1. Introduction
2. Legislative framework
3. Dutch dose register
4. Challenges and developments
5. Conclusions
1.1 Introduction of the Dutch dose registry

1956  TNO start starts with periodic radiation monitoring
1964  Introduction of a registration card with personalised dose
1972  Electronic storage of dose results by TNO
1988  Withdrawal of license for registration cards
1988  Introduction of a national dose registration
      • Total investment at the time €50,000 / $55,000
      • Dosimetry services could reimburse cost for a PC
1989  Start of NDRIS on the 1st of January
2.1 EU Legal frame work

- Dose registry in EU MS to comply with requirements under Annex X (EU-BSS)
- Minimum requirements
  - Worker identity
  - Undertaking / employment
  - Results from individual monitoring
  - Provide for outside workers
  - Provisions for radiation passbook
3.1 Objectives of Dutch dose registry

- Ensure adequate collection and storage of the results from individual dose information
- Signal any exceedance of the dose limits
- Provide for regular reporting on the collected dose information
- Make data available for (statistical) analysis
3.2 Collected dose information

- Measured dose received from the dosimetry services
- Computed dose for aircrew from airliners and large corporations
- Dose from internal contamination e.g. after incident
- Dose from outside workers
3.3 Summary 2018

Medical 0,47 mSv
Nuclear 0,19 mSv
Industry 0,34 mSv
Aircrew 1,68 mSv
Remain 0,19 mSv
Total 0,79 mSv
3.4 NDRIS software application
3.5 NDRIS database

- Secure internet ISO 27001
- NDRIS accumulates individual dose
- Two direction information transfer
3.5 NDRIS database

- Undertaking
  - Dosim. Serv. (incl. aircrew)
    - Passbook
    - Int. contamin
    - Inspection
  - NDRIS
    - Secure internet ISO 27001
    - NDRIS accumulates individual dose
    - Two direction information transfer
3.5 NDRIS database

Undertaking

Dosim. Serv. (incl. aircrew)

Passbook

Int. contamin

Inspection

Secure internet ISO 27001
NDRIS accumulates individual dose
Two direction information transfer

NDRIS

Ministry SZW
3.5 NDRIS database

- Undertaking
  - Dosim. Serv. (incl. aircrew)
  - Passbook
  - Int. contamin
  - Inspection

- Secure internet ISO 27001
- NDRIS accumulates individual dose
- Two direction information transfer

- USCEAR
- ESOREX
- Academia
- Ministry SZW
3.5 NDRIS database

- Workers are labelled according to
  - sector
  - application
  - Source
- Labels consistent with EU initiatives
3.6 Human resources and services

NDRIS human resource
• NDRIS management (2 persons)
  – Manager
  – Deputy
• Secretarial support (3 persons)
  – First responsible
  – NDRIS support during office hours
• Back-office (3 persons)
  – Legal officer (DPO)
  – Security manager
  – IT expert

NDRIS services
• Formal reporting (2 / yr)
• Radiation passbook (~200 / yr)
• Dose history (~20 / yr)
• Dose correction (~30 / yr)
• Request for internal dose (< 5 / yr)
• General requests (~20 / yr)
  (Experts, students, public)
3.7 NDRIS data tool

• Use of NDRIS data for policy development.
• Initial development of the tool in 2014.
• Used by governmental organisations
## NDRIS beleidstool

### Selectie
- Sector
- Werkgevercategorie
- Soort werk
- Brongegevens
- Leefstijlgrenzen
- Geslacht
- Selectie ongedaan maken

### Soort werk

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- Jaarverwacht: 2015
- Samenvoegen met: 4 voorgaande jaren
- Meerjaar overzicht vanaf: 2002 t/m 2015
- Gestapeld: 2002 t/m 2015

- Overzicht per kwartaal: Toon tabel/ grafiek
4.4 NDRIS beleidstool
3.9 Average effective dose $E_{eff}$
3.10 Dose distribution for age and sex

Male

Female

Average dose (mSv)

Age (-)
4.1 HERCA NT on dose collection

• The objective of the network
  – Share experiences & best practices in the field of collection, registration and reporting of occupational doses.
  – Share dose information from HERCA Network members, to perform analysis and interpretation.
4.2 General Data Protection Regulation

• Initial check in 2017 with some major conclusions:
  – Dose information must be classified as a special category of personal data
  – Data protection officer (DPO) mandatory
  – Privacy agreements to be drafted with all organizations involved

• Since 2019 with DPO reviewing work procedures and resolving short-comings
4.3 Electronic radiation passbook
5.1 Conclusions

• NDRIS is the Dutch dose registry
• Around 45,000 radiological workers in NL
• Required competences include: RP, legal, quality and IT
• New challenges in GDPR compliance and IT security
• EU HERCA network on dose collection to address common needs
QUESTIONS?