



Data Sources and Methods for the Release of Toxic Substances to Water Indicators

December 2011

Cat.#: En4-144/26-2011E-PDF
ISBN: 978-1-100-19728-9

1 Introduction

The release of toxic substances to water indicators are part of the Canadian Environmental Sustainability Indicators (CESI) program, which provides data and information to track Canada's performance on key environmental sustainability issues.

The indicators track toxic substances released to water by human activity in Canada. These indicators help to inform Canadians about key water pollutants that have been listed as toxic to human health and the environment. The indicators also help the government to identify priorities and to develop and track progress on strategies and policies put in place to reduce or control water pollution.

2 Description and rationale of the release of toxic substances to water indicators

2.1 Description

The indicators track anthropogenic releases of three toxic substances to water: mercury (Hg), lead (Pb) and cadmium (Cd) reported in kilograms (kg). For each toxic substance, releases are provided at the national, provincial or territorial, and sectoral level.

2.2 Changes since last report

This is the first time that these indicators are reported as part of the Canadian Environmental Sustainability Indicators (CESI).

3 Data

3.1 Data source

The release of toxic substances to water indicators reported in CESI come from the National Pollutant Release Inventory (NPRI) program compiled by Environment Canada. (<http://www.ec.gc.ca/inrp-npri/default.asp?lang=en>) NPRI includes releases reported by facilities.

3.2 Spatial coverage

The indicators are calculated at the national, provincial or territorial, and sectoral level.

3.3 Temporal coverage

Data from past years are also presented at the national level for all three release of toxic substances to water indicators (2003-2009). The latest year (2009) is used for regional and sector releases.

3.4 Data completeness

Because the indicators are derived solely from the NPRI database, they reflect releases only from facilities that met NPRI reporting criteria. As a result, the indicators do not include all emissions in Canada, but only the most important point sources for each selected toxic substance.

3.5 Data timeliness

The data are current up to 2009. The indicators are reported approximately two years after data collection because of the time required for data validation, calculation and interpretation.

4 Methods

Facilities report to NPRI an estimate of their releases to water using one of the following methods:

- Continuous emission/release monitoring systems
- Predictive emission/release monitoring
- Source testing
- Mass balance
- Site-specific emission/release factor
- Published emission/release factor
- Engineering estimates

Please consult the “Reporting to the NPRI” webpage for more details on these calculation methods. (<http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=F6300E68-1>)

Table 1: Number of NPRI facilities that reported Hg, Pb and Cd releases to water, Canada

Substance	2003	2004	2005	2006	2007	2008	2009	Common*	Total**
Hg	81	68	59	73	72	69	86	44	124
Pb	171	181	172	172	191	187	190	125	261
Cd	133	151	146	145	155	142	151	106	202

* Number of facilities common to all years

** Total number of facilities reporting this toxic substance for one or more years

Sector descriptions for the indicators come from the North American Industry Classification System (NAICS) used by Statistics Canada. (<http://www.statcan.gc.ca/concepts/industry-industrie-eng.htm>)

5 Caveats and Limitations

Facilities reporting to the NPRI may use different methods to determine how much of a particular substance they release. These methods may vary depending on the substance or the facility and may also change from year to year. The choice of calculation method could affect the reported amount of a particular substance released to water.

This indicator only reflects the releases reported by facilities to the NPRI. It does not estimate or include potential releases from other sources in Canada.

6 References and further reading

6.1 References

Environment Canada (2011) 2009 NPRI Reviewed Facility Data Release. Accessed July 2011. Available from: <http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=BA891E32-1>

Environment Canada (2011) Guide for Using and Interpreting National Pollutant Release Inventory (NPRI) Data. Accessed July 2011. Available from: <http://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=B5C1EAB8-1>

Environment Canada (2011) National Pollutant Release Inventory (NPRI) Database. December 2010 version. Accessed July 2011. Available from: <http://www.ec.gc.ca/inrp-npri/default.asp?lang=en&n=0EC58C98-#Facility>