

Why is the Lung Cancer Mortality among Ironworkers High?

Hitoshi Kubota¹, Jian Sun², Naomi Hisanaga¹, Ippei Mori¹ and Eiji Shibata³

¹*National Institute of Industrial Health, Japan*

²*Institute for Health Economics, Canada*

³*Aichi Medical University, Japan*

Abstract

We have been engaged in a cohort study on the mortality of members of a construction workers' health insurance society to evaluate the influence of exposure to hazardous factors such as asbestos on the health status of construction workers. In the study, we observed significantly elevated standardized mortality ratios for cancers of the trachea, bronchus and lung among ironworkers (2.88, 95%, CI: 1.44-5.15) compared with the Japanese male population. In addition, according to the chest X-ray investigation in the society, the prevalence of pleural thickening among ironworkers (9.3%) was higher than that for workers in general (2.1%).

In order to elucidate the background of the above-mentioned findings, we carried out a questionnaire survey by mailing. The subjects of the survey were ironworkers and two relevant jobs, welders and reinforcing-bar placers. The questionnaire consisted of questions on previous experiences in 18 types of jobs with possible exposure to hazardous substances such as asbestos, subjective respiratory symptoms, and smoking history.

Of a total of 1,021 workers, 452 (44.3%) responded, and complete answers were obtained from 398, comprising 202 ironworkers, 142 welders and 54 reinforcing-bar placers. Some of the ironworkers did welding as well as their basic tasks. Among 202 ironworkers, rates of experience in asbestos-related jobs such as building demolition, handling asbestos-slate board, installation/removal of heat-insulation materials, working in asbestos-sprayed buildings and handling calcium silicate board in the past were significantly higher than other groups. The combined percentages of current smokers and ex-smokers in the three jobs ranged from 70 to 87%.

Taking into account the high frequency of asbestos exposure and welding work experienced by ironworkers shown in the present questionnaire survey, and no significantly excess deaths by cancers of the trachea, bronchus and lung in welders demonstrated in our cohort study, we suspect that the elevated mortality from lung cancer in ironworkers is associated with their asbestos-related jobs.