

# European Respiratory Society Annual Congress 2012

Abstract Number: 4196

Publication Number: P3391

**Abstract Group:** 6.1. Epidemiology

**Keyword 1:** Occupation **Keyword 2:** Epidemiology **Keyword 3:** Environment

**Title:** Occupational air pollutants – More hazardous for respiratory health than smoking? Report from the obstructive lung disease in northern Sweden studies

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**Body:** Background: Both smoking and occupational air pollutants (OAP) are risk factors for impaired respiratory health. Comparisons of their effects and how they interact are scarce. Aim: To compare the effects of ever smoking and ever OAP on non-malignant respiratory disorders and to assess their interactions. Material and methods: In a population-based incidence study of asthmatic and bronchitic disorders in northern Sweden, 5896 subjects answered a postal questionnaire in 1996 and in 2006 (79% of the responders in 1996). Cumulative incidences were calculated. Risk factors were analyzed in multiple logistic regressions adjusted for possible confounders and the results are presented as odds ratios (OR). Ever/never smoking (S) and ever/never OAP were used as a combined variable with four categories or as dichotomous variables, respectively. Result: Cumulative incidences for 10 years were for  $S_0/OAP_0$  3.2 - 7.4,  $S_1/OAP_0$  3.3 - 9.5,  $S_0/OAP_1$  3.8 – 11.0, and for  $S_1/OAP_1$  7.1 – 15.0. Using a combined variable with  $S_0/OAP_0$  as the reference odds ratios were for  $S_1/OAP_0$  0.99 – 1.8 with some significant results,  $S_0/OAP_1$  1.0 – 2.2, with more significant results, and  $S_1/OAP_1$  1.4 – 3.4 with all results significant. Interactions between smoking and OAP were mostly multiplicative for both asthmatic and bronchitic disorders. Population attributable risks based on dichotomous variables were for smoking about 15%, for OAP about 20%, and for smoking and/or OAP about 25%. Conclusion: OAP were at least as strong a risk factor as smoking for impaired respiratory health. Both smoking and OAP ought to be considered as possible confounders.