



University of Pittsburgh

GRADUATE SCHOOL OF PUBLIC HEALTH
Department of Biostatistics

RECEIVED

JUN 13 1983

S. G. AUSTIN, Sc.D.

June 8, 1983

Dr. Susan G. Austin
Corporate Director of Epidemiology
Health, Safety and Environmental Affairs
Union Carbide Corporation
Old Ridgebury Road
Danbury, CT 06817

Dear Susan:

I have had a chance to read the paper by Leffingwell et al on the Texas City brain cancers. Generally, I think this is a very nice piece of work. I particularly like the fact that residence was examined as a co-variate. There is, however, some additional information that would have made the paper more useful. For one thing it is never stated how many chemical exposure groups there were in which 4 or more cases were present. The only thing shown are the 9 chemicals with 4 or more cases and which showed the strongest positive association plus vinyl chloride. Some of the 9 are not very interesting. It is also strange that there is no strong relationship with time since first exposure for any chemical. Probably most interesting is diethyl sulfate, since this appears to be a carcinogen for upper respiratory cancers among workers producing ethanol and isopropanol.

One thing that bothers me is a requirement that to be studied a particular chemical must have been associated with at least 4 of the brain tumors. I think this is the same rule used in earlier papers and it seems to introduce some bias. I wonder what would have happened if there had been a requirement that at least 24 controls be exposed to a particular chemical.

I also have the feeling that there was some overmatching since not only were dates of hire controlled for but only the work experience of controls were examined which corresponded with the time of work experience for the cases. This, of course, rules out any discovery of time related exposures. If it is clear that such exposures didn't occur, this of course isn't important.

It is curious that the odds ratio for maintenance department workers was .32. I assume this means there was a shortage of brain tumors among maintenance department employees. Generally these employees are thought to have the most opportunities for exposure and this could be commented on.

I am concerned about the summary. Something is needed here to indicate how many chemicals were examined and what the range of odds ratios actually was. The statement in the summary, "no significant

PITTSBURGH, PA. 15261

UCC
052934

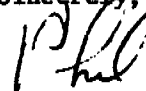
Dr. Susan G. Austin
June 8, 1983
Page 2.

association was found between exposure to VCM and brain tumors in this study" sort of implies there was a significant association found for the 9 other chemicals listed. It should be noted in the summary that the only significant association from a statistical standpoint was with carbon dioxide. The summary should also indicate that there was in no case an association with latency.

Incidentally Reference 22 can't be right; I did not have any co-authors on the paper in the Annals of the New York Academy of Sciences. Also I don't know of any cancers associated with isopropanol exposures (page 12, line 18). To my knowledge all of the positive reports have related to exposures in the production of isopropanol.

Somehow I think diethyl sulfate should have been dealt with more fully. The Alderson and Rattan paper is a good reference and a paper by Lynch et al (JOM, May 1979) should be looked at also.

Sincerely,



Philip E. Enterline
Professor and Chairman

UCC
052935