



Point Source Pollution

in the Georgia Basin

- **What is point source pollution?**
- **What are the major point sources of contaminants to the Georgia Basin?**
- **What types of contaminants are released to the Georgia Basin in point source pollution?**

What is point source pollution?

Point source pollution refers to the direct discharge of effluents or emissions to the environment from a well-defined, identifiable source such as an end-of-pipe discharge.

What are the major point sources of contaminants to the Georgia Basin?

There are a large number of point source releases of contaminants to the Georgia Basin; however, pulp and paper mills and municipal wastewater treatment plants are considered to be the most important sources due to the large volume of effluents and the complex mixture of contaminants contained in these effluents. The concentrations of various pollutants in these discharges are routinely measured to provide information on pollutant loadings from these sources. Some pollution sources, such as stormwater, mines, and contaminated sites, as well as some atmospheric releases, can be classified as both point and non-point.

What types of contaminants are released to the Georgia Basin in point source pollution?

The types and amounts of contaminants released from point sources vary with the source of the discharge. For example, some municipal wastewater treatment plants discharge a wide range of contaminants including metals; conventional POPs such as PCBs, dioxins/furans, PAHs and organochlorine pesticides; new and emerging POPs including PBDEs, AP and APnEOs; phthalate esters, chlorinated paraffins, PCNs and FOCs; pesticides, including organotin compounds and wood treatment chemicals; nutrients; and pharmaceuticals and personal care products.

Point source discharges from the pulp and paper industry contain chlorinated compounds, metals, phytoestrogens, and wood extractives. In the 1980s, BC pulp and paper mills were a major source of dioxins and furans to the environment; however, the introduction of stringent federal regulations has decreased loadings of these substances by more than 98%. Although pulp and paper mill effluents are no longer a major source of dioxins and furans to the Georgia Basin, the combustion of salt laden wood at coastal mills continues to be a source of atmospheric dioxin release.

Few mines are located within the Georgia Basin; however, the continuous drainage of acidic mine water contaminated with metals has been a problem at some abandoned mines. Britannia Mine, located in Howe Sound, was recognized as one of the largest metal pollution sources in North America. Acid mine drainage from this mine resulted in the release of large quantities of copper and zinc into Howe Sound until the recent completion of the wastewater treatment plant to treat the acid mine drainage.

How does point source pollution affect the Georgia Basin environment?

End-of-pipe discharges to the environment can result in the accumulation of high concentrations of pathogens and/or chemical contaminants in local sediments and aquatic organisms. This can directly impact the health of local fish and shellfish and can also cause environmental degradation in the vicinity of the discharge pipe, making it unsuitable as habitat for aquatic species or for human recreational use. In some areas, fish and shellfish have accumulated contaminant concentrations high enough to pose a threat to predators and human consumers and commercially and recreationally harvested species have been deemed unsuitable for human consumption. For example, in the 1980s, high concentrations of dioxins and furans in the effluent discharges from BC pulp and paper mills resulted in the contamination of extensive areas of the BC coast. Unacceptably high concentrations of dioxins and furans in shellfish species prompted the federal government to introduce closures, restrictions, and consumption advisories on various crab, prawn, shrimp, oyster and clam fisheries.

In addition, elevated concentrations of dioxins and furans were detected in some fish-eating species of birds, including herons, bald eagles and ospreys, in the vicinity of some pulp and paper mills. Studies on a heron colony located near a Vancouver Island pulp and paper mill indicated that dioxins and furans may have been the cause of reduced embryo and chick survival as well as abnormal behaviour in adult birds which resulted in poor nesting success. The implementation of regulatory controls and voluntary actions by the industry dramatically reduced the release of these substances in pulp and paper mill effluents.

Concentrations in shellfish have now returned to safe levels and, in most areas, consumption advisories have now been lifted. In addition, dioxin and furan concentrations in herons, bald eagles, and ospreys have also decreased significantly.

Key Reference

(Information for this fact sheet was taken from the following publication)

Garrett, C.L. 2004. Priority substances of interest in the Georgia Basin: profiles and background information on current toxic issues. Technical Supporting Document of the Canadian Toxics Work Group of the Puget Sound/Georgia Basin International Task Force. GBAP Publication No. EC/GB/04/79. Environment Canada, Pacific and Yukon Region, Vancouver, BC.