

Tobacco Smoke in Discos, Restaurants and other Public Places: Hot Spots of Air Pollution

Manfred Neuberger and Hanns Moshhammer, Department of Preventive Medicine, Institute of Environmental Health, University of Vienna, A-1095 Wien, Kinderspitalgasse 15, Austria

In discos, bars and some restaurants we found nicotine concentrations (table 1) indicating exposures to tobacco smoke which pose an acute hazard to customers (e.g. persons with coronary heart disease, asthma or hyperreactive airways). The highest risk, however, results from long term exposure of employees to carcinogens and fine particulate matter (PM) from tobacco smoke.

Indoor we found a high correlation between active surface of PM and nicotine concentrations ($r^2 = 0.89$), and in outdoor studies increases of active surface of PM were followed immediately by lung function decrements (Moshhammer 2003). Numerous other outdoor studies have established spatial and temporal relationships between exposure to fine PM and premature death from respiratory and cardiovascular diseases. Similar mechanisms (e.g. decrease of coronary flow, increased blood clotting) have been found involved in the pathogenesis of diseases from passive smoking (Otsuka 01). In a meta-study a 21% increase of myocardial infarction from involuntary smoking at the work place was estimated (Steenland 99). An even higher increase was found for stroke (Bonita 99) and asthma (Jaakola 03). For fine PM and for carcinogens no safe threshold is known. The increase of lung cancer from passive smoking is well established and has been estimated 25% for the workplace (Brown 99). From the mean nicotine concentrations which we measured in bars, we estimated an increase of coronary heart disease of 75% for a nonsmoking employee working 4 hours a day.

Mean concentrations measured in teachers rooms of schools and in nurses rooms of hospitals were lower, but the health risk from passive smoking is considerable (Kawachi 97). At some locations we even found indications that smoke from the nurses gets into patients rooms and smoke from the teachers gets into class rooms. Smoking outdoors in front of schools or hospitals is not to be recommended either, because of the bad example for students or patients. Therefore smoking rooms ventilated separately to the outside or smokeless nicotine seems to be necessary at these workplaces for the nicotine addicts. Countries like Sweden, however, have shown that smokefree hospitals and schools are feasible. Young people who want to become teachers, doctors or nurses should learn during their training that they need to quit smoking.

Working in a smoke-free workplace was in general more strongly correlated with successful quitting than the use of nicotine replacement products, and the most effective population based smoking cessation method is to pass and enforce laws for smoke-free workplaces (U.S. Dpmt.of Health 2000). And most important, our goal that nobody has to inhale carcinogens and other hazardous air pollutants at his job is achievable only after a complete ban of smoking at the workplace.

Table 1: Nicotine concentration in 107 Austrian air samples

location	n	mean	SD
bar, disco	22	154,37	102,38
restaurant, all	19	29,84	42,08
<i>without separation</i>	9	38,04	<i>60,55</i>
<i>nonsmoking s.</i>	6	23,26	<i>15,92</i>
<i>smoking section</i>	4	21,26	<i>6,09</i>
schools	19	3,03	4,6
hospitals	18	12,23	16,51
public transport	14	8,88	8,02
university	9	11,52	10,77
other	6	0,32	0,55

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