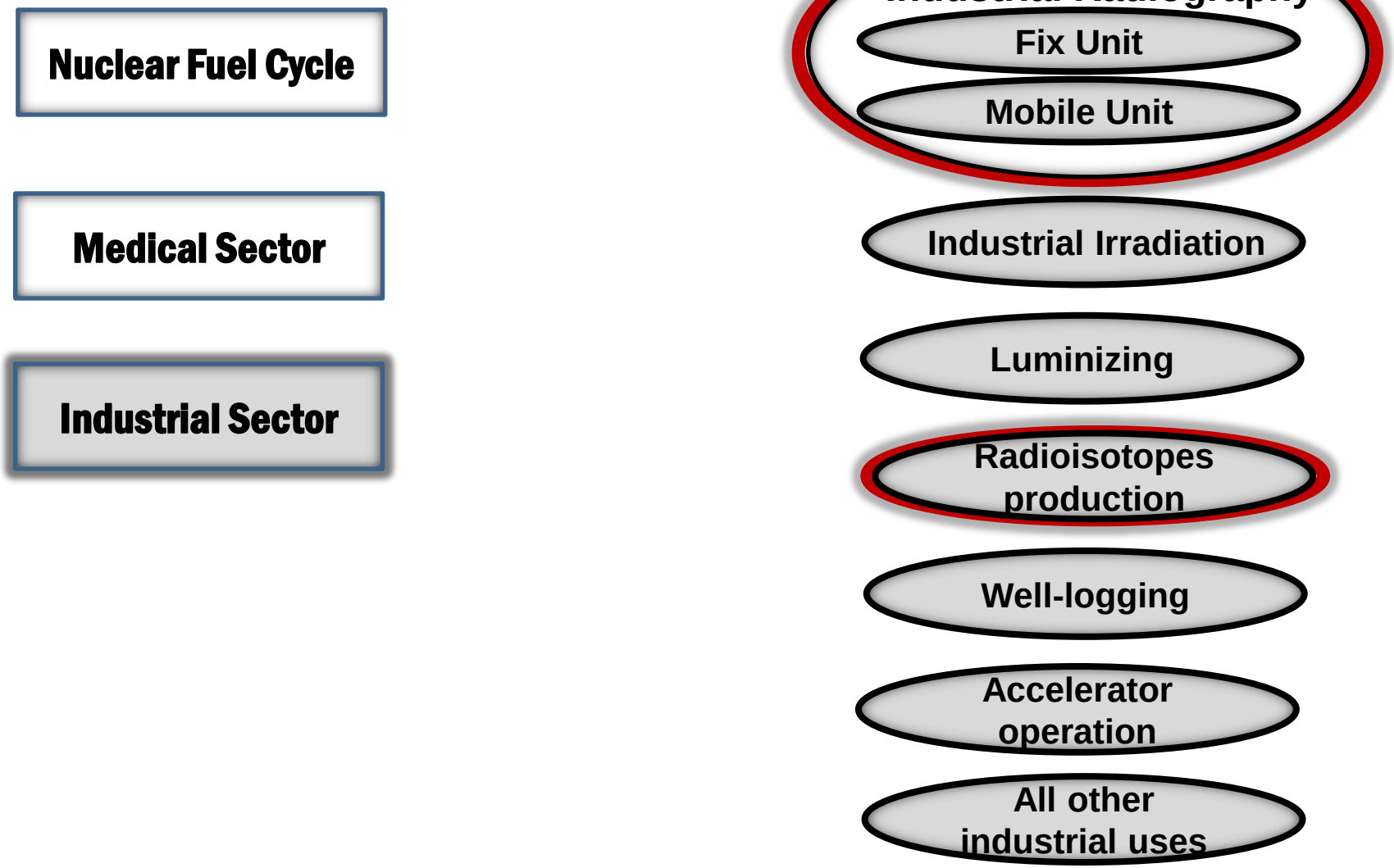
Nuclear Fuel Cycle

Medical Sector

- **Radiology**
  - Conventional Radiology
  - Interventional Procedures

  → Higher level of radiation; Exposure according to job category; Doses lens of the eyes and extremities.
- **Nuclear Medicine** → Exposure according to job category; Doses lens of the eyes and extremities.
- **Dental Practice**
- **Radiotherapy** → Exposure according to the technique:
  - External beam therapy,
  - Brachytherapy
- **Veterinary Medicine**
- **All Other Medical Uses**

MAN MADE SOURCES OF RADIATION



MAN MADE SOURCES OF RADIATION

- **Nuclear Fuel Cycle**
- **Medical Sector**
- **Industrial Sector**
- **Military Activities**

- Weapon Fabrication
- Nuclear Ships and Support Facilities
- All Other Military Activities

MAN MADE SOURCES OF RADIATION

- Nuclear Fuel Cycle
- Medical Sector
- Industrial Sector
- Military Activities
- Miscellaneous

- Educational Establishments
- Waste Management other than NFC
- Safety and Inspections
- Transport of Radiation Sources
- Other Specified Occupational Group

UNSCEAR QUESTIONNAIRE

Designed to obtain:

- **Basic data to evaluate the level of occupational exposure in each sector and sub-sector of work:**
  - **Average effective dose and the number of workers for different dose intervals (mSv).**

- **Specific additional information for each sector or subsector:**
  - **Contribution of several sources of exposure on the total effective dose;**
  - **Dose to lens of eyes and hands.**

- **Additional information to evaluate the reliability of the data:**
  - **Quantity recorded, conversion from WLM to effective dose, accreditation or authorization of the individual monitoring services for internal and external dosimetry, etc.**

UNSCEAR QUESTIONNAIRE

Microsoft Excel
)7-2003 Workshee

SUMMARY

- National databases for occupational exposure are the main source of information for UNSCEAR.

- It is vitally important that the national databases are update in order to reflect any change on the level of exposure when new technological developments and modifications to work practices occur;

- UNSCEAR needs to have robust database to conduct a reliable evaluation that reflects the real picture of the occupational radiation exposure;

- UNSCEAR questionnaire is in good agreement with national databases that are currently updated.

UNSCEAR's Strategy to Improve Data Collection

Some elements of the strategy:

(i) standardize taxonomy and terminology of surveys;

(ii) focus on most significant populous countries;

(iii) use existing mechanisms to obtain data from international organizations (e.g. IAEA, ILO, ISOE, ESOREX);

(iv) establish small standing expert group on occupational exposure;

(v) use national contact persons to coordinate data collection; and

(vi) develop electronic solution for data collection.

Thank you for your attention.