



Radioactive residue and waste streams in the Netherlands

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Background and Goal

Directive 2011/70/Euratom requires member states to have a national policy for safe management of spent fuel and radioactive waste. Additionally, Dutch national policy recommends governance towards a circular economy. As a first step to determine how to prevent or minimize radioactive waste by means of safe management, RIVM has made an inventory of waste streams and the amounts of radioactive residues and waste generated in the Netherlands.

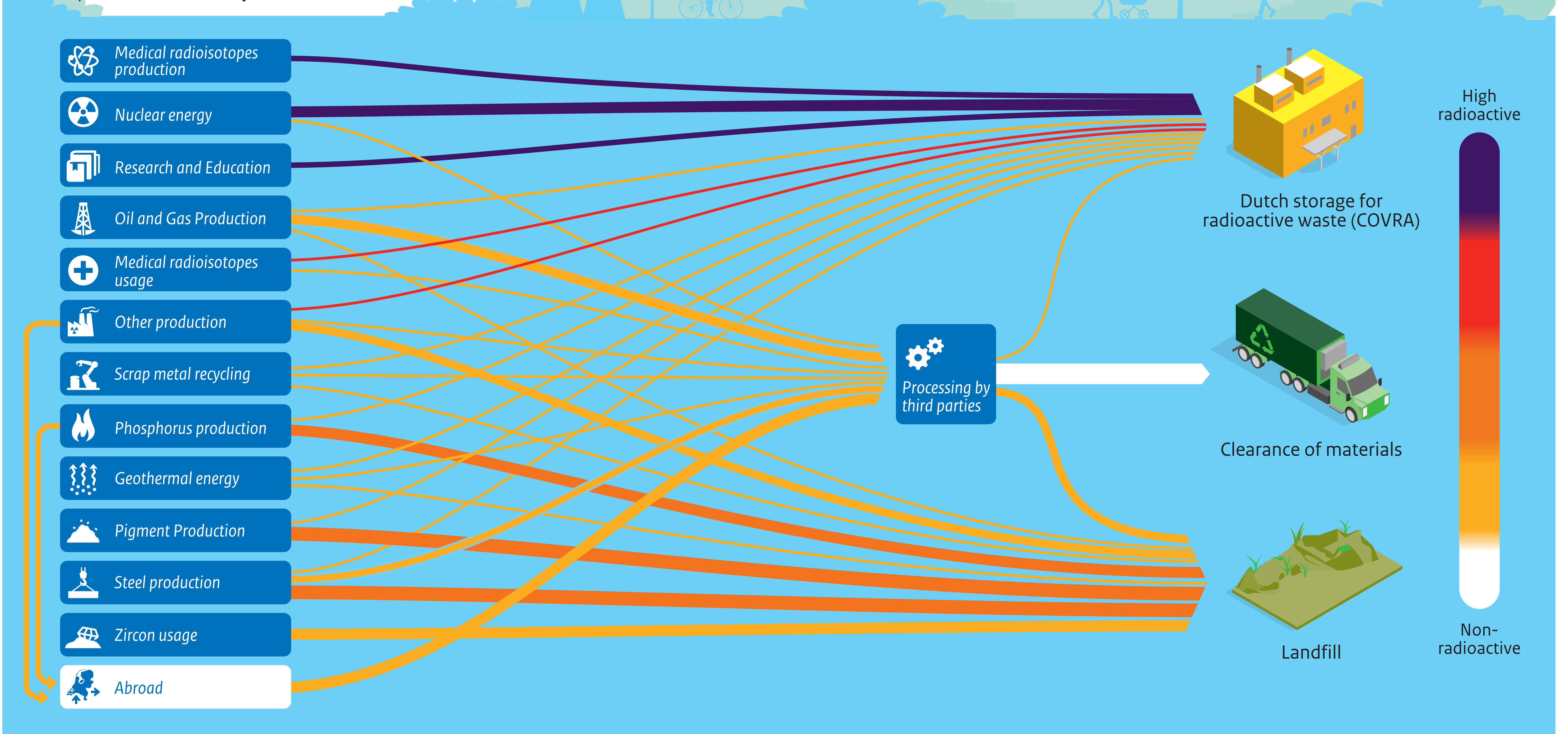
Conclusion

- Annually an average of $1.2 \cdot 10^8$ GBq ($8.7 \cdot 10^4$ tonnes) radioactive residue/waste is disposed of in the Netherlands.
- Man-made radioactive waste counts for the largest amount when expressed in activity (nearly 100 % of all waste) and is stored at the central storage facility in the Netherlands (COVRA).
- (TE)NORM residue and waste counts for the largest amount (97 %) when expressed in mass and is disposed of at landfills.
- Processing of radioactive residue is conducted for re-use or recycling purposes or to meet landfill acceptance criteria.
- For certain types of radioactive waste it appears to be technologically feasible to reduce the quantity to be disposed of, for example through recycling. Whether this is practically feasible, however, depends on factors such as costs involved, societal factors, policies and regulations.

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2018-2020

The thickness of the streams represents the annual disposal of radioactive material expressed in mass. The colours of the streams represent the annual disposal of radioactive material expressed in radioactivity.



Methods

- Generators of radioactive residue/waste were divided in 13 sectors.
- Per sector, the radioactive residue/waste streams were explored (from cradle to crib).
- The amount of radioactive residue and waste per sector was determined, expressed in both mass per year and radioactivity per year (annual average from the period 2018-2020).
- Information was gathered from literature, licenses, annual reports and interviews with stakeholders.

Reference (in Dutch):

Radioactive residue and waste streams in the Netherlands. An inventory.
M. van der Schaaf, P.D.B.M. Bekhuis, L.H.A. Boudewijns
<http://hdl.handle.net/10029/626133>



Results

- Nearly 60 % (expressed in activity) of the radioactive waste originates from the production of medical radioisotopes; about 39 % comes from the sector nuclear energy.
- All man-made radioactive waste is stored at the Dutch storage facility for radioactive waste (COVRA).
- 97 % (expressed in mass) of all radioactive residue/waste consists of NORM.
- The bulk (90%) of disposed of NORM comes from pigment (46000 tonnes/y) and steel production (32000 tonnes/y).
- Both, conditionally cleared NORM residue and NORM waste (subject to the obligation of registration) are disposed of at landfills.
- Radioactive residue coming from abroad mainly consists of offshore installations associated with oil and gas production that are transported to onshore decommissioning facilities. Large parts of these installations could be cleared from regulatory control.