EFFECTS OF AIRBORNE CONTAMINANTS IN SWINE CONTAMINANTS IN SWINE CONFINEMENT BUILDINGS ON ACUTE CHANGES IN LUNG FUNCTION IN SWINE FARMERS

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Dust, endotoxin, ammonia and carbon dioxide were measured in 25 swine confinement buildings and lung function tests were conducted before work and every 2 hours subsequently on 52 swine farmers working in the buildings. Swine farmers had 8.7 ± 6.8 swine farming years and 4.3 ± 2.3 work-hours per day. Values for forced vital capacity (FVC), forced expiratory volume in one second (FEVl) and maximum mid-expiratory flow rate (MMFR) in these farmers were significantly lower after 2, 4, 6 and 8 hours of work than at baseline ($p < 0.05$). Average shift changes during the day were: -3.98 ± 6.18 percent for FVC, -6.07 ± 6.14 percent for FEVl, -2.06 ± .42 percent for FEV1FVC and -12.14 ± 11.17 percent for MMFR. Male swine farmers had significantly greater shift changes than did female swine farmers (p 1<°-°S). Swine farmers with acute cough, acute chest tightness and chronic cough symptoms had greater shift changes in FEVl than those without these symptoms ($p < 0.05$). Multiple regression analysis showed that endotoxin, total dust, number of swine per farm, swine farming years, grain farming years and mask wearing were associated with the shift changes in FEV1 in non-smoking swine farmers. We conclude that swine farming is associated with acute reductions in lung function which are related to exposures to airborne contaminants in confinement buildings. (Supported by Health and Welfare Canada and the Saskatchewan Lung Association).

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