

Pesticides in Ontario's Treated Municipal Drinking Water, 1986-2006

KEY MESSAGES

- The Ministry of the Environment recently completed a report examining the presence of pesticides in treated drinking water across Ontario for the period of 1986 to 2006. The report, *Pesticides in Ontario's Treated Municipal Drinking Water, 1986-2006*, summarizes water quality data on pesticides collected by the ministry in Ontario's treated (finished) drinking water during the twenty-year period.
- The goal of the report was to better understand the presence of pesticides in treated water for surface water and ground water systems.
- The report shows that there has been a dramatic decrease in pesticides detected in treated surface waters and that, where detections have occurred, concentrations are generally low. As well, most groundwater systems had no pesticide detections in treated water
- Only two pesticides, atrazine and terbufos, were detected above their respective Ontario Drinking Water Quality Standards. The last exceedance documented by the report occurred in 2001 and no exceedances have been detected since.
- The atrazine exceedances occurred at two surface water treatment plants that are no longer in use (Dresden and Alvinston).
- The terbufos exceedances occurred at two wells at the Strathroy Well Supply. Strathroy has since switched to the use of surface water only for its drinking water supply. All wells have been decommissioned.
- Samples taken for the study represent about 90 percent of Ontario's existing municipal residential drinking water systems.

QUESTIONS AND ANSWERS

1. What were the findings of the report?

The report shows that there has been a dramatic decrease in the pesticides detected in treated surface waters and that, where detections have occurred, concentrations are generally low.

Specifically, the report shows that in treated surface water the pesticide detection rate decreased from **86 percent to 3 percent** due to a drop in pesticide concentrations in source water between 1986 and 2006.

The report also shows that in treated ground water most groundwater systems had no pesticide detections. From 1987 to 2006, the pesticide detection rate in treated ground water was generally much lower than in treated surface water, however, the gap has steadily decreased.

2. What data was used to generate the report?

The report uses data from the ministry's Drinking Water Surveillance Program (DWSP) from 1986 to 2006, and data from the Drinking Water Inspection/Compliance Program from 1997 to 2006.

3. Which pesticides showed exceedances in the test results?

The study included 104 pesticides and pesticide degradates. Out of over 16,000 treated water samples collected from 1986-2006, there were only four exceedances of Ontario Drinking Water Quality Standards (ODWQS) for pesticides, namely:

- Two exceedances of atrazine in surface water systems; and
- Two exceedances of terbufos at a groundwater system that is under the direct influence of surface water (GUDI).

The last exceedance documented by the report occurred in 2001. Since 2001 there have been no exceedances of ODWQS for pesticides in samples from either DWSP or the Drinking Water Inspection/Compliance Program.

4. Where did the exceedances occur in province?

The exceedances of atrazine and terbufos occurred at systems in southwestern Ontario, the region of Ontario with the highest agricultural use of pesticides.

- The atrazine exceedances occurred at two systems drawing water from the Sydenham river: the Dresden Water Treatment Plant (WTP) and the Alvinston WTP. The Dresden WTP exceedance was 2.8 times the standard and the Alvinston WTP exceedance was twice the standard. **Neither WTP is currently in use.**
- Both exceedances of terbufos occurred at the Strathroy Well Supply (three times the standard and twice the standard, respectively). **All wells have been decommissioned.**

5. What is atrazine and what are its effects?

Atrazine is one of the most widely used pesticides in Ontario. It is used by certified farmers and persons holding an Agriculture licence for the control of grass and broadleaf weeds in field corn, production seed corn and sweet corn. It is persistent in soils but is degraded by the action of microbes.

Atrazine is suspected of disrupting reproductive and developmental processes. However, the federal Canadian Pest Management Regulatory Agency concluded in its review of atrazine in 2007, which noted that the effects of atrazine on amphibians are inconclusive.

6. Are there are measures in place to mitigate the potential effects of atrazine?

Placement of risk mitigation measures on the atrazine product labels is required, which include:

- the herbicide not be applied by air
- the herbicide not be applied by ground application during dead calm, if winds are gusting greater than 8 km/hr, temperature is expected to exceed 28oC or if heavy rainfall is forecast.
- appropriate buffer zones be used between the downwind point of direct application and the closest edge of aquatic habits including a non-treated vegetation buffer zone between the treated area and any water body (a buffer zone of 30 metres is required for ground spray booms when mixing and loading and 10 metres when spraying).

7. What is terbufos and its effects?

In Canada, terbufos is limited to the control of soil dwelling pests (wireworms and root maggots) in sugar beets. Terbufos is allowed for use until August 1, 2012 prior to which time the federal Pest Management Regulatory Agency will re-evaluate its continued use.

Terbufos may lead to over-stimulation of the nervous system.

8. Does the report list the drinking water systems tested and their respective results?

The report does not name drinking water systems.

9. Is the ministry going to carry out further studies as a result of this report?

The ministry is currently conducting a study which examines pesticides in urban streams. This study is being carried out to determine the effect of the pesticide ban now in place.

The *Cosmetic Pesticides Ban Act*, which took effect in April 2009, prohibits the sale and use of pesticides for cosmetic purposes. Under the Act, 92 pesticide ingredients (all three formulations of 2,4-D and 89 other pesticide ingredients) are banned from use by homeowners and/or hired lawn care companies on lawns, parks, schoolyards and gardens. The ban also prohibits the sale of 231 domestic products containing these pesticides.

The study began in 2008 with the collection of pesticide data on ten urban streams prior to the implementation of the pesticide ban, and data collection continued in 2009 after the ban took effect. A scientific report on the findings is underway.

10. How do we account for pesticide contaminants in the drinking water source protection planning process?

One of the key objectives of the source protection program is to identify and manage both existing and future threats to sources of drinking water. Application of pesticides to land and the handling and storage of pesticides are two out of twenty-one prescribed drinking water threats under the Clean Water Act. Specifically, the source protection program prescribes activities and circumstances that may identify the application, handling, or storage of pesticides as a significant drinking water threat. Significant drinking water threats must be addressed in a source protection plan to reduce the risk to the drinking water sources. Policies to address significant drinking water threats will be developed by local source protection committees in consultation with stakeholders. Examples of policies could include education and training of persons applying pesticides, risk management plans for specific activities that include storage, application and handling of pesticides, or banning the application of pesticides in certain areas.

11. Where can I find a copy of the report?

The report can be found the ministry's website at:
<http://www.ene.gov.on.ca/publications/7407e.pdf>