

EPB 312- Pesticides in Drinking Water – June 2015



Source Water Protection

The water supply source is the beginning of the drinking water system. In any drinking water system, preventing source water contamination is the most effective means of preventing contaminants from reaching consumers. Source water protection also helps to ensure that additional, potentially more costly treatment is not necessary to remove further contaminants.

All municipalities employing surface water reservoirs as their source of drinking water should have a watershed management program in place that is able to control, minimize or eliminate any undesirable practices within the watershed area that are harmful to water quality within the water supply reservoir.

It is necessary to cooperatively manage/control farming practices in sensitive areas, particularly in areas that are nearby to raw water reservoirs. Pesticide and herbicide applications on the farmland near raw water reservoirs may be controlled through by-laws. All municipalities need to look at their individual situations and put into place protection of their raw water supplies. Buffer zones, controlled application of pesticide and herbicide, application times and favourable conditions should be established so as to protect the quality of source water reservoir.

Another source of pesticides and herbicides can occur from stormwater runoff. Stormwater discharge is something for all municipalities to investigate and look at putting a management plan in place.

Water Treatment

Conventional surface water treatment methods (coagulation-flocculation, sedimentation and conventional filtration) used at the majority of our municipal water systems do not appear to provide pesticide removal in finished drinking water.

Powdered activated carbon (PAC), granulated activated carbon (GAC) filtration and reverse osmosis have shown to be highly effective water treatment processes for removal of certain pesticides and herbicides.

The most common treatment method of removing certain pesticides and herbicides would be adding PAC at suitable locations in the conventional water treatment processes with no significant capital investment and an increase in annual operating cost.

GAC filtration is normally found immediately after conventional filtration and can be very effective provided the proper flow rates/contact times are used and the carbon is either replaced or regenerated on an annual basis or as required. GAC typically requires an increase in capital cost and ongoing operating costs.

Reverse osmosis has been found to be effective but the capital cost of a full treatment facility may be higher than PAC or GAC.

Air stripping is effective for the removal of volatile pesticides, but this method is used at only a small percentage of municipalities.