

Which of these legal drugs was one of the most frequently detected in a mid-2000s survey of drinking water produced from surface raw waters in Ontario?

- A) Cyclopenthiazide
- B) Carbamazepine
- C) Acetaminophen
- D) Progesterone

Answer: B) Carbamazepine

In 2007, the Ontario Ministry of the Environment conducted a survey of the Occurrence of Pharmaceuticals and Other Emerging Contaminants in Untreated Source and Finished Drinking Water in Ontario, and examined the levels and occurrence of pharmaceuticals and other emerging contaminants. The top 4 chemicals in descending order were

Carbamazepine (Anti-epileptic, anti-depressant)
Gemfibrozil (Cholesterol regulating drug)
Bisphenol A (Plasticizer)
Ibuprofen (Non-steroidal anti-inflammatory drug)

These listed substances all end up in raw sewage as they are poorly absorbed and metabolized by the body. They exist in such small quantities (in the parts-per-trillion level) that they are not considered a threat to human health if they end up in drinking water. Chlorination is the most effective at degrading these pharmaceuticals before the drinking water reaches the consumer, however this method does not fully remove them and they are persistently detected in water systems where "treated" wastewater is released.

Carbamazepine (a commonly prescribed mood stabilizer and anti-epileptic agent) is the most common legal drug found in drinking water produced from Ontario surface raw waters, according to a survey done in the mid-2000s.

Acetaminophen is an analgesic commonly marketed under the brand name Tylenol.
Cyclopenthiazide is a diuretic used to treat hypertension and heart failure.

Progesterone is an endogenous steroid hormone used to control the menstrual cycle and, in both genders, produce other sex hormones. It is also synthetically produced for use in contraceptive pills and it is this source that is responsible for no or reduced development of fish eggs where untreated wastewater with high levels of this steroid empties into their habitat.

Ref:

<http://www.ontla.on.ca/library/repository/mon/26004/316712.pdf>

<https://archive.org/details/std01079830.ome>