# Health Concerns with Flooring and Fire Stopping Used in Healthcare Facilities. Executive Summary

Zero toxicity is one of the ten sustainability area that the four health authorities supported by Lower Mainland Facilities Management (LMFM) is trying to achieve. In order to better understand the toxic substances in building materials and furnishing, LMFM is focusing on the toxic substances in resilient flooring and fire stopping sealants used in acute and chronic care facilities. This report elucidates on the possible toxic substances used in 1) resilient flooring, their installation, care, and maintenance, and 2) fire stopping sealants.

A review of the Material Safety Data Sheet and Environmental Product Declaration (or Product Transparency list) of several manufacturers of flooring products and fire stopping sealants yielded the following list associated with negative health effects in humans: phthalates, metal soaps as heat stabilizers in PVC, flame retardants, isocyanates, epoxy curing agents, silicon-based compounds in sealants, antimicrobial agents in canned building products, and glycol ethers. Phthalates and organophosphorus flame retardants are found in PVC flooring and some sealants, the latter with widespread use among many building materials and furnishing.

Further examination of the risk of these compounds to the occupants where these products are used showed a few chemicals may be of concern to occupants' health. Phthalates are associated with asthma symptoms and endocrine disruption. Halogenated flame retardants are also associated with endocrine disruption, but persist in the environment and bioaccumulate in organisms to a point that the background level of these flame retardants are rising. Organophosphorus flame retardants cause a variety of health effects depending on the exact compound. Isothiazolinone are associated with skin sensitization, and can be detected in rooms where isothiazolinone-containing products were used even after a year.

Building materials containing alternatives to phthalates and flame retardants are available. However, little is known about whether they may cause other adverse effects not tested yet, though early toxicity studies show no toxic effects related to the conventional chemical used. Alternatives for phthalates are already available in the market. There are fewer alternatives to flame retardants, with varying levels of toxicity to humans or the environment. Little is known about possible alternatives to isothiazolinone, but a compound in the same family is believed to be less likely to cause skin sensitization.

# Chemicals of Concern in Healthcare Products. Executive Summary

Health Shared Services BC (HSSBC) is interested in achieving zero toxicity within the health authorities it serves, which involves reducing and removing potential toxic substances used. At the moment, HSSBC has limited information on the potential risk to human and environment health from the many healthcare products supplied to the health authorities, and this report hopes to determine which products within healthcare should seek an alternative and the status with vendors and manufacturers to incorporate these alternatives into the health authorities.

The search came up with 8 chemicals/chemical groups of concern voiced by some organizations related to healthcare. These include mercury, triclosan, latex, chemicals in disinfectants, chemicals in sterilizers, polyvinyl chloride, phthalates, bisphenol A, and brominated flame retardants. The risk of mercury and latex are well known, and alternatives are currently available. The alternatives with triclosan (and other antibacterial soaps and hand wipes) and chemicals and disinfectants and sterilizers are not only related to their risk to human and environmental health, but also to their effectiveness on providing a safe environment within healthcare facilities, which is outside the scope of this report. Phthalates, specifically di(2-ethylhexyl)phthalate (DEHP) in PVC, bisphenol A, and brominated flame retardants may pose a health risk to humans and the environment, and alternatives are available for most healthcare products known to contain these chemicals.

The initial interviews with vendors for products that may contain phthalates, bisphenol A, and flame retardants showed that not all vendors know whether their products contain these chemicals. It also showed that the manufacturers are likely to change their product based on market pressures, most of which comes from government regulations and standards.