

PLAINTIFF'S EXHIBIT

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September 17, 1986

AN INVESTIGATION OF MORTALITY FROM UNSPECIFIED NEOPLASMS
AMONG DOW, MIDLAND/BAY CITY LOCATION EMPLOYEES

Protocol Number: EPI-DR-9999-9999-2186

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BACKGROUND: Our recently completed general mortality survey of male employees from the Midland or Bay City locations identified a statistically significant excess of deaths due to cancer of other and unspecified sites(1). A total of 169 deaths were coded to this category, whereas 125.3 deaths were expected based on rates for U.S. white males, SMR = 135, 95% CI = 115-157. This excess was not accounted for by regional factors, as comparisons with the State of Michigan or the local seven county area yielded similar results. The excess was unaffected by duration of employment, period of hire, or age at hire. Employees in all three pay status groups (hourly, salary exempt, salary non-exempt) experienced excess mortality from other and unspecified cancers. A review of their death certificates identified that the excess was principally in unspecified cancers, as opposed to being in miscellaneous other cancer sites. Unspecified cancers have been noted to occur at excessive rates in other studied Dow populations (2,3), a phenomenon which currently is unexplained.

Several years ago we observed that State Vital Statistics Offices would query the certifier for

additional information in the event an unspecified cancer was listed on the death certificate(4). This queried information then would be incorporated in coding the underlying cause of death, and as a consequence, would shift the death from an unspecified to a specified cancer category. The National Center for Health Statistics (NCHS) which compiles the U.S. mortality data we use for comparison with Dow employees, then tabulates the death incorporating the queried information.

Despite our requests, State Vital Statistics Offices rarely provide us with the queried information along with copies of the death certificate. Lacking that queried information, our nosologists cannot arrive at the same underlying cause of death code as the NCHS. It is our hypothesis that the unavailability of this queried information creates an artificially high mortality rate from unspecified cancers among Dow employees.

OBJECTIVE: Our objective in this investigation is to determine the underlying cause of death code assigned by the State of Michigan Vital Statistics Office to deaths among Dow Midland/Bay City location employees which

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had been coded to unspecified cancers by our nosologists. We will then recalculate the SMR for the category of unspecified cancers using the number obtained after removing those which the state was able to classify to a specified site.

MATERIALS
AND METHODS:

The eligible study population will be drawn from the recently completed Midland/Bay City location general mortality survey(1). All death certificates of male employees which were coded to the category of other and unspecified cancers will be reviewed to distinguish those which were unspecified from those coded to miscellaneous other sites. The focus of the remaining study will be on the unspecified cancers.

State copies of death certificates will be requested from the Michigan Department of Public Health for those deaths for which we currently possess only county copies.

Mr. Glenn Copeland from the Michigan Vital Statistics Office has agreed to provide us with the underlying cause of death codes assigned by the State for a limited number of decedents. They do not have

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access to the codes which were assigned prior to 1970, but according to Mr. Copeland, the codes were often handwritten on the certificates during earlier years.

We will recalculate the SMR for the category of cancer of other and unspecified sites reclassifying deaths on the basis of data obtained from the State of Michigan.

RATIONALE FOR INTERPRETATION: We have repeatedly observed Dow employees to have experienced excess mortality from cancers of other and unspecified sites. We have not regarded this as a biologically meaningful association because of the lack of specificity in the response variable and the fact that the association does not appear to be limited to any particular subgroup of Dow employees. Instead, the excess is observed across all pay status groups, in each age, and duration of employment category. We have suspected that the excess is artificial and is due to inadequate information available to our nosologists to be able to code these deaths to specific cancer sites. The present study is designed to test this hypothesis.

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The success of our efforts will depend upon the availability of underlying cause of death codes as assigned by State of Michigan nosologists. If these codes are not available for a sufficient number of decedents (more than half) to be able to test the hypothesis, then an alternative strategy must be devised. It is not clear at this time what those alternatives might be, but they should become clearer as the present study progresses.

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SIGNATURES:

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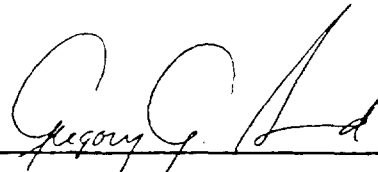
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