



# Environmental Protection Review

The following is a summary of the Environmental Protection Review (EPR) for the Darlington Nuclear Site (DN Site) located in the Municipality of Clarington, Ontario. Ontario Power Generation (OPG) operates the DN Site, which includes the Darlington Nuclear Generating Station (DNGS), the Darlington Waste Management Facility (DWMF), the proposed Darlington New Nuclear Project (DNNP) and the Tritium Removal Facility. This EPR focuses on DNGS and DWMF. EPRs are an evidence-based technical assessment conducted by the Canadian Nuclear Safety Commission (CNSC) staff, as required by the *Nuclear Safety and Control Act*.

## Darlington Nuclear Site

The DN Site is located within the lands and waters of the Michi Saagiig Anishinaabeg, the Gunshot Treaty (1787-88), the Williams Treaties (1923), and the Williams Treaties First Nations Settlement Agreement (2018).

## Key Findings



Airborne Emissions



Waterborne Effluent



IEMP



Health Studies

CNSC staff found that OPG has effective environmental protection measures which adequately protect the environment and the health and safety of persons.

Scan to access the full report or find it at [nuclearsafety.gc.ca](http://nuclearsafety.gc.ca)



## Indigenous Knowledge

The CNSC recognizes the importance of considering and including Indigenous Knowledge in all aspects of the CNSC's regulatory processes.

To find out more, visit the CNSC's [Indigenous Knowledge Policy Framework](#)

## Effects to the Environment

CNSC staff reviewed OPG's assessment of current and predicted effects of licensed activities on the environment and health of persons in the 2020 environmental risk assessment for the facility.

### Atmospheric Environment

OPG routinely conducts ambient air quality monitoring to assess radiological emissions to air from DN Site operations including noble gases, iodine-131, tritium and carbon-14. CNSC staff found that ambient air quality around the facility remains at levels protective of human health and the environment.

### Terrestrial Environment

OPG has a routine terrestrial monitoring program including soil, sand and vegetation monitoring at the DNGS. CNSC staff found that the concentrations of contaminants in soil, sand and vegetation surrounding the DNGS are acceptable. Localized soil contamination was identified, but risk to people and the environment is considered low. OPG has commissioned a soil characterization study which will inform the next steps in managing the soil from these areas.

### Human Environment

OPG assessed the risk to a hypothetical person that could represent someone living near the DN Site to determine if there is an impact to human health through breathing the air, drinking and swimming in the water, and eating plants, fish, and wildlife from the area.

The estimated annual radiological doses for the 2016 to 2020 period have remained below the regulatory annual dose limit for the public. CNSC staff have found that impacts to humans from radiological and hazardous substances released from the DNGS are negligible, and that people in and around the facility remain protected.

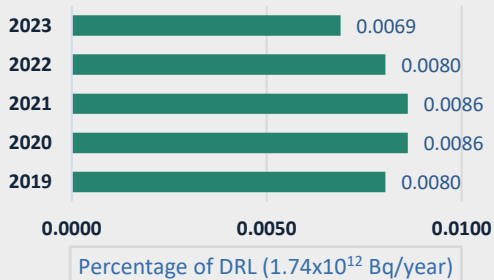
# Releases to the Environment

Hazardous and radiological substances have the potential to cause negative impacts to both humans and the environment. Derived release limits (DRLs) are established to ensure releases remain at levels protective of the environment and human health.

## Airborne Emissions

From 2019 to 2023, all airborne releases from the DNGS remained well below the DRLs. As an example, Iodine-131 is displayed below. CNSC staff have found that OPG continues to provide adequate protection of people and the environment from airborne emissions.

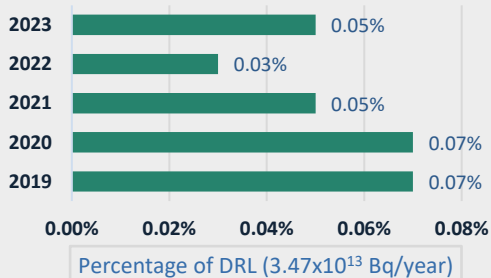
Annual airborne emissions of tritium oxide from the DNGS as a percentage of the release limit



## Waterborne Effluent

From 2019 to 2023, all waterborne releases of from the DNGS remained below the DRLs. As an example, gross beta/gamma can be seen below. CNSC staff have found that OPG's treatment of effluent is providing appropriate protection to people and the environment.

Annual waterborne effluent of gross beta/gamma from the DNGS as a percentage of the release limit



## The exposure pathway

This figure illustrates a conceptual model of the environment around a generic nuclear processing facility site to show the relationship between releases (airborne emissions or waterborne effluent) and human and ecological receptors or exposure pathways.

## Health Studies

The CNSC conducts and reviews health studies as an important component of ensuring that the health of people living near or working at DNGS is protected.

CNSC staff review:

- ✓ Regional community health studies and reports
- ✓ Canadian and international scientific publications
- ✓ Population and worker epidemiological studies

CNSC staff have not observed and do not expect to observe any adverse health outcomes connected to the DNGS.



## CNSC Independent Environmental Monitoring Program (IEMP)

The IEMP is carried out by CNSC staff in publicly accessible areas and consists of taking samples from the environment and analyzing them for harmful substances released from facilities in all areas of the nuclear fuel cycle.

The IEMP results for 2014, 2015, 2017, 2021 and 2023 confirm that the public and the environment surrounding the DNGS **remain protected**.

Results are consistent with the results submitted by OPG.

Scan to view IEMP results or find them at [nuclearsafety.gc.ca](https://nuclearsafety.gc.ca)

