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Epidemiologic Findings - Du Pont's Camden, S.C. Site

Gentlemen:

We are providing the Agency information supplementing previously reported results of epidemiologic studies of male workers at Du Pont's Camden, South Carolina site. The reports submitted in 1977, 1979, and 1984 dealt with employees assigned to plant areas where there was exposure to acrylonitrile. In the initial 1977 report in which we observed an increased incidence of certain cancers, we recognized that there was exposure to chemicals other than acrylonitrile. In an effort to examine potential confounding by exposure to dimethylformamide, our data base has been extended to include all males at the plant. The total number of employees in this study is about 5,000. Of these roughly 1,100 constitute a nonexposed group, that is, they were exposed to neither acrylonitrile nor dimethylformamide. The number of workers exposed to dimethylformamide but not acrylonitrile was about 2,500; those exposed to both acrylonitrile and dimethylformamide number about 1,300. The cohort includes only those employees with first exposure to dimethylformamide between 1950 and 1970. A small group (16) was exposed to acrylonitrile but not to dimethylformamide.

Preliminary findings from this study of the Camden employees exposed to dimethylformamide but not acrylonitrile show no statistically significant excess in total cancers for the period 1956 through 1984 based on Du Pont rates (47 observed with 40 expected). Within this group, we also observed 9 cases of cancer of the buccal cavity and pharynx with 1.6 cases expected. Of these, 8 were observed in the wage roll group with 1.0 expected and 1 was observed in the salary roll group with 0.6 expected. We have not observed an increased incidence of buccal cavity and pharynx cancer in the cohort exposed to both acrylonitrile and dimethylformamide (2 observed and 1.6 expected).

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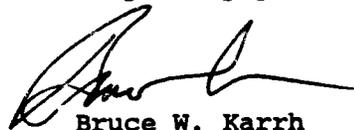
In reviewing the mortality of the cohort exposed to dimethylformamide but not acrylonitrile, compared to Du Pont rates, we observed 2 deaths from cancer of the buccal cavity and pharynx with 0.8 expected. We did observe statistically significant excesses of deaths ($P < 0.01$; 2-tailed) from the following categories: all causes, 225 observed with 160.2 expected; ischemic heart disease, 77 observed with 57.3 expected; external causes, 46 observed with 28.6 expected. However, when these observations are compared to the expected number based on U.S. rates, they are not statistically significant. These observations are based upon a preliminary review of the raw data and after refinement a report will be prepared. Du Pont will submit this report to you upon completion.

While the observed incidence of cancers of the buccal cavity and pharynx is statistically significant when compared to Du Pont Company rates, there are a number of factors which complicate the interpretation of these data. The findings are based only on numerical data and do not take into consideration confounding factors such as cigarette smoking and alcohol consumption, both of which have been associated with cancer of the buccal cavity and pharynx. All 9 cases of cancer of the buccal cavity and pharynx were cigarette smokers.

In addition to the findings reported above, we have reviewed the available animal and human toxicity data which suggest that the liver is the target organ for dimethylformamide toxicity. We have seen no excess incidence of liver cancer in employees exposed to dimethylformamide at the Camden plant. Therefore, after evaluation of all human and animal toxicity data available to us, our Haskell Laboratory has concluded that no change is necessary in our 10 ppm, 8-hour and 12-hour acceptable exposure limit value (AEL) used for these operations. All affected Du Pont employees are being apprised of these findings. Similarly, we plan to notify other manufacturers and customers, as appropriate, of these findings.

Should the Agency have further questions on the above matter, please contact me at (302) 774-9513 or Gerald A. Hapka at (302) 774-9466.

Very truly yours,



Bruce W. Karrh

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