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Data Sources and Methods for the Household Use of Chemical Pesticides and Fertilizers Indicator

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1 Introduction

The Household Use of Chemical Pesticides and Fertilizers indicator (www.ec.gc.ca/indicateurs-indicators/default.asp?lang=En&n=258BC62B-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.

2 Description and rationale of the Household Use of Chemical Pesticides and Fertilizers indicator

2.1 Description

The Household Use of Chemical Pesticides and Fertilizers indicator reports on the percentage of Canadian households with lawns or gardens that reported using chemical fertilizers and pesticides in 1994 and every two years from 2005 to 2011. The data are broken down by province showing the comparison between data collected in 1994 and 2011.

2.2 Rationale

Chemical pesticides, including herbicides, insecticides and fungicides, are used to maintain the appearance of lawns and gardens by eliminating pests. However, chemical pesticides can have negative effects on human and environmental health by contaminating air, water, soil and food sources. For example, in addition to killing target insects, insecticides can also harm or kill other, non-target insects, soil microbes and insect-eating birds, thus disrupting the natural balance of the lawn or garden's ecosystem.

Chemical fertilizers are added to lawns and gardens to help them grow greener and thicker. However, if fertilizer is applied improperly or in excess, soluble nutrients can pollute drainage and storm waters, which eventually reach lakes and rivers. Run off of nutrient-laden water readily occurs in urban environments because there are many hard surfaces. In addition, water in storm sewers is frequently not treated before it reaches lakes or rivers, thus contributing to excessive growth of aquatic plants and algae.

2.3 Recent changes to the indicator

No methodological change has been made to the indicator since its last update in 2012.

3 Data

3.1 Data source

Data for this indicator come from Statistics Canada's 1994,¹ 2006,² 2007,³ 2009⁴ and 2011⁵ Households and the Environment Survey (HES).

3.2 Spatial coverage

The target population of the HES consists of Canadian households, excluding those in Yukon, Northwest Territories and Nunavut, households located on First Nations reserves or Crown lands, and households consisting entirely of full-time members of the Canadian Armed Forces.

3.3 Temporal coverage

Data for 1994 as compiled in the HES 2006 report are used in this indicator. The 1994 HES was conducted as a supplement to the May 1994 Labour Force Survey.

The HES 2006 was conducted as a supplement to the Labour Force Survey from February 15 to April 15, 2006. The HES 2007, 2009 and 2011 were conducted from October to December of their respective years as a follow-up survey to the Canadian Community Health Survey.

3.4 Data completeness

A representative sample of Canadian households from each province is surveyed in the HES. The 1994 HES surveyed 38 080 households and yielded an 83.1% response rate. The HES 2006 surveyed 36 431 households and yielded a 77.8% response rate. The HES 2007 surveyed 29 980 households and yielded a 72.3% response rate. The HES 2009 surveyed 20 000 households and yielded a 73.8% response rate. The sample size for HES 2011 was 20 000 households and yielded a final response rate of 74.3%.

Household estimates in the HES are produced using weights attached to each sampled household. The weight indicates the number of households in the population represented by the sampled unit.⁶

3.5 Data timeliness

The most recent data available at the time this indicator was produced are for 2011.

¹ Statistics Canada (1995) Households and the Environment 1994. Catalogue no. 11-526-XPB.

² Statistics Canada (2008) Households and the Environment 2006. Catalogue no. 11-526-X. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/11-526-x2007001-eng.htm.

³ Statistics Canada (2009) Households and the Environment 2007. Catalogue no. 11-526-X. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/11-526-x2009001-eng.htm.

⁴ Statistics Canada (2011) Households and the Environment 2009. Catalogue no. 11-526-X. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/11-526-x2011001-eng.htm.

⁵ Statistics Canada (2013) Households and the Environment 2011. Catalogue no. 11-526-X. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/11-526-x2013001-eng.htm.

⁶ Statistics Canada (2013) Data quality, concepts and methodology: Methodology and data quality. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/2013001/technote-notetech1-eng.htm.

4 Methods

In 1994 and 2006, the HES did not make the distinction between natural and chemical fertilizers and pesticides. It is reasonable, however, to assume people were only talking about chemical fertilizers and pesticides because there were not many natural remedies available. There should be no impact on the trend.

The HES 1994 data collected for this measure were based on the following question:

- In the last 12 months, did anyone, including commercial operators, apply the following chemicals to the yard, lawn or garden: pesticides or fertilizers? (Yes, No, Don't know)

The data collected for this measure from the HES 2006 were based on the following questions:

- In 2005, were any chemical fertilizers applied to your lawn/garden? (Yes, No, Don't know/Refused)
- In 2005, were any weed killers, pesticides, or fungicides applied to your lawn/garden? Include fertilizer and pesticide mixes like "Weed and Feed." (Yes, No, Don't know/Refused)

The HES 2007 and 2009 data collected for this measure were based on the following questions:

- In the last 12 months, were any chemical fertilizers applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)
- In the last 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden/lawn or garden? Please include fertilizer and herbicide mixes such as "Weed and Feed". (Yes, No, Don't know/Refused)

The HES 2011 data collected for this measure were based on the following questions:

- In the past 12 months, were any chemical fertilizers applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)
- In the past 12 months, were any chemical pesticides such as weed killers (herbicides), bug killers (insecticides), or fungicides applied to your lawn/garden/lawn or garden? (Yes, No, Don't know/Refused)

5 Caveats and limitations

The coverage error for the HES is based on the survey of which it is a sub-sample (i.e., the Labour Force Survey in 2006 and the Canadian Community Health Survey starting in 2007). In all cases, the coverage error is estimated at less than 2%.

Households located in the Yukon, Northwest Territories and Nunavut, households located on First Nations reserves and military bases, and households consisting entirely of full-time members of the Canadian Armed Forces are excluded from this study.

Estimates not meeting an acceptable level of quality were either flagged for caution or suppressed.⁷

⁷ Statistics Canada (2013) Data quality, concepts and methodology: Methodology and data quality. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/2013001/technote-notetech1-eng.htm.

6 References and further reading

6.1 References

Statistics Canada (1995) Households and the Environment 1994. Catalogue no. 11-526-XPB.

Statistics Canada (2008) Households and the Environment 2006. Catalogue no. 11-526-X. Retrieved on 17 March, 2014. Available from: www.statcan.gc.ca/pub/11-526-x/11-526-x2007001-eng.htm.

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