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Data Sources and Methods for the Managing Pulp and Paper Effluent Quality in Canada Indicator

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1. Introduction

The Managing Pulp and Paper Effluent Quality in Canada indicator (www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=E20C2E23-1) is part of the Canadian Environmental Sustainability Indicators (CESI) program (www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=47F48106-1), 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 (www.ec.gc.ca/dd-sd/default.asp?lang=En&n=CD30F295-1).

2. Description and rationale of the Managing Pulp and Paper Effluent Quality in Canada indicator

2.1 Description

The Managing Pulp and Paper Effluent Quality in Canada indicator reports the percentage of acute lethality, biochemical oxygen demand (BOD) and total suspended solid (TSS) tests that met their regulatory limits from 1985 to 2012. The indicator provides information about whether Canada's *Pulp and Paper Effluent Regulations* (PPER) are able to sustainably manage the impact of Canada's pulp and paper industry on the environment.

2.2 Rationale

The PPER were developed under the *Fisheries Act* in 1971 to govern the discharge of deleterious substances into waters frequented by fish. The PPER have the overall objective of protecting water quality that sustains fish, fish habitat and the use of fisheries resources. This indicator summarizes the results achieved since the mid 1980's under the PPER.

The PPER were designed to encourage mills to modify their processes in order to improve water quality and protect fish, fish habitat and the use of fisheries resources. Prior to 1992, the PPER set mass-based limits for deposits of TSS and BOD matter, and prohibited the release of effluents that were acutely lethal to fish. In 1992, the 1971 PPER were updated to expand coverage to all mills, and to drive further effluent quality improvements based on standards achievable using secondary wastewater treatment. Since 1992, the regulatory standards have remained unchanged.

3. Data

3.1 Data source

Data for the Managing Pulp and Paper Effluent Quality indicator for 1985–2008 are taken from Environment Canada's Status Report on the Pulp and Paper Effluent Regulations (ec.gc.ca/Publications/A231D61D-E897-4257-9E4B-F65CF5A8B5AD/780_PPER_Status_Report_e_04.pdf). Data for 2012 comes from Environment Canada's Fisheries Act and Forest Products (Water) office.

3.2 Spatial coverage

For this indicator, data for all active pulp and paper mills across Canada are used. There are mills operating in all provinces except Prince Edward Island.

3.3 Temporal coverage

Environment Canada receives monthly or annual reports from pulp and paper mills across Canada. The reports include monitoring results and production information.

Effluent samples for BOD, TSS and toxicity are taken throughout the year as laid out in the PPER. Biochemical oxygen demand tests are taken at least three times a week for each outfall structure discharging directly to the environment. TSS are sampled daily for each outfall structure

discharging directly to the environment. Toxicity tests are run once a month for each outfall structure discharging directly to the environment.

Data from selected years (1985, 1996, 1998, 2000, 2002, 2003, 2008 and 2012) are included to represent effluent quality at key points in the evolution of the PPER and during the rationalization of the industry.

3.4 Data completeness

The indicator includes all compliance data sent to Environment Canada for the years reported in this indicator.

3.5 Data timeliness

The most recent data available at the time this indicator was produced are for 2012.

4. Methods

The Managing Pulp and Paper Effluent Quality indicator is based on the compliance rate, which is calculated as the number of tests passing their maximum limits in a year for all mills divided by the total number tests of taken in a given year.

Toxicity tests refer to effluent acute lethality tests conducted on Rainbow Trout (*Oncorhynchus mykiss*). Tests are run once a month for each outfall structure discharging directly to water following Environment Canada's Reference Method EPS 1/RM/13 (www.ec.gc.ca/faunescience-wildlifescience/default.asp?lang=En&n=F9AEDA4E-1). An effluent is considered acutely lethal if the effluent at 100% concentration kills more than 50% of the Rainbow Trout during a 96-hour period.

5. Caveats and limitations

This Managing Pulp and Paper Effluent Quality indicator only assesses the quality of effluent releases to surface waters. Groundwater is not considered in this indicator.

6. References and further reading

6.1 References

Department of Fisheries and Oceans (1992) *Pulp and Paper Effluent Regulations*. *Canada Gazette*, Part II. May 20, 1992. Queen's Printer for Canada.

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6.2 Further reading

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McMaster ME, Parrott JL and Hewitt LM (2003) A Decade of Research on the Environmental Impacts of Pulp and Paper Mill Effluent in Canada (1992-2002). National Water Research Institute, Burlington, Ontario. NWRI Scientific Assessment Report Series No. 4. 84 p. Retrieved on 3 September, 2014. Available from: www.ec.gc.ca/inre-nwri/default.asp?lang=En&n=DFCDAED6-1.

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