

# Experience of the State Office for Nuclear Safety (SONS) in the execution of the radiation protection legislation in the NORM industry

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# Czech NORM Legislation

- Act. No. 18/1997 Coll. (Atomic Act), as amended
- Regulation No. 307/2002 Coll., on radiation Protection, as amended
- both since July 2002

# Czech NORM Legislation

## Duties of owners of NORM workplaces

- to ensure the measurements of natural radioactivity and the determination of effective doses of workers, and keep the related records
- to inform the concerned workers about radiation risk
- to permit release of natural radionuclides exceeding clearance levels under the terms specified in a license issued by the Office
- to perform (optimised) measures to reduce exposure
- to inform to the Office about the cases where exposure from natural sources may (for workers) exceed 6 mSv/year

# Czech NORM Legislation

Regulation No. 307/2002 Coll., on radiation Protection, as amended

- positive list of NORM workplaces
- measurements and exposure evaluation procedure
- investigation and guidance levels
- records requirements
- clearance levels

# Measurements and exposure evaluation (3 steps)

Exclusion:

- working time for each worker < 100 hours/y

1<sup>st</sup> step

- the average radon concentration in air is measured; results are compared with investigation level 400 Bq/m<sup>3</sup>
- external gamma irradiation, inhalation of natural radionuclides and skin contamination are measured; results are compared with investigation level 1 mSv/y of the effective dose
- If none of these levels is exceeded, measurements are finished.

# Measurements and exposure evaluation (3 steps)

## 2<sup>nd</sup> step

- A repeated and more detailed measurements are made at workplaces.
- Their results are compared with guidance level 6 mSv/year.
- If this level can be exceeded, measurements are finished.

# Measurements and exposure evaluation (3 steps)

## 3<sup>rd</sup> step

- On the workplaces where 6 mSv/year can be exceeded measurements are repeated every calendar year.
- Their results are compared with limits for exposed workers.
- The radiation protection of these workers is insured in the scope, which is applied for controlled areas.

# Measurements

- Measurements and exposure evaluation can be ensured only by holder of license of SONS
- Up to today - 8 licenses
- Guide of SONS - method of performing measurements and determination of effective doses on workplaces with natural radionuclides - the issue January 2007



# Inspection activity of SONS

- The complete survey of existing NORM places doesn't exist.
- routine inspections in NORM workplaces since 2004.
- 2004 – 2007: 20 inspections
  - coal combustion product treatment
  - production of building materials from these products
  - titanium dioxide production
  - production and utilization materials containing thorium and uranium (production of thorium wires and electrodes, uranium admixtures in glass)
  - disposal of sediments from underground water treatment.

# Inspection activity of SONS - results

- The duty of measurements and determination of effective doses had not been performed in any of checked workplaces.
- Up to today, only 1 workplace in which effective doses exceeded 1 mSv/y was identified (1,6 - 3,6 mSv/y, producer of titanium dioxide).
- In the other cases doses were lower than 1 mSv/y or the measurement hadn't been finished yet.
- Part of workplaces (e.g. production of thorium wires and electrodes, uranium admixtures in glass) handle with natural radionuclides for period shorter than 100 hours/y - they were ad hoc exempted from measurements

# Inspection activity of SONS - results

- 4 companies producing wastes whose activity is higher than clearance level were identified:
  - filters from production titanium dioxide (Ra 226 activity ~ 10 kBq/kg, filters are currently stored in separated room on – site)
  - sediments from the underground water treatment (Ra 226 activity ~ 3 kBq/kg, 3 licenses were issued - disposal on repository for hazardous waste)

# Conclusion

- ☹ lack of information about existing NORM workplaces in Czech Republic
- ☹ owners of NORM workplaces are not informed very well about their duties from Atomic Act
- ☹ legal doubts in case disposal of materials with activity above clearance level on repository for non radioactive waste
- ☹ not enough experience with taking of remedial measures

# Conclusion

- ☺ quality and well applicable legislation
- ☺ quality and well applicable guide of SONS for measurements and determination of effective doses
- ☺ sufficient number of holders of license for measurements and determination of effective doses
- ☺ routine SONS inspections in NORM workplaces

Thank you for your attention.