



Mercury In Hospitals

In 2001, The Nova Scotia Department of Environment and Labour (NSEL) partnered with Environment Canada to conduct a study to determine mercury use and release in 17 Nova Scotia Hospitals. Wastewater samples were taken to determine total mercury concentrations, and a questionnaire was developed and used to assess mercury use and disposal in those hospitals. This study helped to identify sources of mercury in hospitals, what initiatives hospitals are undergoing to reduce mercury usage, and what next steps should be taken to reduce mercury use in hospitals.

Mercury (Hg) is a persistent, toxic, bioaccumulative substance that poses serious health risks to humans and wildlife. Health care facilities use a variety of products that contain mercury including; thermometers, blood pressure cuffs, fluorescent lamps, batteries, and lab chemicals. Mercury is released from hospitals by: incineration of medical waste; land filling of mercury-containing solid waste; and releases of mercury containing chemicals into wastewater. Hospitals have an opportunity to play a key role in protecting public health and the environment by minimizing their use and release of mercury-containing products and waste. Some Nova Scotia hospitals have already implemented programs to reduce mercury use and release.

Hospitals in Nova Scotia with more than 80 beds were selected as study sites and a questionnaire was developed and used to determine mercury use at those facilities. A 24 hour composite sample of wastewater from each facility was also collected twice during the year and analysed for total mercury concentrations. A flow measurement was taken of the wastewater discharge to estimate mercury loadings

Key Findings - Identification and Replacement for Sources of Mercury

Nine of the 17 study hospitals provided information on their mercury policies, programmes and practices. Forty- four percent (44%) of hospitals indicated that mercury purchasing policies has had been developed and were in use. Fifty-six percent (56 %) of hospitals surveyed had a policy for identification and inventory of mercury. A number of respondents indicated a willingness to share their policies with other health care facilities.

Key Findings - Disposal of Mercury Containing Products

Seven of the 17 study hospitals provided information on mercury - containing equipment, products and lab chemicals. All hospitals reported using limited quantities of mercury-containing thermometers. Other equipment and products had varying levels of use. Weighted esophageal dilators and blood pressure cuffs accounted for the majority of the total mercury, by volume, at all of the study sites, 96% of the estimated 106,320 grams. Sixty-seven percent (67%) of hospitals surveyed had clean-up procedures for mercury spills. Mercury disposal methods varied widely between hospitals. At least two facilities were disposing mercury-containing items incorrectly (incineration, general solid waste).

Five chemicals/products accounted for approximately 98% of the mercury used at all sites: B5 Fixative; Mercurochrome; Hg chloride; Zenker's solution; and Hg (II) oxide. Most hospitals use commercial hazardous waste companies for disposal of unused chemicals or wastes but some hospitals pour chemicals (fixatives) down the drain

Key Findings - Total Mercury Releases

Total mercury concentrations in hospital waste waters ranged from 0.0064 to 0.26 µg/L with a mean concentration of 0.10 µg/L. Mean mercury concentrations from hospitals were 3.3 times higher than mean concentrations from reference sites, not influenced by hospital discharges (0.03 µg/L). The total mercury concentrations in hospital waste waters were far below the Service Nova Scotia and Municipal Relations model sewer discharge by-law for NS communities (100 µg/L) and the HRM wastewater discharge by-law (10 µg/L). However, 16 of the 17 hospitals surveyed had mercury concentrations within the range of concentrations (0.03 to 1.6 µg/L) that has caused impaired reproduction in sensitive aquatic organisms. Estimated annual mercury loadings ranged from 3.21 to 138.6 g/yr with an average discharge of 65.3 g/yr. Using the most conservative estimate for each site, at a minimum an estimated 375 g of mercury are released annually in wastewater from the 17 hospitals surveyed. One gram of mercury released per year is enough to contaminate all the fish in a lake with a surface area of 8 hectares

Summary

While many hospitals have already made efforts to reduce mercury use and implement mercury management practices, there appears to be additional opportunities to reduce mercury use at most hospitals in NS through pollution prevention practices. Hospitals indicated a lack of information on identifying less obvious sources of mercury and on sample policies/practices as barriers to implementing mercury reduction programmes. NSEL's pollution prevention team is currently working with the Atlantic Support Services Association to promote pollution prevention in the health care sector.

For additional information on identification and reduction of mercury in health care facilities or more information on Pollution Prevention please contact the Nova Scotia Department of Environment and Labour at Tel: 902-424-2578 or visit our website at www.gov.ns.ca/enla/envin/p2