

Discharges of radioactive substances to the North-East Atlantic



OSPAR Contracting Parties have made progressive and substantial reductions in discharges of radioactive substances in the period 1995-2018

Background

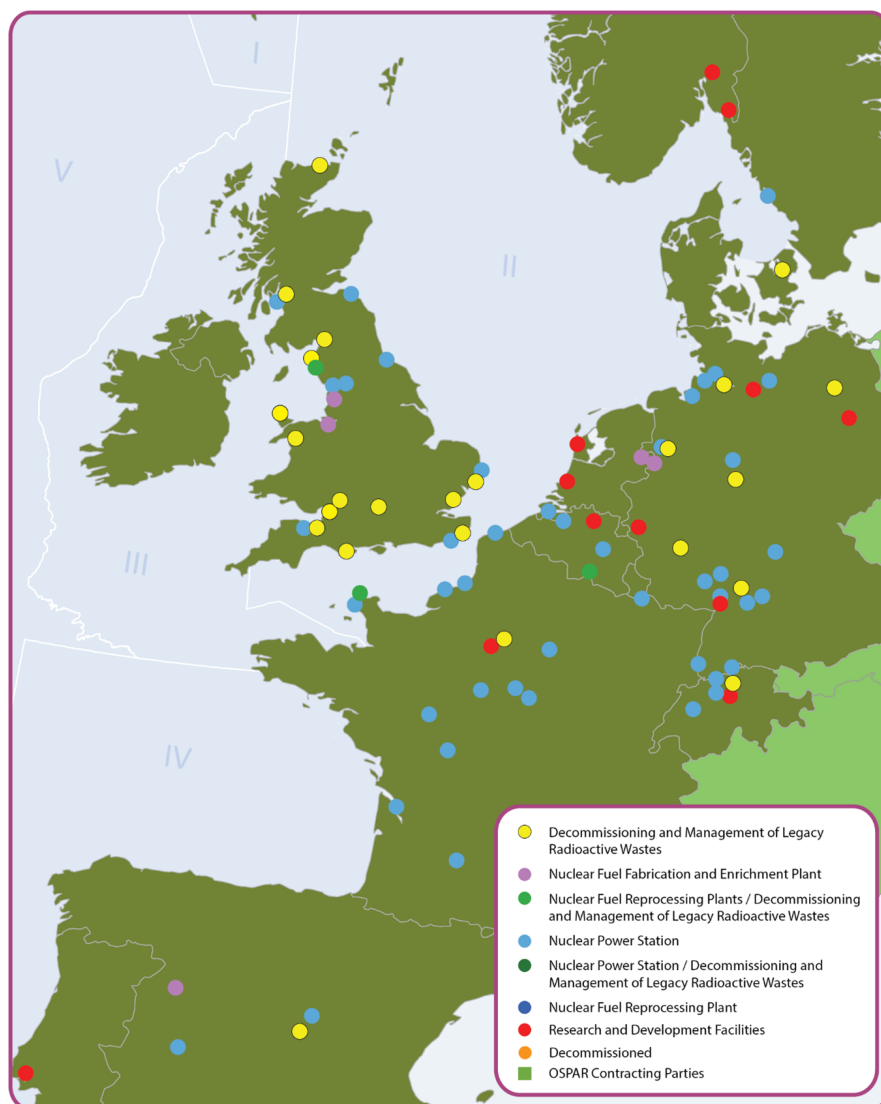
Society has a need for secure low carbon energy supplies. Some countries have a policy that energy generated by nuclear power stations can fulfil some of that need. Nuclear reactors are also the source of some radionuclides that can be used to diagnose and treat diseases such as cancer. These nuclear technologies generate radioactive waste and some of that radioactive waste is discharged in liquid form directly or indirectly into the North-East Atlantic (Figure 1). We know that ionising radiation can be harmful and that the presence of radioactive substances in the environment as result of human activities is of high public concern.

In 1996 OSPAR committed to making progressive and substantial reductions in discharges of radioactive substances so that by the year 2020 concentrations of radionuclides in the environment were no higher than historic levels.

Figure 1: Nuclear sites for which radioactive discharges into the OSPAR Maritime Area have been reported by Contracting Parties in the period 1995 to 2018. The status of the above sites may have changed from operational to decommissioning during the reporting period. The nuclear sites for which radioactive discharges are reported are given in OSPAR Agreement 2013-10 (2021 update).

Measures

OSPAR Contracting Parties are required to use best available techniques (BAT) to minimise discharges of radioactive substances into the environment. They are also required to regularly report on their progress made with the implementation of BAT in the nuclear sector (Recommendation 2018/01). These reports are peer reviewed by other Contracting Parties and also contribute to the sharing of good practice and innovative techniques. The [national BAT reports are published on the OSPAR website.](#)



Discharges of radioactive substances to the North-East Atlantic



Measures

Every year, discharges of radioactive substances from the nuclear sector are reported to OSPAR ([Agreement 2013-10](#)) and assessed by an expert panel. The [discharges and the assessment reports](#) are published on the OSPAR website and our [data portal](#).

As part of [our most recent assessment](#), we have analysed the discharge data collected from the period 1995 to 2018 using statistical tests to determine if there have been progressive and substantial reductions in discharges over this period. As well as total discharges, we analysed discharges in different nuclear sub-sectors and in different Contracting Parties.

What is a substantial reduction?: Discharges in the period 2012-2018 are lower than they were in 1995-2001.

What is a progressive reduction?: There has been a downward trend in discharges over the period 1995-2018.

What has been achieved?

Table 1 shows that progressive and substantial reductions have been achieved.

Figures 2 and 3 illustrate the changes for the different nuclear sub-sectors for total alpha and total beta. The figures also show that nuclear reprocessing dominates discharges from the nuclear sector.

Table 1

| Radionuclide | Substantial reduction | Progressive reduction |
|--------------------------------|---------------------------------|-----------------------|
| Total alpha | Yes by a factor of 2.1 | Yes |
| Total beta (excluding tritium) | Yes by a factor of 13 | Yes |
| Tc-99 | Yes by a factor 66 | Yes |
| Cs-137 | Yes by a factor 3.3 | Yes |
| Pu-239,240 | No, but a reduction is observed | No |

OSPAR collects data for groups of radionuclides such as alpha emitting radionuclides ('total alpha'), beta emitting radionuclides ('total beta (excluding tritium)') and groups of radionuclides not individually listed ('other radionuclides'). They are useful as a regulatory tool, for evaluating trends in discharges, and for comparing discharge data for different periods.

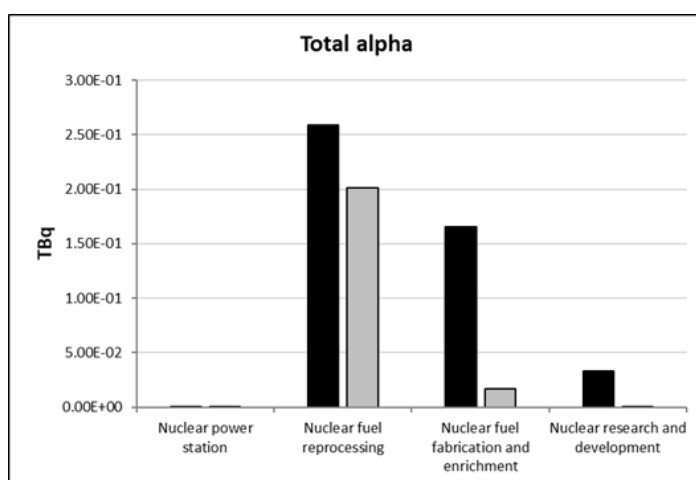


Figure 2: Comparison of total alpha discharges in the different nuclear sub-sectors for the periods 1995-2001 (black columns) and 2012-2018 (grey columns).

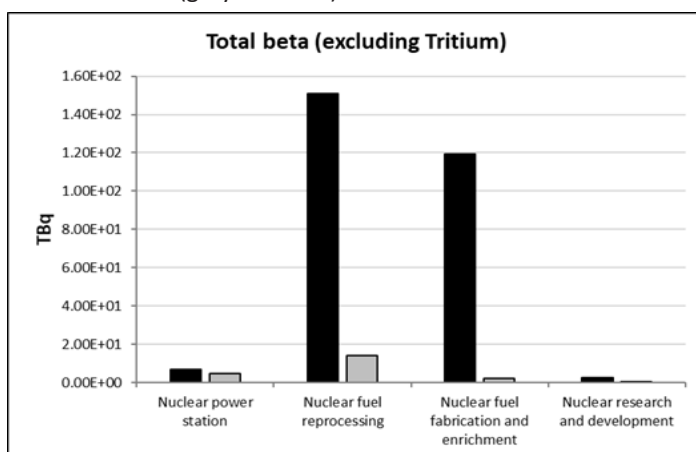


Figure 3: Comparison of total beta (excluding tritium) discharges in the different nuclear sub-sectors for the periods 1995-2001 (black columns) and 2012-2018 (grey columns).

Discharges of radioactive substances to the North-East Atlantic



What has been achieved?

Figure 4 and 5 illustrate achievements in reducing discharges of Cs-137 from the nuclear power sub-sector and Tc-99 from the nuclear reprocessing sub-sector.

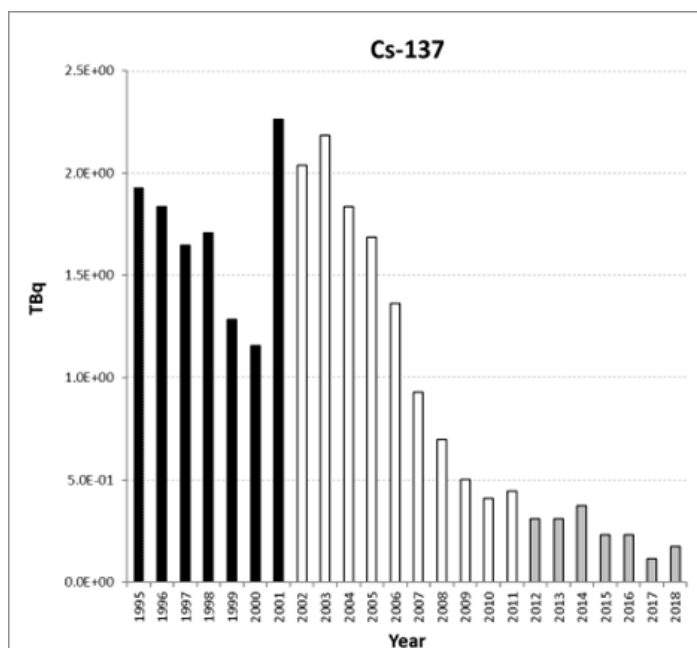


Figure 4: Cs-137 discharges from the nuclear power station sub-sector for all Contracting Parties for the period 1995 to 2018. Time periods indicated are baseline period (black columns), assessment period (grey columns) and intervening years (white columns).

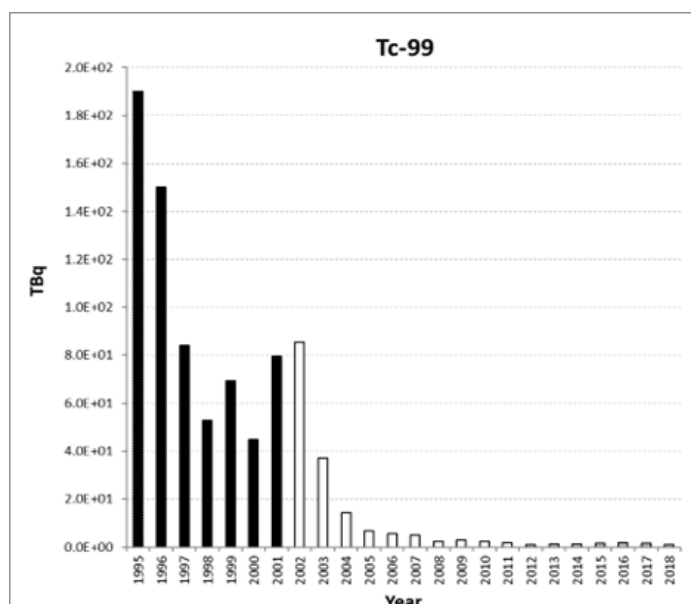


Figure 5: Tc-99 discharges from the nuclear power station sub-sector for all Contracting Parties for the period 1995 to 2018.

What does this mean for the North-East Atlantic?

As discharges are falling, we would also expect environmental concentrations to fall. This is what we have observed as shown in our fact sheet and our latest assessment.

Future considerations

OSPAR is committed to ensuring that radioactive discharges are prevented, reduced or remain as low as possible. OSPAR Contracting Parties will continue to report how they apply BAT.

We will continue to monitor and assess discharges.

OSPAR's North-East Atlantic Environment Strategy 2030 states that OSPAR Contracting Parties are committed to

“Prevent pollution by radioactive substances in order to safeguard human health and to protect the marine environment with the ultimate aim of achieving and maintaining concentrations in the marine environment at near background values for naturally occurring radioactive substances and close to zero for human made radioactive substances”.

www.ospar.org