LETTERS TO THE EDITOR

Lymphatic and haematopoietic cancer mortality

EDITOR,—We read with interest the article by Loughlin, Rothman, and Dreyer,¹ and we write to provide the factual background for the study and additional information that may be of interest to your readers.

The study was commissioned by 17 chemical companies to defend against lawsuits we filed on them on behalf of 14 former students, who attended for two or three years (from 1943 to 1989) Port Neches-Groves High School and who contracted lymphohaematopoietic cancers (Hodgkin's disease, leukaemia, and non-Hodgkin's lymphoma).

Because of the study design, only four of the 14 cases we represent were counted in the study. Seven of the remaining 10 either still are alive or died after the cut off date for determining vital status. Two attended high school before 1963. And the remaining case died of "small cell carcinoma, unknown primary" (probably secondary to extensive chemotherapy treatment for Hodgkin's disease), but his death certificate did not mention Hodgkin's disease.

In addition to the cases we represent, we are aware of several other former students of the high school who died from lymphohaematopoietic cancers but were not counted because they attended school before 1963 (including at least four from Hodgkin's disease), and at least two others who have been diagnosed with lymphohaematopoietic cancers and are still alive.

The finding by Loughlin *et al* of increased mortality from lymphohaematopoietic cancer in men who attended Port Neches-Groves High School should come as no surprise. The worker populations at the adjacent styrene-

butadiene rubber facilities have themselves been the subjects of epidemiological studies and have been found to have increased mortality rates for lymphohaematopoietic cancer.^{2,3} The styrene-butadiene rubber manufacturing complex in Port Neches was this country's largest emitter of butadiene, with ambient levels of butadiene outside the complex measured at up to almost 3 ppm as recently as 1990.⁴ It is little wonder that the children attending school next door would be similarly affected.

As noted by Loughlin *et al*, one weakness of their study was that they evaluated cancer mortality rather than incidence. To reflect the true magnitude of any increased risk of lymphohaematopoietic cancers and other cancers in that population, a morbidity study is needed and the cohort should be expanded to include those who attended the school at any time after the styrene-butadiene rubber facilities began operations in 1943.

Although we disagree with the authors' interpretation of the data, we are grateful to Loughlin *et al*, and the chemical companies who sponsored them, for undertaking this important project. We hope they will continue to follow up this cohort and give consideration to expanding the study along the lines we have suggested. In doing so they may create a model that can be used to study similar populations at risk outside the occupational setting.

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- 1 Loughlin JE, Rothman KJ, Dreyer NA. Lymphatic and haematopoietic cancer mortality in a population attending school adjacent to styrene-butadiene facilities, 1963-1993. *J Epidemiol Community Health* 1999;53:283-7.
- 2 Divine BJ, Hartman CM. Mortality update of butadiene production workers. *Toxicology* 1996; 113:169-81.
- 3 Delzell E, Sathiakumar V, Hovinga M, *et al*. A follow-up study of synthetic rubber workers. *Toxicology* 1996;113:182-9.
- 4 Durchin J. *Sampling and analysis of the ambient air in the area of Port Neches, Jefferson County, Texas, Final Report*. Austin, TX: Sampling and Analysis Division, Monitoring Operations, Texas Air Control Board, June 1990.

Authors' reply

We reported that attending a high school adjacent to a styrene-butadiene facility did not seem to increase the risk of subsequent mortality from lymphatic and haematopoietic cancer.¹ Hanks and Townsley state that they disagree with our interpretation of our study data, but they give no reason for their disagreement. They imply that the increased mortality rate for lymphohaematopoietic cancer among men who attended Port-Neches Groves High School is an effect of proximity to the adjacent styrene-butadiene plant. Their implication ignores our key findings, which were (1) there was a decreased mortality for women who attended the high school, and whose exposure was presumably equal to that of the men; and (2) men who attended the school for a shorter time had a greater excess mortality from lymphohaematopoietic cancer than those who attended for three or more years. We think that these findings are best explained by an effect of subsequent occupational exposure, and not by an effect of attendance at the high school. Men who dropped out of school early are presumably more likely than those who stayed through graduation to take a job in the nearby plants. Women were much less likely than men to take a job in the plants. Thus an occupational exposure alone can explain our findings. An effect of attendance at the high school cannot explain the findings. We are certainly curious as to which part of this reasoning Hanks and Townsley might disagree with.

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- 1 Loughlin JE, Rothman KJ, Dreyer NA. Lymphatic and haematopoietic cancer mortality in a population attending school adjacent to styrene-butadiene facilities, 1963-1993. *J Epidemiol Community Health* 1999;53:283-7.