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HAND DELIVER TO:

FROM

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J. Hookersmith BSP

Rush
UNION CARBIDE CORPORATION
Corporate Communications Department

39 Old Ridgebury Road
Danbury, CT 06817-0001

MEMORANDUM

KL-file
"Epidemiology"
To: "Brain Tumors"

HAND DELIVER

R.E. Bollinger, L-1497
J.B. Browning, P-2602
P. Davey, E-3255
T.G. Fortney, N-2567
T. Gagner, P-2591
H.L. Greenberg, P-2581
H.C. Lewinsohn, P-2590
D. Licheskind, L-1494
M.G. Ott, P-2580
E.J. Slack, C-2
R. Van Mynen, P-2607
B.L. White, E-3253
R.C. Wise, K-4440

WANG

L. Bissett, Tech Center
T.L. Collins, Tech Center
T.D. Epps, Tech Center
D.A. Gosselin, Tech Center
J. Hookersmith, Texas City
G.M. Lipscomb, South Charleston
F.S. Sefcovic, Institute
R. Shomo, Institute
R.G. Link, South Charleston

TELEX OR OVERNIGHT MAIL

Anthony Amatangelo
Telex No. 382837
UCAR Emulsion Systems
410 Gregson Drive
Cary, N.C. 27511

FROM: Tomm Sprick
Media Relations
C-2211

Jan. 27, 1986

SUBJECT: Employee Bulletin Board notice, Q's/A's on UCC/NIOSH Study

Attached...

are the final versions of the employee bulletin board notice, and questions and answers on the UCC/NIOSH study, as approved by the Law, HS&EA, Division, site management and PAG.

The bulletin board announcement is scheduled to be posted in the KV on Tuesday, Jan. 28.

The questions and answers on the UCC and NIOSH study will be used only to respond to questions from the media -- the information will not be volunteered.

Thanks for your valuable assistance.

UCC 097465

TO: ALL _____ EMPLOYEES

January __, 1986

SUBJECT: KANAWHA VALLEY EPIDEMIOLOGY STUDY

UCC, NIOSH CONDUCT INITIAL EVALUATION OF DATA IN EPIDEMIOLOGY STUDY

For the past six years, Union Carbide Corporation has been involved in a cooperative effort with the National Institute of Occupational Safety and Health (NIOSH) to examine the causes of death of Union Carbide workers in the Kanawha Valley from 1940 to 1978. We would like to update you on the progress of the study through 1985.

Even though Union Carbide and NIOSH have identified minor technical difficulties that need to be resolved before performing final analyses on the data, an initial evaluation of the data suggests that:

1. The overall death rate, and that from all cancers combined as well, is lower (better) for the employees being studied, when compared to general U.S. mortality rates.

2. The liver cancer death rate is higher for the employees studied when compared to the general U.S. population. However, we believe that this increased rate may be confined to a subgroup of employees who were first employed before 1950, and were assigned for at least 10 years to units that used vinyl chloride monomer. When this subgroup is subtracted from the total population being studied, the liver cancer death rate among the rest of the study group is consistent with the rate in the general U.S. population.

As you know, vinyl chloride monomer was first recognized as a human liver carcinogen in the 1970's. At that time, employees were informed of the new health findings and further trained in safe operations involving this chemical. We also made substantial revisions to our facilities and to our procedures to greatly reduce employee exposure, consistent with sound safety procedures. Subsequent to 1979, all vinyl chloride-related operations at South Charleston were operated intermittently, with the last use being in September 1982.

We intend to do further studies to evaluate these preliminary findings and, as is our normal practice, we will keep you informed of the results. We urge you to contact Dr. _____ in our Medical Department if you have any further questions.

Site Manager_____
Medical Director

Q/A RE: THE KV EPIDEMIOLOGY STUDY

1. When did Union Carbide and the National Institute of Occupational Safety and Health (NIOSH) begin this study?

A. In early 1979.

2. What does such a study encompass?

A. A scientific investigation, such as this study, can be divided into four main parts:

- o Design of the study;
- o Data collection;
- o Analysis; and
- o Report writing.

The Kanawha Valley epidemiology study was jointly conceived and designed by UCC and NIOSH beginning in early 1979. Phase I of the study (design) ended in the spring of 1979 and Phase II (data collection) began with the issuance of the joint study agreement in August 1979. The data collection phase has lasted through the third quarter of 1985, due to the tremendous volume of information involved. At this point, initial analysis of the data has begun and is continuing.

3. Who was included in the study?

A. The study includes approximately 34,000 former and current Union Carbide employees, of whom more than 29,000 are men. These employees worked at the South Charleston Technical Center, the South Charleston plant, or the Institute plant for one day or more between January 1, 1940, and December 31, 1978.

4. What prompted Union Carbide to undertake the study?

A. As part of the company's Charleston-area occupational health surveillance program, Union Carbide in 1978 commissioned a preliminary study by the University of Pittsburgh to analyze information relating to all deaths occurring during the 14-year period 1965-1978, among active and retired UCC employees in the Kanawha Valley.

Eight hundred nineteen (819) deaths were identified in the University of Pittsburgh study. The analysis suggested a proportional excess of deaths due to multiple myeloma, liver, kidney and central nervous system cancers compared to general U.S. mortality rates for the same time period.

The significance of these results could not be determined because of the relatively small number of cases examined; the small number of employees

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involved; the limited time frame chosen; the fact that no information on occupation was collected; and other limitations inherent in the study design.

Therefore, Union Carbide decided to work with NIOSH to design and initiate an investigation covering more employees over a longer period of time. The study is examining living as well as deceased employees, and includes information regarding work assignments.

5. What is the purpose of the study?

A. The purpose is to describe the mortality patterns of the UCC employ e population in the Kanawha Valley and to compare those patterns with those of the general U.S. population and the general population of West Virginia. Medical causes of death that appear more frequently than expected will be further investigated to determine whether they are associated with any occupational and non-occupational factors.

6. When was the study completed?

A. The study is not yet complete. Union Carbide and NIOSH are currently examining the mortality patterns of the overall study population. If these analyses indicate medical causes of death that appear to be in excess of expectation based on general U.S. mortality rates, those causes will be further investigated using more focused analytical techniques, in an attempt to isolate and gain insight into the possible reason(s) for the excess(es). This study is thus an evolving one, and the initial analysis should be completed by the end of the first quarter of 1986. Future study activities will depend upon the results of the overall and plant specific analyses.

7. Why has it taken so long for the study to be conducted and the initial results examined?

A. A study of this breadth -- involving 34,000 current and former employees over a 38-year period -- requires time to trace and verify mostly non-computerized work histories; determine if persons are living or deceased; if deceased, to obtain a death certificate to ascertain the cause of death; then code and computerize all the information, prior to any type of analysis being conducted.

(NOTE: give out only if pressed for number of deaths in study. State: "More than 5,000 deaths.")

8. Where do the studies stand now?

A. UCC and NIOSH epidemiologists performed parallel computer runs using different analysis programs and then compared the results. We have identified minor technical difficulties, such as inconsistencies in the data base, and errors in the computer programs. We are currently working to discover the reasons for them and make appropriate corrections.

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TO: J. Hockersmith

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9. What does the initial assessment of the data suggest?

A. The initial assessment suggests that overall mortality in the study population was less (better) than expected based on general U.S. mortality rates. The death rate for all cancers was lower (better) than anticipated based on general U.S. mortality rates, as well.

However, there may have been an excess of deaths due to liver cancer. Further study is need to confirm this finding, and to determine whether it is associated to any degree with specific occupational and non-occupational factors.

10. How do you plan to address the suspected excess of deaths due to liver cancer?

A. The study agreement with NIOSH provided for more detailed studies of diseases that appeared in excess of general U.S. mortality rates. The liver cancer deaths, if the initial assessment is confirmed (as well as other cause that may appear in excess), will be examined by UCC and NIOSH in light of specific occupational and non-occupational factors.

11. When will the follow-up results of the more detailed studies be completed?

A. We do not know at this time when the studies will be completed.

12. What can cause liver cancer?

A variety of occupational and non-occupational related causes can lead to liver cancer, such as:

A.* 1. Hepatitis B-Virus -- Transmitted from mothers to infants and other susceptible individuals may be infected.

2. Alcohol -- Alcoholics, especially persons with liver cirrhosis, are at increased risk.

3. Androgenic-anabolic steroids -- These steroids are used mainly for treatment of anemia.

4. Aflatoxin -- These metabolites are produced by a fungus that grows on improperly stored grains, nuts, and beans.

5. Overexposure to vinyl chloride and inorganic arsenic.

6. Thorotrast (thorium dioxide) -- This substance was used as a radiographic contrast agent for liver-spleen scans from about 1930-55.

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* See Schottenfeld, D., and Fraumeni, J.F., "Cancer Epidemiology and Prevention," W.B. Saunders Co., Philadelphia, 1982, pp. 668-682.

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13. Are/were any of these substances used at UCC plants in the Kanawha Valley? If yes, at what plants; for how long; and for what purposes?

A. Yes, at the following locations --

1. Institute:

a. Vinyl chloride is not used now, but small quantities were used from 1959-63 in a fiber manufacturing operation.

b. Inorganic arsenic is present in a few re-agents used in the plant laboratory.

2. South Charleston:

a. Vinyl chloride monomer was first recognized as a human carcinogen in the 1970's. At that time we made substantial revisions to our facilities and to our procedures to greatly reduce employee exposure, consistent with sound safety procedures. Employees were also informed of the new health findings and given training in safe operations involving this chemical. Subsequent to 1979, all vinyl chloride-related operations at South Charleston were operated intermittently, with the last use being in September 1982.

b. Inorganic arsenic is present in a few re-agents used in the plant laboratory.

3. Tech Center:

a. Vinyl chloride was processed in a pilot plant area in 1985. The last previous use was a small volume use two to three years ago. (The chemical was more frequently worked with in years prior to 1979.)

b. Inorganic arsenic is occasionally used in catalytic forms in lab experiments.

14. Have there been any past problems with these substances causing cancers or deaths at UCC plants in the Kanawha Valley?

A. Vinyl chloride monomer is a known human carcinogen that was first recognized in the 1970's and at that time we identified and communicated information to employees about cases of liver cancer deaths. The current study, involving vastly more detail, will apparently provide quantitative support for the observations made initially in the 1970's.

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15. Are these chemicals or substances used at any other UCC locations? If so, where and for what purposes and have there been any health problems at those locations?

A. Relatively small amounts (about 2 percent of raw material volume) of vinyl chloride monomer are purchased by UCC for use at its Chemicals and Plastics plants in Garland, Texas, Tucker, Ga.; Torrance, Calif.; and Somerset, N.J. Vinyl chloride monomer is used to make latex emulsions (intermediates) that UCC sells to the paint industry.

Vinyl chloride monomer is also purchased for use at UCC's Texas City plant, where it is used in the manufacture of solution vinyl resins. These are chemical intermediates that go into the production of highly sophisticated types of coatings, such as marine finishes or peelable coatings used to protect stainless steel sinks while in transport. There are no health problems that we are aware of with regard to vinyl chloride at these operations.

After vinyl chloride monomer was recognized as a human carcinogen in the 1970's, we made substantial revisions to our facilities and to our procedures to greatly reduce employee exposure. At each of these operations, UCC adheres to OSHA exposure limit requirements; employs computerized monitoring systems; and provides training in safe operations involving this chemical to further insure worker safety.

NOTE: If any reporter wants additional information about the latex operations at a particular plant, refer them to the appropriate person below. They have all been alerted to the possibility of media inquiries:

Garland, Texas -- Plant Manager Henry Hooper, 214-864-6100
Somerset, N.J. -- Plant Manager Bill Cole, 201-937-4902
Torrance, Calif. -- Plant Manager Glover Sanders, 213-214-5316
Tucker, Ga. -- Plant Manager Bob Stodghill, 404-496-7120.
Texas City -- Jim Hockersmith, 409-948-5269

Within the Consumer and Industrial Products and Services Group, UCC occasionally processed vinyl chloride from 1966-74. Since 1947, UCC has been processing polyvinyl chloride into different PVC films for various uses. There are no health problems that we are aware of with regard to vinyl chloride from any of these uses. After vinyl chloride monomer was recognized as a human carcinogen in the 1970's, we made substantial revisions to our facilities and to our procedures to greatly reduce employee exposure. At each of these operations, UCC adheres to OSHA exposure limit requirements; employs monitoring systems; and provides training in safe operations involving this chemical to further insure worker safety.

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16. Are there any other causes of death or diseases for which UCC workers in this study show an excess?

A. This is the only one that has come to our attention at this time. Union Carbide, and NIOSH are currently examining the mortality patterns of the overall study population. If these analyses indicate medical causes of death that appear to be in excess of expectation based on general U.S. mortality rates, those causes will be further investigated using more focused analytical techniques, in an attempt to isolate and gain insight into the possible reason(s) for the excess(es).

17. What other known carcinogens are UCC workers involved with, and what does UCC do to protect its workers?

A. Numerous substances are known to be carcinogenic. For any substances used at our plants, Union Carbide operates within exposure standards that governments or UCC (which ever is stricter) have set at a level to protect employees from known adverse acute and chronic health effects. Employees are provided with information concerning materials with which they work that may pose a carcinogenic risk.

18. Since exposure to vinyl chloride has been related to angiosarcoma, what health monitoring is UCC providing those employees who have worked with the chemical?

A. The plant medical examination has been modified so as to measure those factors that reflect such health problems. Further, all plant employees in operations are encouraged to be examined annually. (Those whose work does not place them in positions of possible chemical exposure follow an exam program on a less frequent schedule.)

19. Vinylidene chloride is related to vinyl chloride; what are its health hazards?

A. There is no evidence that vinylidene chloride is a human carcinogen.

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