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Data Sources and Methods for the Number of Marine Pollution Spills from Identified Vessels Indicator

June 2015

Suggested citation for this document: Environment Canada (2015) Canadian Environmental Sustainability Indicators: Data Sources and Methods for the Number of Marine Pollution Spills from Identified Vessels Indicator. Consulted on *day month, year*. Available at: www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=129CF320-1.

ISBN: 978-0-660-02192-8
Cat. No.: En4-144/66-2015E-PDF

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1. Introduction

The [Number of Marine Pollution Spills from Identified Vessels](#) indicator is part of the [Canadian Environmental Sustainability Indicators](#) (CESI) program, which provides data and information to track Canada's performance on key environmental sustainability issues. This indicator is also used to measure progress towards the goals and targets of the [Federal Sustainable Development Strategy](#).

2. Description and rationale of the Number of Marine Pollution Spills from Identified Vessels indicator

2.1 Description

The [Number of Marine Pollution Spills from Identified Vessels](#) indicator reports the number of spills that were detected under the National Aerial Surveillance Program (NASP). In addition, data are shown on detections per hour of patrol of surveillance aircraft for fiscal years (April 1–March 31) 2009–2010 to 2013–2014, which provides tracking of the trend in intensity of marine spill incidents.

2.2 Rationale

Ship operations as well as accidents or hazards can result in the release of harmful pollutants in the water. Internationally, aerial surveillance is widely adopted and considered to be the most effective method for detection of oil spills. The presence of the NASP surveillance aircraft acts as a deterrent by discouraging illegal discharges of pollutants at sea.

3. Data

3.1 Data source

Transport Canada's (TC) Marine Safety and Security Directorate compiles the data used to develop this indicator.

3.2 Spatial coverage

The National Aerial Surveillance Program (NASP) aerial surveillance fleet consists of three specialized aircraft that are strategically placed across the country, serving as the primary means of monitoring shipping activities and detecting illegal discharges in all waters under Canadian jurisdiction. A TC-owned and operated Dash-8 aircraft is located in Moncton, New Brunswick, and another is located in Vancouver, British Columbia; a TC-owned and operated Dash-7 aircraft, is primarily located in Ottawa, Ontario, but is also being collocated with Iqaluit, Nunavut, for the Arctic-shipping season (usually July–November).

Other aircraft are contracted by other government departments to supplement the NASP. Through an agreement with the Department of Fisheries and Oceans, TC uses Provincial Airlines Limited (PAL) aircraft for pollution patrols in waters off Newfoundland and Labrador, on an as required basis.

TC also uses satellite surveillance from Environment Canada's Integrated Satellite Tracking of Pollution (ISTOP) program to detect illegal discharges at sea. ISTOP is used to search for oil-like signatures (anomalies) on the ocean's surface, and the resulting information helps direct NASP aircraft to locations of potential pollution incidents in near real time. The aircraft crew then examines identified anomalies to confirm if oil is present, identify the source if possible, and gather evidence for prosecution.

3.3 Temporal coverage

All data collected from fiscal years (April 1–March 31) 2009–2010 to the last year with available data, 2013–2014, were used to calculate this indicator.

3.4 Data completeness

Data are gathered at the end of each month and analyzed by surveillance analysts in TC. At the end of each fiscal year, the NASP data are compiled.

3.5 Data timeliness

Data are submitted by the aircrews at the end of each month. Fiscal year end reports are compiled by the end of the first quarter of the next fiscal year.

4. Methods

As part of the [Number of Marine Pollution Spills from Identified Vessels](#) indicator, the total number of spills detected for the last year of available data is reported in the text and the data for all available years is provided in the data table. To depict a trend, the total number of spills detected was divided by the number of hours of patrol conducted by National Aerial Surveillance Program (NASP) surveillance aircraft for all fiscal years between 2009–2010 and 2013–2014.

5. Caveats and limitations

Although the overall average rate of detection is 0.05 spills observed per patrol hour over the past five fiscal years (including spills from identified and unidentified sources), the majority of these spills are less than 10 litres and are detected within Canada's territorial sea, which extends 12 nautical miles from its coastal baseline.¹ The number of offshore spills from commercial ships has declined since 2006.

Spills are attributed to specific vessels, as they are identified during the evidence-gathering stage by the aircrew. If a spill is detected, the spill and the vessel responsible for the discharge are flown over in order to confirm the origin of the spill.

In the National Aerial Surveillance Program (NASP) data, ship-source spills also includes oil rigs for the purposes of data collection.

6. References and further reading

6.1 References

Transport Canada (2014) [Report to Parliament 2006-2011 – Marine Oil Spill Preparedness and Response Regime \(TP 14539E\)](#). Retrieved on 4 December, 2014.

¹ The normal baseline is the low-water line along the coast, islands, rocks and even low-tide elevations as marked on large-scale charts officially recognized by Canada. Where a coast, such as Canada's, is very irregular, drawing straight baselines joining appropriate points on the coast is an accepted practice.

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