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BRAIN TUMORS IN 7 PETROCHEMICAL PLANTS IN TEXAS TO BE REPORTED:

The experiences with brain tumors in at least seven petrochemical industry facilities on the Texas Gulf Coast will be reported by Government and industry investigators at the meeting of the New York Academy of Sciences at the Barbizon Plaza Hotel Oct. 27-29 (*OCCUPATIONAL HEALTH & SAFETY LETTER*, Sept. 22).

As reported exclusively in our last issue, Dr. Victor Alexander of OSHA will report on 18 primary brain tumor deaths, nearly all glioblastoma multiforme, among employees of the Union Carbide plant in Texas City, Tex., over the last 30 years, with most of the deaths occurring in the last decade.

Dr. Ralph R. Cook, Director of Epidemiology for Dow Chemical, will report on the case-control study of 24 brain tumor deaths at its chemical plant in Freeport, Tex. Dr. Sanford Leffingwell of NIOSH will report on the investigation of brain cancer clusters at the Union Carbide plant in Texas City, to be followed by a proportional mortality investigation of brain tumors among members of the Oil, Chemical and Atomic Workers local at the Amoco refinery in Texas City where, it is understood, eight brain tumors are to be listed.

Terry Thomas of the National Cancer Institute and Richard Waxweiler of NIOSH will report on brain cancer among OCAW members in three oil refineries—Gulf, Amoco and Texaco (although they are not identified in the paper, nor are the companies in the other papers being presented by Government investigators. Finally, Exxon officials will report on their experience with brain tumors.

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In his paper on the Union Carbide employees at Texas City, Dr. Alexander will note that the average age of the 18 workers was 53 at the time of death, with the youngest dying at the age of 30.

Total length of employment at the plant ranged from one month to slightly more than 35 years, with a median value of 21 years, among the 18 brain tumor cases. Two cases had short periods of employment at Union Carbide after working for many years in another chemical plant. The interval from first employment to death, which provides an estimate of latency, varied from as few as 3½ years to nearly 36 years, with a median of 24.

Because 15 of the cases were Galveston County residents at the time of death, the possibility of an environmental etiology related to the county was considered, Dr. Alexander will say in his paper. Surveys made by the Texas State Department of Health for 1975 through 1978 show that the Galveston County annual brain cancer crude mortality rates were 3.6 to 4.5 per 100,000 and thus "there is no evidence... that local environmental factors outside the plant are responsible for the apparent excess of brain cancer."

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The plant is a diversified petrochemical manufacturing facility with a large number of major product lines which over the years have included ethylene, butadiene, naphtha, ethylene dichloride, diethyl sulfate, glycols, aldehydes, acetates, alcohols, amines, organic acids and plastics and resins (polyethylene, vinyl chloride-vinyl acetate co-polymers, phenol-formaldehyde resins).

Review of the plant's chemical inventory reveals the presence of at least 10 recognized or suspect carcinogens in significant quantities as raw materials, reaction by-products or manufactured compounds, Dr. Alexander says. They are identified as benzene, diethyl sulfate, dioxane, ethylene dichloride, hydrazine, isopropyl oils, trichloroethane, trichloroethylene, vinyl chloride and vinylidene chloride.

Eight of the men were chemical operators in production departments; five others were maintenance workers who may have had the opportunity for plant-wide exposures; two worked in the chemical shipping department as weighmasters and three worked in various construction trades.

"The information available indicates that 18 brain tumors is excessive for this plant population, and that the tumors are likely to be occupationally-related," Dr. Alexander concludes. "There is no good evidence so far to implicate non-plant, general environmental factors. A very careful and thorough investigation of this situation must be completed, since a previously unsuspected chemical exposure may be responsible for this striking appearance of brain cancers in a single petrochemical plant."

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Dow has submitted to OSHA and NIOSH at least two studies of its brain tumor cases, and Dr. Cook's report in New York will be based on those results. He is understood to be refining his report for publication in a scientific journal.

In Dow's reports to the Government, 24 cases of brain tumors are acknowledged at the Freeport facility. This, it is contended, is neither an excess over the brain tumor rate in the U.S. population and cannot be considered to be related to occupation, the company contends.

"The only statistically significant findings were an elevated odds ratio for being hired prior to 1950, and a negative correlation with employment with Dow Greater than 10 years," says an abstract of its data. "A consistent, but not significant, finding was the greater propensity of cases to have been salaried employees. None of the cases had a history of job assignment in a vinyl chloride area, although vinyl chloride monomer has been produced at this site since 1948. The finding that 20 of 24 brain tumor cases were first hired between 1940 and 1946 suggests several possible explanations."

Among the explanations was that they were hired during World War II and their average age was older than those employees hired in peacetime and thus were more likely to develop brain tumors with advancing age. Dow noted that there have been no primary brain cancer deaths among its Texas Division population since 1977.

"This case-control epidemiologic study of deaths from primary intracranial tumor in Dow, Texas Division, although somewhat limited in scope and statistical power, has failed to demonstrate an association between these deaths and likely chemical exposures peculiar to their Dow work histories," the Dow report says. "The statistically significant finding of an elevated odds ratio for being hired before 1950 does not allow ruling out an occupational influence. A consistently elevated odds ratio for being a salaried employee suggests a further study of association with socioeconomic variables is needed."

Lawrence Garfinkel of the American Cancer Society will lead off the program with a statistical discussion of trends in brain tumor mortality and morbidity in the U.S. Annual data already released by ACS, based on information from the National Center for Health Statistics, shows about 11,900 new tumors of the brain and central nervous system being reported annually, with about 9,800 deaths per year from those causes. The rates have remained constant at that level for the past two years. According to the Third National Cancer Survey, the average incidence rate for brain cancer for white males aged 35-80 in the U.S. is 11.5 cases per 100,000 population.

Note: Before its papers are presented to the New York meeting, the OSHA and NIOSH investigators are planning to acknowledge that much of the data is premature and preliminary but that the importance of the subject to occupational and public health justified their reports at this time.

OSHA TO ALLOW AREA DIRECTORS TO SETTLE COMPLAINTS BEFORE CONTESTING CITATIONS:

OSHA, in a major policy shift, will now permit its area directors to enter into informal settlement agreements with employers prior to filing of a notice of contest with the Occupational Safety & Health