



THE DOW CHEMICAL COMPANY

MIDLAND, MICHIGAN 48674

R&S 140580

February 2, 1988

TO: R. Axe (Pittsburg, CA)
C. Bauer (47 Bldg)
L. Bollinger (2020 Bldg)*
G. G. Bond (1803 Bldg)
K. L. Burgess (1803 Bldg)
J. B. Cartmill (1803 Bldg)
R. R. Cook (1803 Bldg)
D. E. Crager (Freeport, TX)
M. F. Currier (Plaquemine, LA)
R. L. Daniel (Freeport, TX)
P. Dean (566 Bldg)
G. Dickson (433 Bldg)
S. L. Dombrowski (2020 Bldg)
R. D. Egedahl (Sarnia)
R. J. Fike (1803 Bldg)
P. J. Gehring (2030 Bldg)
M. R. Gondek (Pittsburg, CA)
J. Gootee (Legal - 47 Bldg)
S. Gorgacz (474 Bldg)
E. A. Gresch (WSB)
R. L. Hagerman (1803 Bldg)
F. D. Hoerger (1803 Bldg)
D. B. Hylton (1803 Bldg)
H. Kaipert (Horgen)
J. M. Lanham (1803 Bldg)
J. E. LeBeau (1803 Bldg)
F. R. Lehman (47 Bldg)
T. E. Lipps (607 Bldg)
M. A. Makulski (Legal WSB)
J. Mann (1602 Bldg)*
J. B. Martin (2030 Bldg)*
D. D. McCollister (1803 Bldg)
E. A. McLaren (1803 Bldg)
B. H. Miller (1803 Bldg)
R. J. Moolenaar (1803 Bldg)
M. E. Nevill (Plaquemine, LA)
G. W. Olsen (1803 Bldg)
P. M. Pankratz (2020 Bldg)
C. N. Park (1803 Bldg)
L. W. Rampy (1803 Bldg)
D. A. Rausch (1803 Bldg)
F. L. Sabel (258 Bldg)
J. H. Saunders (Freeport, TX)
H. Schumacher (Horgen)
P. G. Watanabe (1803 Bldg)

SUBJECT: AN UPDATE OF MORTALITY AMONG CHEMICAL WORKERS
EXPOSED TO VINYL CHLORIDE

Attached is a copy of the Executive Summary for the report "AN UPDATE OF MORTALITY AMONG CHEMICAL WORKERS EXPOSED TO VINYL CHLORIDE". It has received final clearance and will be submitted for publication as a "Letter-to-the-Editor to a scientific journal."

If you have need for a copy of the complete report, please contact me.

Wendy S. Dahar

Wendy S. Dahar
Epidemiology, H&ES
Phone: 6-8102

* Member of the EPIDEMIOLOGY INSTITUTIONAL REVIEW BOARD

Attachment

aag

February 2, 1988

R&S 140581

EXECUTIVE SUMMARY

of

UPDATE OF VINYL CHLORIDE MORTALITY STUDY

by

W. S. Dahar, M.P.H.

G. G. Bond, Ph.D., M.P.H.

E. A. McLaren, RN

F. L. Sabel, M.S.

T. E. Lipps, M.D.

R. R. Cook, M.D., M.P.H.

UPDATE TO VINYL CHLORIDE MORTALITY STUDY

The mortality experience of 593 Dow Michigan Division employees potentially exposed to vinyl chloride was recently updated through 1982. An earlier study evaluated this group for the time period 1942 through 1973 and found an excess of total malignancies among the subgroup considered to have the highest exposure(1). However, during the additional period of follow-up (1974-1982), a deficit of malignant neoplasms was observed for this subgroup.

During the nine years of additional follow-up, the total deaths in the study group increased by 63 (to 155) and the person-years by 4,234 (to 17,114). The study's primary focus was directed at cancers of the liver (including angiosarcoma), biliary tract, lung and brain and to emphysema because of previous reports linking these conditions to vinyl chloride exposure in some workforces(2,3). No deaths from angiosarcoma were found and there were no statistically significant excesses for any of the other conditions of interest.

Only those employees identified for the original study were included in the recent investigation and their work histories and exposures were updated through 1977 so as to ensure a minimum five year induction latency period. Consistent with past practice, separate analyses were conducted first including and then excluding

There were six deaths from emphysema or chronic obstructive pulmonary disease (approximately 5 expected). None of these individuals worked in areas where there was a potential for exposure to PVC dust.

An increased risk of lung cancer was not found (SMR = 89) and the study was capable of ruling-out more than a 60% increase with 95% certainty. The lack of an association with lung cancer is consistent with the findings from the majority of other studies, especially those with the greatest statistical power to detect an excess(6).

To examine for a dose-response relationship, subjects were allocated to one of four intensity of exposure categories (undetermined, less than 25 ppm TWA, 25-200 ppm TWA, and 200 or more ppm TWA) based on their highest rated job assignment held for at least one month. During the updated follow-up period (1974-1982) a deficit of total cancer occurred in the highest exposure category (3 observed versus 5.4 expected); however, for the entire follow-up period this subgroup experienced an excess

REFERENCES

1. Ott MG, Langner RR, Holder BB: Vinyl chloride exposure in a controlled industrial environment. Arch Environ Hlth 30:333-339, 1975.
2. Wong O, Whorton MD, Ragland D, Klassen C, Samuels D, Claxton K: An update of an epidemiologic study of vinyl chloride workers, 1942-1982. Prepared for Chemical Manufacturer's Association. October 17, 1986.
3. Purchase IFH, Stafford J, Paddle GM: Vinyl Chloride: An assessment of the risk of occupational exposure. Fd Chem Toxic 25:187-202, 1987
4. Ott MG, Holder BB, Gordon HL: Respiratory cancer and occupational exposure to arsenicals. Arch Environ Health 29:250-255, 1974.
5. Bond GG, McLaren EA, Cartmill JB, Wymer KT, Sobel W, Lipps TE, Cook RR: Cause-specific mortality among male chemical workers. Am J Indust Med 12:353-383, 1987.
6. Beaumont JJ, Breslow NE: Power considerations in epidemiologic studies of vinyl chloride workers. Am J Epidemiol 114:725-734, 1981.