

EPB 293- Managing Wastes Generated by Water Treatment, Distribution, Maintenance, Repair and Extension

The Environmental Management and Protection Act, 2010 requires that all persons must report the discharge of any substance into the environment that may cause, is causing or has caused an adverse effect on the environment to the Water Security Agency (WSA).

WSA approval is required prior to construction of a waterworks residual waste management facility. Approval from federal authorities (Environment Canada and the Department of Fisheries and Oceans) may be required where there are discharges into fish bearing waters.

Environmental Responsibility

Providing safe drinking water can be a difficult task. Water utility owners and operators must ensure residual wastes created during water treatment are managed in an environmentally responsible manner. Source water protection resulting from proper management of residual waste, along with energy conservation and water conservation, ensure environmental impacts from water treatment plants are minimized.

Water Treatment Residual Waste Management

Managing residual wastes from a water treatment plant can present a difficult challenge and may account for a considerable portion of water treatment plant costs. Water treatment plant residual waste must be treated to provide source water protection for downstream users and to maintain a healthy watershed ecosystem.

Water Treatment Plant Sludge

Brine waste from an ion exchange process or residual sludge from other treatment processes like coagulation, lime softening, clarification and filtration, sand separators and filter backwash water are primary or secondary residual wastes. These processes can produce a considerable amount of waste product that must be treated and handled in an environmentally friendly manner.

Residuals from Flushing Programs

A less common type of discharge to the environment is the residuals from the flushing of water mains and flushing of chlorinated water storage reservoirs.

Prior to starting any flushing program, operators must determine how to deal with the flushed water and solids discharged during the cleaning process. If the flushed material is going to a storm drain, the solids must be removed and the water must be treated to remove chlorine and tested to confirm the discharge water will not be toxic to fish or aquatic life and will not damage the environment.

Residuals from Disinfection of Water Mains and Storage Facilities

WSA requires that all pipelines, distribution systems, water mains, extensions to an existing system and repaired portions be chlorinated and flushed prior to being placed into service. If the chlorinated water is to be discharged to the environment and there is potential that the discharge may be toxic to fish, plant or animal life or may damage the environment, then the material must be de-chlorinated prior to discharge.

Typical de-chlorinating agents are sulfur dioxide, sodium bisulfite, sodium sulfite and sodium thiosulfate. Volumes of agent required vary depending on the chlorine concentration and the agent used. Chlorinated water should not be discharged to sanitary sewers if there is potential for the chlorine to interfere with the wastewater facility operation.

Residuals from Distribution System Water Main Break Discharges

In addition to the reporting requirements mentioned above as outlined in the *Environmental Management and Protection Act, 2010* regarding discharges of any substance into the environment that may cause, is causing or has caused an adverse effect on the environment, the federal *Fisheries Act* requires reporting of any occurrence where there is a deposit of a deleterious substance in water frequented by fish that is not authorized under the Act. In considering chlorinated water discharges from water main breaks the CCME Water Quality

Guidelines for the Protection of Aquatic Life (<http://st-ts.ccme.ca/en/index.html?chems=all&chapters=all>) should be considered which indicate that the presence of any detectable reactive chlorine species (0.5 ug/l) is potentially deleterious.

Whatever reasonable efforts such as dechlorination or other preventative measures as possible, given the situation specific circumstances, to prevent the discharge of chlorinated water to fish bearing receiving waters during water main break events should be taken.

Reporting of chlorinated water discharges which may cause an adverse effect as per EMPA 2010 and the discharge of a deleterious substance as per the federal *Fisheries Act* during an uncontrolled or unanticipated water main break that may have the potential to allow chlorinated water to reach fish bearing waters can be done by reporting to the Spill Control Centre at 1-800-667-7525 and complying with the requirements of the Environmental Spill Control Regulations. Discharges of chlorinated water to fish bearing receiving waters would also be considered as upset conditions as outlined in EPB 267 – Upset Reporting at Waterworks/Sewage Works and require reporting to the Upset Report Line at 1-844-536-9494.

Water Security Agency Procedure

The WSA requires that owners of municipal water treatment plants and many associated works obtain a Permit to Construct Works prior to construction of new or altered works. This permit procedure requires a plan by the owner for managing water treatment and distribution system residual wastes. Additional information on treatment options that are applicable to the residual wastes generated from water treatment facilities are discussed in [A Guide to Waterworks Design EPB 501](#) (Section 3.1.13). Communities are encouraged to work with a consultant and the WSA to determine suitable waste treatment or management options.

Please contact your Environmental Project Officer if you have any questions or concerns regarding water treatment related waste management practices.