

Awareness of occupational health risks of nitrous oxide and formaldehyde used in a hospital's operating room

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Abstract

The objectives of this study were to assess awareness of the possible occupational chemical hazards in the surgical department of hospitals in Estonia, to identify the risk of adverse health effects to hospital workers caused by exposure to chemical agents, as well as to assess the need for recommendations to minimise the health risks of workers. The study was conducted in Tallinn Mustamäe Hospital and focused on the exposure of hospital workers (anaesthesiologists, surgeons, nurses and cleaners) to formaldehyde and nitrous oxide. The levels of nitrous oxide found were above the Estonian occupational exposure limits for the eight-hour workday (100 ppm) in two out of four operating rooms. The environmental levels of formaldehyde exceeded the Occupational Limit Value (0.5 ppm) and Limit Value-Ceiling (1 ppm) Values in Estonia. According to previous studies, exposure to formaldehyde at levels similar to those recorded in the study, is associated with adverse health such as reduced fertility, spontaneous. It is recommended that measures be taken to minimise the hospital workers' exposure to these chemical agents in order to reduce risk to their health.

Introduction

An increasing concern about occupational hazards in the health care professions has been observed during the recent years. Hazardous chemical agents found in the operating rooms include anaesthetic gases, disinfectants, and the vapours of solvents. High levels of occupational exposure to nitrous oxide (>50 ppm) have been associated with reduced fertility, increased risk of spontaneous abortion, and neurological disturbances (Guirguis, 1990, Rowland, 1995, Sessler, 1997, Smith, 1998). Studies of hospital workers exposed to formaldehyde are reported with health effects, such as eye and throat irritation, upper respiratory tract irritation, chest tightness, and increased risk of nasal cancer (Alexandersson, 1982). The present study focused on the occupational exposure of health care workers to common chemical hazards (nitrous oxide and formaldehyde) found in a surgical department of a hospital. The choice of these particular chemical agents was based on the fact that these were being commonly used in surgical departments and their concentration can be measured in the air. The objectives of the study were to assess the possible occupational chemical hazards in the surgical department of Tallinn

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