Federal Office for
Radiation Protection

Future: How to deal and to solve the challenges in protecting workers, public and environment in a Circular Economy with materials containing elevated levels of NORM in a sustainable way?

Panel 36 “Protection of workers, public and environment”

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Sustainable development and radiation protection

- **Sustainable development** is one of the goals agreed under the Treaty on European Union: "[The Union] shall work for the sustainable development of Europe based on balanced **economic growth and price stability, a highly competitive social market economy, aiming at** full employment and social progress, and **a high level of protection and improvement of the quality of the environment**." – Article 3 (3) second sentence of the Treaty on European Union (TEU)

- **Radiation Protection of workers**: Protection of human health
- **Radiation Protection of members of the public**: Protection of human health
- **Radiation Protection of the environment:** Conservation of biological diversity and preservation of species (changes in sizes and structures of populations)
- If workers/members of the public are protected, then also non-human biota is protected but this needs to be proven **(ICRP 60/ICRP 108)**

Protection of workers/members of the public/environment is at the core of the radiation protection system. The circular economy and sustainability goals have to be in line with the goals of the RP system (not vice versa)

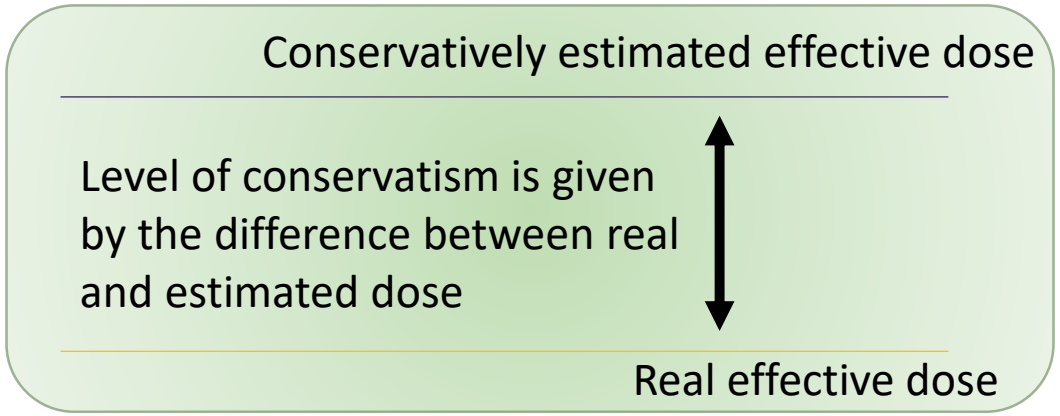
Circular economy and NORM

- "The circular economy is a model of **production and consumption,** which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products is extended." *Source: EU Commission*
- To meet goals of circular economy **specific information** about characteristics and amount (mass and activity concentration) of NORM that is circulating together with information on technologies for measuring and treating/mitigating NORM is required
- Therefore, **NORM inventories** are necessary and amount and type of information need to be internationally harmonised as much as achievable
- Information exchange between regulators and industry operators as well as waste managers is necessary

Circular economy implies efficiency and optimisation in use and reuse of NORM as well as in obtaining information about existing and accruing NORM

Conservatism, dose assessment and NORM

- Materials containing elevated levels of NORM have to comply with limiting activity concentration values before being used any further
- Limiting activity concentration values are derived from **dose assessments** (for workers/members of the public) for relevant exposure scenarios
- In RP **conservatism** is a well-established approach for deriving limiting values from dose criteria.
- Level of conservatism depends on choice of **assumptions, mathematical models and parameters**.
- Conservatism underlying limiting activity concentrations makes sure that dose limits are complied with but might cause unjustified restrictions



- If the activity concentration is close to or even exceeds the limiting activity concentration value it is necessary to investigate the level of conservatism
- Also non-RP experts may find themselves in situations in which they need to “get a feel” for whether use/reuse/handling of NORM is safe or not from RP perspective

When necessary, level of conservatism in dose assessments needs to be reduced.
Guidance and tools on how to carry out dose assessments should be made available to non-RP experts

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