Accelerated Annual Decline In Fev1 Among Norwegian Aluminum Workers

V. Soyseth[1, 2], B. Bakke[3], P. K. Henneberger[4], J. Kongerud[5],

[1]Akershus University Hospital, Lorenskog, Norway, [2], [3]National Institute of Occupational Health, Oslo, Norway, [4]CDC National Institute for Occupational Safety and Health (NIOSH), Morgantown, WV, [5]University of Oslo, Oslo, Norway

In a longitudinal study we have compared the annual decline in lung function between potroom operators in seven Norwegian aluminum plants (index group) and a reference group that comprises employees in a road construction company, a roller factory, and a rim factory. The index group and the reference group consisted of 4,774 and 537 employees, respectively. They were followed up annually using spirometry and a respiratory questionnaire. The index group differed from the reference group by having proportionately fewer females (20% versus 26%) and a lower mean age at inclusion (29.2 years, sd=11.6 versus 35.0 years, sd=12.4). The mean forced expiratory volume in one second (FEV1) and forced vital capacity (FVC) at inclusion were greater for index participants, with values of FEV1=4.35 (sd=0.85) and FVC=5.28 (sd=0.98) L in the index group and FEV1=4.01 (sd=0.80) and FVC=5.03 (sd=0.97) L among the references. Current smokers accounted for approximately half of each group, with 2,196 (53 %) and 294 (56 %) in the index group and among the references, respectively. The subjects were followed-up for 10 years. The mean annual declines in FEV1 (dFEV1) and FVC (dFVC) by study group and smoking status are shown in table 1.

spirometry	dFEV1	dFEV1	dFEV1	dFVC	dFVC	dFVC
	Current	Former	Never	Current	Former	Never
Reference	35.1 (6.5)	49.3 (19.4)	34.0 (9.2)	42.6 (7.4)	84.5 (17.9)	46.9 (10.3)
Index group	65.2 (2.1)	60.6 (6.4)	50.4 (3.5)	42.4 (2.2)	49.1 (6.1)	21.1 (3.7)

After controlling for height, gender, smoking habits and age at inclusion in linear mixed regression models, aluminum plant workers had an accelerated annual decline in FEV1 (20.2 ml/year, 95% CI: 6.5 to 33.8) but not FVC (-6.5 ml/year, 95% CI: -20.3 to 7.1). In conclusion, our data indicate that aluminum potroom workers had an increased risk of pulmonary obstructive disease compared to workers in otherwise comparable settings.

This abstract is funded by: The Norwegian Aluminum Industry

Am J Respir Crit Care Med 189;2014:A5100

Internet address: www.atsjournals.org **Online Abstracts Issue**