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ENVIRONMENTAL AND OCCUPATIONAL IMPACT ON HUMAN HEALTH OF DUST AND CHEMICALS FROM MODERN TECHNOLOGIES

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Abstract

The paper concentrates on the risks of modern technologies (in wood processing and metal industry, spray-painting processes and car washing technologies) in the industrial and office environments on human health. The problems discussed are the following: fine dust ($PM_{2.5}$and $PM_{1.0}$) penetrating deeply into the lungs; high concentration of carbon dioxide in the air of cities and office areas that are situated close to the transport junctions. The health damages can be described as follows: allergic reactions, hypersensitivity to the bacteria and viruses from the environment; headaches and fatigue; decreased work-life and early retirement. The measurements in the indoor and outdoor environment of carbon dioxide, chemicals and dust were carried out in and near the industrial premises and office-rooms in Estonia. Health risk levels in the industrial and office environments were determined using the worked out simple risk assessment model (connected with the standard EVS-EN 15251) by the authors. The most emphasized problem is the Estonian woodworkers' exposure to wood dust. The wood dust concentration in the air of near-by residential areas has been determined. On the basis of the Estonian legislation, the measurements and the literature data on wood dust hazardousness, the model for determination of wood dust risk levels is worked out. The risk level of wood dust in the example of Estonian wood-processing industry is III to IV in the five levels scale. On the basis of the investigation it has been concluded that the working conditions in the wood processing industry in Estonia in 2011-2012 have been improved compared with the earlier time period (1999-2000). The better working conditions have been achieved mainly by installing more effective ventilation systems and consistent cleaning of the work areas.

Key words: environment pollution, carbon dioxide, chemicals, dust, indoor air

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