Int Arch Occup Environ Health. 2008 Jul;81(7):899-911. Epub 2007 Dec 8.
Environmental and biological monitoring of antineoplastic drugs in four workplaces in a Swedish hospital.
Hedmer M, Tinnerberg H, Axmon A, Jönsson BA.
Division of Occupational and Environmental Medicine, Department of Laboratory Medicine, Lund University Hospital, 221 85 Lund, Sweden. maria.hedmer@med.lu.se
Abstract
OBJECTIVES:
Exposure to antineoplastic drugs should be avoided due to the risk of getting adverse health effects. Antineoplastic drugs such as cyclophosphamide (CP) and ifosfamide (IF) are commonly used in medical attendance. In this study the variability of surface contamination of CP and IF was investigated by repeated wipe sampling over time in four workplaces in a university hospital. The surface contamination levels were also evaluated and health care workers were biologically monitored.
METHODS:
A hospital pharmacy, two oncology wards and one oncology outpatient department were selected. Between 10 and 13 different surface areas such as work areas, floors and handles were selected in each workplace and wiped between 7 and 8 times during 9 months. Pre- and post-shift urine samples were collected from the workers in the investigated workplaces. Analysis was performed by liquid chromatography combined with tandem mass spectrometry.
RESULTS:
Measurable amounts of CP and IF were detected on the majority of the sampled surfaces. The highest concentrations were found on the floors in the patient lavatories and utility rooms (up to 95 ng cm(-2)). In general, the surface contamination of CP and IF on floors did not vary much over time. Work areas and handles had larger variability. Neither CP nor IF were detected in any of the collected urine samples.
CONCLUSIONS:
The variability in surface contamination of CP and IF was rather low especially on floors. Higher concentrations of CP and IF were found on the floors compared with the work areas. The highest surface loads were found on floors (in patient lavatories and utility rooms) that were related to patient activities such as handling of patients' urine. Although high contaminations were found, the biological monitoring showed no uptake. Wipe sampling is a good method to improve the work practices.