



IAEA International Conference on Radiation Safety:
Improving Radiation Protection in Practice (*Virtual Event*)
9-20 November 2020

Side event:
**UNSCEAR Global Survey on
Public Exposure**

The Brazilian experience in collecting data for UNSCEAR surveys

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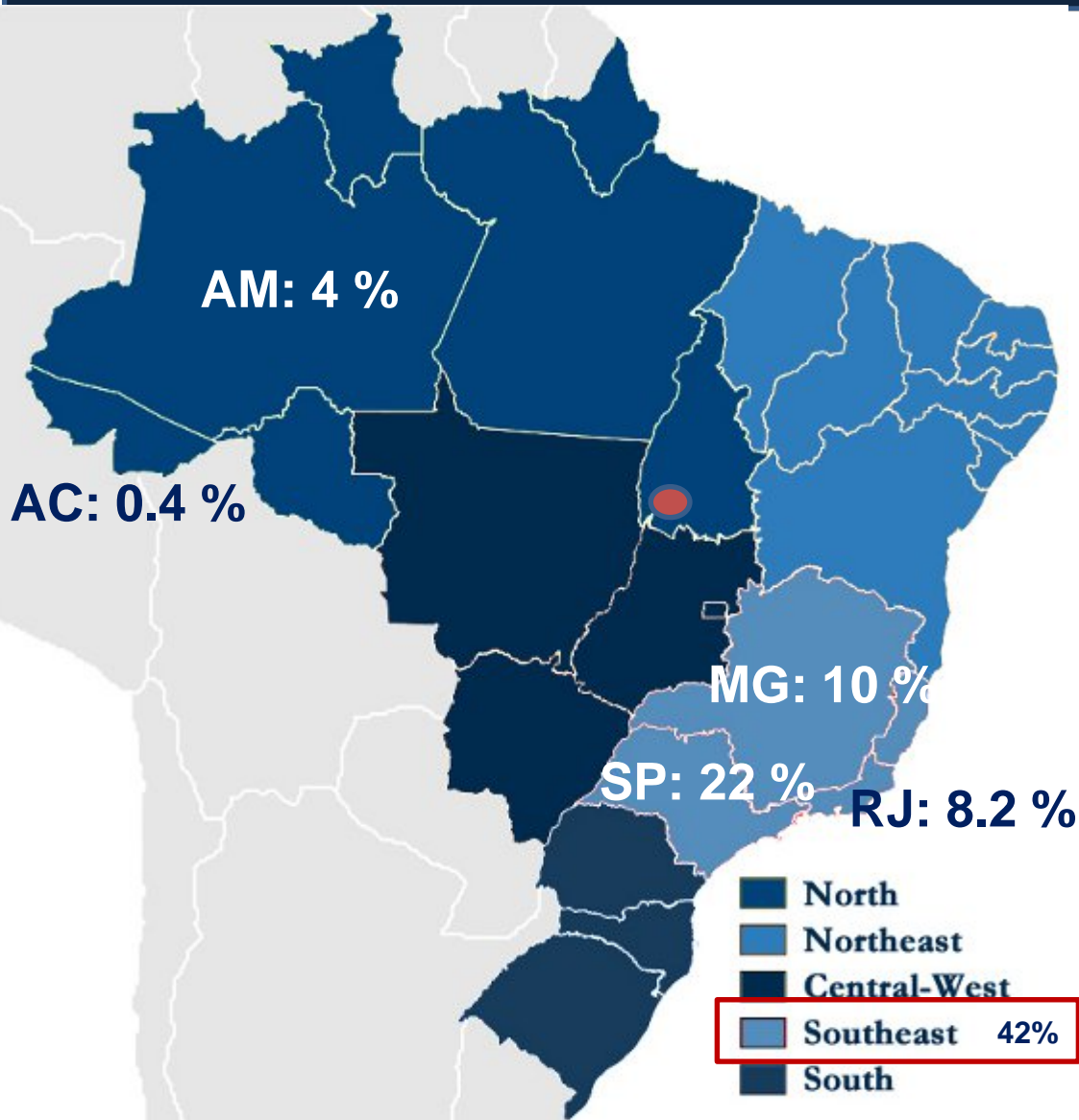
Brazilian National Nuclear Energy Commission, Rio de Janeiro, Brazil

WHERE IS BRAZIL IN THE WORLD?



211,755,692 inhabitants (2020)

8.510.295,914 km²



Most populous region – Southeast

Great social inequality (industrial and human development)

05 regions
26 states
1 Federal District - Capital

UNSCEAR data collection

Data on exposures and trends in different geographic areas, demographic characteristics, health indicators, among other evaluations



Occupational Exposures

Regulatory Body

- Ministry of Science, Technology and Innovation (MCTI)
 - Brazilian Nuclear Energy Commission (www.cnem.gov.br)
Licensing and control nuclear and radioactive facilities
- ✓ Individual monitoring is a legal requirement (CNEN standards)
- ✓ National Database on occupational individual monitoring - *GDOSE*
- ✓ Monthly reports from each individual dosimetry laboratories
- ✓ Doses above investigation level are monitored by a group of experts (GADE)

MEDICAL	37.7%
INDUSTRIAL	35.3%
SECURITY	10.4%
RESEARCH	11.0%
COMMERCE	1.3%
SERVICE	4.3%

- ✓ 2 Nuclear Power Plants
- ✓ Uranium Mining
- ✓ Fuel Cycle
- ✓ NORM

NATURAL SOURCES	0.95%
NUCLEAR FUEL CYCLE	3.03%
MEDICAL USE	80.70%
INDUSTRIAL USE	11.63%
MILITARY ACTIVITIES	0.01%
MISCELLANEOUS	3.68%

Occupational exposures

Some restrictions

- Internal dosimetry register
- Neutron exposures registry

MEDICAL EXPOSURES

Two Regulatory Bodies : for both it is not a requirement

- Ministry of Health (www.ms.gov.br)

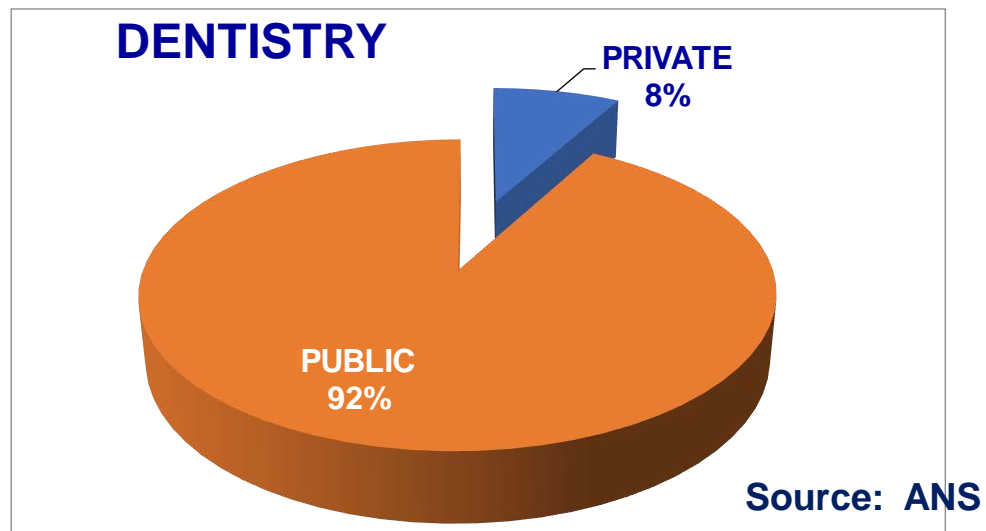
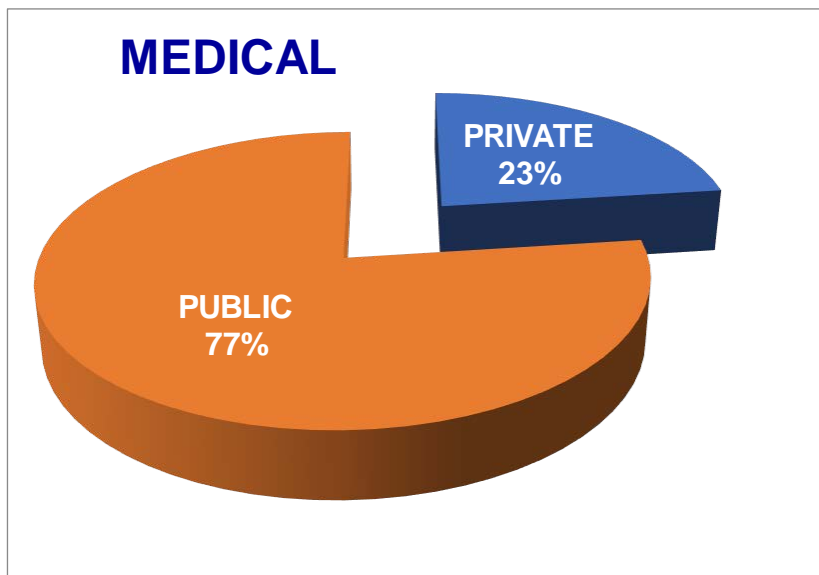
- ANVISA (www.anvisa.gov.br) Grant licenses addressing sanitary aspects and control radiation protection issues for Diagnostic Radiology**
- SUS (Unique Public Health System www.sus.gov.br)**
- ANS (National Health Agency www.ans.gov.br) – private health insurance**

- Ministry of Science, Technology and Innovation (MCTI)

- Brazilian Nuclear Energy Commission (www.cnen.gov.br) Licensing and control Radiotherapy and Nuclear Medicine facilities**

Brazilian health system

- **PUBLIC (SUS):** compulsory health insurance paid directly from the salaries of every worker
- **PRIVATE (ANS):** paid health insurance (in addition to the public), very expensive



The number of procedures is not directly related

➤ General information about Brazilian population is available consulting government institutions (www.ibge.gov.br)

➤ Ministry of Health System – Public Health System

▪ DATASUS: www2.datasus.gov.br/

▪ Number of diagnostic procedures by age and sex

▪ Number of treatment procedures by age and sex

➤ ANS systems

▪ Total number of procedures by age and sex

➤ National Health Facilities Registration www.cnes.datasus.gov.br

▪ Number of devices

➤ Agreement with professional societies to obtain data

Doses involved in each procedure – data collect in the main hospitals considering as a refence for all data

PUBLIC EXPOSURES

Brazilian NCP is nominated - an environmental specialist

- **Natural radiation sources**
 - **Cosmic radiation: we do not have estimated values for public exposure during aircraft flights**
 - **Radon and its daughters (inhalation and ingestion): Radon mapping would be a problem because we do not have these measures as a priority in the country**
- **Nuclear Power Plants - online monitoring system**
- **Military applications – great challenge**
- **Goiania accident, 1987 – information is available**
- **International systems like DIRATA are not up to date**

Cooperation agreements must be established

In conclusion....

The surveys are a challenge in a country of large dimensions and diverse realities in its regions

Centralization of information remains necessary

Thank you

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