



FEB 16

Centers for Disease Control
National Institute for
Occupational Safety & Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati OH 45226-1998

February 14, 1990
HETA 89-021

The Honorable Sherwood Guernsey
Massachusetts House of Representatives
152 North Street - Room 330
Pittsfield, Massachusetts 01201

Dear Representative Guernsey:

The epidemiologic study of deaths among workers at the General Electric Company, Pittsfield, Massachusetts, conducted by Dr. David Wegman and Dr. Sander Greenland has been concluded. The results were presented to the public at a press conference in Pittsfield, Massachusetts on January 24, 1990. As I understand it, copies of the executive summary and appendices have been made available at several local libraries. We received a copy of both documents the morning of January 24, 1990, and will retain these in our files (refer to HETA 89-021).

Several appropriate recommendations were made to General Electric. The establishment of a panel of physicians to ... "provide assessment and consultation to any employee who has further concern about health problems..." is particularly useful. This should help workers who are left wondering... "So, what does this mean for me, as an individual?" Not mentioned, but worth considering, are the selection criteria for physicians to the referral panel. I believe that the local union should be actively involved in this process. Little will be gained if the workers have no trust in the physician panel. The recommendation to further examine the association between exposure to "resins" and lung cancer should also be pursued. The first task would be to explore the availability of useful data.

Several limitations to the study were emphasized by the investigators. The fact that many personnel files were unavailable limited the study design options. Even so, the researchers have done an extraordinary job with the available materials.

No doubt, many questions remain unanswered and new questions have evolved. While these questions have merit and deserve attention, further epidemiologic evaluation, using this data set, will probably not help. Further work should focus on solvable issues. Current exposures to chemical hazards, increased worker awareness, and concern regarding health risks may be addressed by instituting engineering controls to reduce exposures, worker education, and developing physician panels like the one recommended by Dr. Wegman. The costs, benefits, quality of available data, and time required should be considered before further epidemiologic studies are begun. Removing hazardous exposures prevents future disease and need not await the outcome of a prolonged study.

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In your recent letter dated February 7, 1990, you referred to several inadequacies in Dr. Wegman's report.

Note: Local workers apparently believe that not all of those who died were included in the study or had been assigned to the correct job task. To address this you requested a set of tables "categorizing worker deaths by exposure level, by job code, and by individual buildings." You were particularly concerned with buildings 12 (12, 12X, 12Y, 12P, 12H inclusive) and 100. I believe it reasonable for General Electric, or its contractor, to furnish a listing of all workers in the study who worked in these buildings. The list should include name, job codes, exposure levels, and dates of employment for each job code. Since all study subjects had died, the release of names, death certificate information, and job histories should not infringe on privacy considerations. However, information from medical records might be considered private and probably should not be released. The General Electric Company should also provide a listing of all deaths that were not included in the study, giving name and cause(s) of death (or copies of death certificates).

The next three items (#2, 3, 4) focused on the deceased workers excluded from the study because of missing personnel files. The question is whether these workers differed from the study group in respect to exposure and cause of death and, if so, whether this affected the study results. Drs. Greenland and Salvan examined this in their Appendix IV (pages IV 42-46). Listed are the numbers of cases and controls and cause of death by exclusion/inclusion status. The tables are discussed on pages IV-2 and IV-3. It does not appear that the exclusion of these deaths seriously biased the study results.

The "proportional analysis based on national and state [proportions]", which Dr. Wegman agreed to conduct, would not add to the more direct approach taken by Drs. Greenland and Salvan. The proportionate mortality of the exclusions and the study group appear to be similar. Comparing the proportionate mortality of the exclusions to state and national mortality would, in effect, be a proportional mortality ratio study. Such studies are generally considered less accurate than the case-control approach that was carried out.

You also requested a comparison between Dr. Wegman's executive summary and an interim report recently released concerning the mortality experience of workers at Westinghouse Electric in Bloomington, Indiana. The two studies differed in design and cannot easily be compared. The General Electric facility included multiple buildings and manufactured transformers and plastic resin systems. The Westinghouse facility was housed under a single roof with few walls separating the various process areas and manufactured only electric capacitors. Types of exposures and the amount of exposure probably differed at the two facilities. However, polychlorinated biphenyls (PCBs) were used at both.

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In the Westinghouse study, we identified all workers, employed for one or more days between January 1, 1957 and April 30, 1977. The workers were followed until June 30, 1986. The number of observed deaths from specific causes was compared to the number of deaths expected from age-, sex-, race-, and calendar year-specific United States rates. The entire cohort of workers at Westinghouse had been exposed to PCBs; differences in PCB exposure level have not yet been factored into the analysis, although we intend to do this. We reported an increased mortality risk from malignant melanoma (SMR = 4.06, 95% CI 1.75 - 8.01) and cancer of the brain and central nervous system (SMR = 1.80, 95% CI 0.58 - 4.22) for workers at the Westinghouse Electric Plant. The General Electric study found no association between exposure to PCBs (pyranol) and either cancer of the brain or malignant melanoma. Malignant melanoma was not studied by Drs. Wegman and Greenland since they did not observe more than ten deaths attributed to this cause. (We found only 8 deaths with an underlying cause of malignant melanoma among 5600 exposed workers, representing a four-fold excess.) Two studies of capacitor workers, similar to the Westinghouse study, did not confirm the increased mortality from malignant melanoma or cancer of the brain and central nervous system that we found at the Westinghouse facility.

An appendix appears to be missing from the report. The executive summary refers to an "Operations Descriptions Book" included as an appendix (page II-12). This appendix should be added to the reports already distributed.

I have enjoyed working with you during the past year. Please convey my appreciation to Mr. Steve Hamilton of General Electric, Dr. David Wegman, Dr. Sander Greenland, and the peer review panel for inviting me to attend their meetings. If I can be of further assistance, please feel free to contact me at (513) 841-4386.

Sincerely yours,



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