Work in brief

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ACCOUNTING FOR THE CARCINOGENICITY OF AIRBORNE PARTICLES

Findings from epidemiological studies conducted as early as the 1950s suggest that air pollution might explain the higher rates of lung cancer seen in urban areas. Solid evidence implicating a specific agent to account for that effect is lacking, but attention has been focused on particulate matter (PM) because it contains known carcinogens, including metals and polycyclic aromatic hydrocarbons (PAH). Two articles in this issue examine the evidence that some constituent of particulate air pollution causes lung cancer. Harrison and colleagues (p. 799) take a creative, indirect approach to the problem by comparing the lung cancer rates observed in the large American Cancer Society cohort to the rates expected in the same group based on its estimated exposure to fine particles and published risk coefficients for arsenic, chromium, nickel, and PAH. They find that the observed and expected rates are similar. Although the authors point to uncertainties in their estimates, they interpret the compatibility of the observed and expected lung cancer rates as an indication that known chemical carcinogens could plausibly explain the cancer risks associated with PM. In a related editorial (p. 797), Forastiere reviews the evolving research on air pollution and cancer and emphasises the practical importance of identifying specific carcinogenic constituents of particulate matter.

DUST EXPOSURE AND SILICOSIS AMONG SOUTH AFRICAN GOLD MINERS

The persistence of silicosis when its aetiology and prevention are well known is a disturbing feature in the landscape of contemporary occupational health. On p. 811, Churchyard et al. report high prevalence of silicosis, on the order of 18–20%, among black gold miners over age >40 employed at a mine in South Africa. The authors also report that their study is the first to give estimates of dust exposure for this group of South African workers. At the time of the study, the mean intensity of exposure to respirable quartz was below the recommended occupational exposure limit (0.1 mg/m^3), but the duration of employment was long—nearly 22 years, on average. The authors conclude that the prevalence of silicosis among black gold miners is likely to increase over time and call for improved dust control.

PREDICTING SENSITISATION TO LABORATORY ANIMAL ALLERGENS

Surveillance for occupational allergy typically involves regular medical examination and skin-prick testing of workers exposed to allergens. This approach is not particularly efficient, however, because most workers remain negative. Meijer and colleagues (p. 831) sought to improve the efficiency of surveillance for laboratory animal allergy by developing predictive models based on questionnaires and exposure measurements from a three year follow up of 351 workers exposed to laboratory animals. Using logistic regression in a clinical decision making analysis, the authors found that a few questionnaire items concerning personal, medical, and occupational factors were able to predict both the current probability and the future risk of sensitisation to workplace allergens. These findings are encouraging because they suggest that simple, easily obtained information from questionnaires could be used to improve surveillance for occupational allergy.

VARIATION IN SICKNESS ABSENCE IN THE EUROPEAN UNION

Sickness absence has become an important concern because of its implications for economic and social policy, as well as for health, but international comparative data on the frequency of sickness absence are relatively sparse. Gimeno and colleagues (p. 867) seek to provide comparative data for the European Union through a new analysis of data from the third European Survey of Working Conditions conducted in 2000. The age adjusted 12 month prevalence of sickness absence averaged 14.5% for the 15 countries of the EU, and ranged from 6.7% in Greece to 24.0% in Finland, with lower rates in the southern countries, Ireland, and the UK, relative to the rest of Europe. The authors describe their findings as preliminary, but the data may be a useful guide to countries' relative performance nevertheless.

SMOOTHING EXPOSURE-RESPONSE CURVES

Epidemiological exposure-response analysis requires decisions about models and variables that can sometimes affect the study results. The choice of cut points for categorizing a continuous variable can exaggerate or attenuate risk, for example. Several new developments in statistical methods and computation may help investigators make informed decisions and minimise bias, however. On p. 854, Eisen *et al* reanalyse data on lung cancer among workers exposed to silica to demonstrate a promising technique based on curve smoothing. The authors report that smoothing exposure-response functions with penalised splines is a flexible approach that reduces dependence on prior assumptions and provides a convenient, visual representation of the exposure-response curve. They suggest that presenting these smoothed curves along with numerical output from traditional parametric models can provide a more complete representation of exposure-response relations for purposes of research and practical intervention.