epidemiological studies,1,4 which were cited in my previous paper. Laboratory investigations have shown that benzene in vivo and hydroquinone (a benzene metabolite) in vitro alter the recruitment or stimulation of myeloid progenitor cells, thereby increasing the number of cells at risk of developing leukaemia. Furthermore, this effect is selective for myeloid cells only.1 Similarly, epidemiological cohort and case-control studies based on analyses of specific leukaemia cell types did not detect any increased risk of other leukaemia cell types in people exposed to benzene.1,3 None of the evidence from these laboratory or epidemiological investigations was considered by Savitz and Andrews.

In my paper I provided an account of why different leukaemia cell types were combined for analysis in some epidemiological studies in the past and why such an analysis would not be appropriate or meaningful given recent developments in laboratory research on the subject. In particular, I showed that ignoring the heterogeneity of leukaemia cell types would underestimate the risk of AML at high concentrations of benzene exposure. Although there are high exposures of benzene uncommon in developed countries, in some parts of Asia and eastern Europe they have not been totally eliminated. Advocating an analysis which ignores the underlying biological mechanisms of the disease on one hand and underestimates the risk of occupational exposure on the other is a disservice to the workers.

OTTO WONG


Comment on EQM Testmate OP cholinesterase kit

Editor—We read with interest the report by London et al, on the EQM Testmate OP cholinesterase kit.1 We have previously reported good reproducibility of repeated measurement accuracy of the kit.2 The Pearson correlation coefficient for duplicate measurements on the 23 samples in that study was 0.93 (in a real-world occupational exposure study). The correlation between duplicate erythrocyte cholinesterase measurements conducted recently on 20 blood samples, with a production model of the field kit, was 0.98 (Amaya A, unpublished data). In epidemiological studies, the kit has been found to be sensitive to subtle differences in cholinesterase activity based on exposure.3

We do not offer an explanation for the poor performance of the kit, in the study of London et al, under conditions apparently similar to those under which our evaluation showed good repeatability. However, we recently have found that the temperature adjustment of cholinesterase activity by the field kit can be a source of significant error. In one experiment, we measured haemoglobin (Hb) adjusted erythrocyte cholinesterase activity according to the manufacturer’s specifications, at different ambient temperatures, on blood from the same unexposed person. A sample of blood was drawn in heparin in the night before testing and stored at 4°C overnight (in six separate aliquots). Each aliquot was defrosted 30 minutes before testing. Figures 1 and 2 suggest that the temperature adjustment by the kit is not accurate, as measured activity on the same sample varied considerably with temperature both for plasma and for erythrocyte cholinesterase.

In another experiment, we examined the rate of thermal equilibration of the kit by moving a Testmate kit from a cool room, where the kit’s internal thermometer and an independent external thermometer read 8°C, to a room where the external thermometer read 40°C. The internal thermometer of the kit (the basis for the colorimeter’s temperature adjustment) registered only 30°C after 120 minutes at ambient temperature of 40°C. Moving the kit from an air-conditioned vehicle to a non-air-conditioned field site has been, in our experience, a common scenario. Such rapid changes in temperature immediately before measuring cholinesterase would result in considerable error.

Although we have found repeated cholinesterase measurement to be highly reliable, in contrast to the experience of London et al, we think that variable temperatures under field conditions result in significant error in the accuracy of cholinesterase measurement by the kit. This problem might be solved if the manufacturers were to provide accurate temperature adjustment factors, and if they were to measure directly the temperature of the reagent solution, rather than the temperature of the colorimeter.

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NOTICES


The Department of Epidemiology and Public Health, and Department of Air Quality, University of Wageningen, The Netherlands, in collaboration with The Netherlands Institute for Health Sciences (NIHES) have organised this course. The course is divided in plenary morning sessions and parallel afternoons. The parallel sessions include two modules: module 1: environmental epidemiology; module...
Comment on EQM testmate OP cholinesterase kit.

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