

**Safe Drinking Water: A Public Health Challenge**

**Abstract**

Disinfection of drinking water through processes including filtration and chlorination was one of the major achievements of public health, beginning in the late 1800s and the early 1900s. Chloroform and other chlorination disinfection by-products (CBPs) in drinking water were first reported in 1974. Chloroform and several other CBPs are known to cause cancer in experimental animals, and there is growing epidemiologic evidence of a causal role for CBPs in human cancer, particularly for bladder cancer. It has been estimated that 14–16% of bladder cancers in Ontario may be attributable to drinking water containing relatively high levels of CBPs; the US Environmental Protection Agency has estimated the attributable risk to be 2–17%. These estimates are based on the assumption that the associations observed between bladder cancer and CBP exposure reflect a cause-effect relation. An expert working group (see [Workshop Report in this issue](#)) concluded that it was possible (60% of the group) to probable (40% of the group) that CBPs pose a significant cancer risk, particularly of bladder cancer. The group concluded that the risk of bladder and possibly other types of cancer is a moderately important public health problem. There is an urgent need to resolve this and to consider actions based on the body of evidence which, at a minimum, suggests that lowering of CBP levels would prevent a significant fraction of bladder cancers. In fact, given the widespread and prolonged exposure to CBPs and the epidemiologic evidence of associations with several cancer sites, future research may establish CBPs as the most important environmental carcinogens in terms of the number of attributable cancers per year.

[http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/cdic-mcc/19-3/c\\_e.html](http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/cdic-mcc/19-3/c_e.html)

Workshop Report

**Health Risks of Drinking Water Chlorination By-products: Report of an Expert Working Group**

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**Abstract**

Studies of water chlorination by-products have suggested a possible increased risk of bladder and colon cancers, as well as adverse reproductive and developmental effects such as increased spontaneous abortion rates and fetal anomalies. A workshop for an expert working group was convened to advise Health Canada on the need for further action. Participants were given background papers and a set of key questions to review prior to the meeting. At the workshop, experts presented an overview of what was known to date on water chlorination by-products from toxicologic studies, epidemiologic studies of cancer and adverse reproductive/developmental effects, and risk assessment. This paper summarizes the information provided in the background papers and presentations, describes the consensus arrived at regarding assessment of evidence for level of risk and presents a number of suggestions for future research.

**Key words:** cancer; chloramination; chlorination; chlorine; disinfection by-products; epidemiology; ozonation; reproductive health; toxicology; trihalomethanes

[http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/cdic-mcc/19-3/b\\_e.html](http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/cdic-mcc/19-3/b_e.html)

**INVESTIGATION OF AN OUTBREAK OF LEGIONNAIRES' DISEASE IN A HOSPITAL UNDER CONSTRUCTION:  
ONTARIO, SEPTEMBER-OCTOBER 2002**

<http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/ccdr-rmtc/03vol29/dr2917ea.html>

**AN OUTBREAK OF CRYPTOSPORIDIUM PARVUM IN A SURREY POOL WITH DETECTION IN POOL WATER  
SAMPLING**

**Introduction**

Cryptosporidium parvum is a protozoal pathogen that causes acute, watery diarrhea. Outbreaks of cryptosporidiosis have been associated with exposure to contaminated drinking water, recreational water, consumption of apple cider and produce, and contact with infected individuals in health care and child day-care settings<sup>(1)</sup>. Cryptosporidium oocysts are highly resistant to the chemical disinfectants used to purify drinking water and recreational water sources, such as pools and water parks.

<http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/ccdr-rmtc/04vol30/dr3007ea.html>