

In 1981: Brain cancer probe to intensify in chemical and petroleum industries

FORECAST
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Late in 1978, government and industry investigators uncovered what appeared to be a high rate of brain cancer in a Texas chemical plant. Soon, more brain cancer cases surfaced at a nearby plant. In 1981, health and safety officials will be attempting to define the risk to workers more precisely and perhaps discover the cause.

CANCER is the nation's Number 2 killer, expected to account for 405,000 deaths in 1980. But cancer of the brain and nervous system is relatively rare. It will kill about 9,800 Americans this year, only 2.4 percent of the cancer death total. Brain cancer's rarity, combined with the horror it conjures up, has focused national interest on two Texas chemical plants where investigators have found 43 brain cancer deaths among workers.

To date, NIOSH and OSHA investigators have discovered 25 brain cancer deaths at Dow Chemical U.S.A.'s Freeport, Texas plant and, about 60 miles away, 18 deaths at Union Carbide Corporation's Texas City plant. At a New York Academy of Sciences workshop on brain tumors in the chemical industry, held October 27-29, OSHA/NIOSH investigators reported that the 18 deaths at Union Carbide revealed "a plant-wide excess brain cancer risk twice that expected among 6,800 white males at the plant since 1941." In a progress report of its Dow Chemical investigation, agency researchers found an excess risk of death due to brain cancer of approximately 2-1/2-fold. However, a case-control study by Dow Chemical investigators has found that "preliminary calculations of expected deaths from pri-

mary intracranial neoplasms [brain tumors] among the employee cohort suggested there was no excessive risk."

In the spring, Union Carbide researchers expect to complete a full-scale historical prospective mortality study which will identify all Texas City plant workers and compare causes of death with national and state averages. Dr. Michael Utidjian, associate corporate medical director for toxicology and epidemiology, said a final estimate of excess risk must wait for this study. "We are very concerned about the appearance of an excess [of brain tumors]. We are not pooch-pooching this or saying the government is wrong. We are saying that we have to wait for the final cohort study to be completed before, one, we know if there is an excess, and, two, we know how large the excess might be." Dr. Utidjian said his "gut reaction" is that the study will probably reveal a slight excess of brain tumors.

At presstime, NIOSH and OSHA investigators were close to completing a sample-based cohort study at the Dow plant of a 5-percent sample of the total of 44,000 employed since 1940. In addition, the agencies were planning an in-plant, case-control study in order to try to determine causal factors.

Concern over brain cancer in the Gulf area first surfaced in November 1978, when a Union Carbide employee was informed by his doctor that he had a brain tumor. The employee remembered that two coworkers had died in the recent past from brain tumors. He called OSHA, and both OSHA and NIOSH investigated.

A quick check by Union Carbide and agency officials of company death certificates revealed 9 deaths from brain tumors. A comparison of company payroll records against the cancer registry maintained at the M.D. Anderson Cancer Unit at the University of Texas revealed further cases, as did checks of records maintained by Louisiana and Arkansas.

During examination of the Texas death certificates from Brazoria, Galveston, and Harris counties, agency investigators discovered cases of brain cancer at Dow Chemical's Freeport plant. Local media began talking of a "brain cancer epidemic," which Dr. Ercyl Blum, Dow vice president for health and environmental sciences, called "premature, inaccurate and irresponsible."

Dow officials maintain that the number of brain cancer cases discovered at Freeport may actually

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fewer than would be expected. A company statement also noted that "there have been no brain tumor deaths in 1980, 1979, or 1978. Our studies indicate there has been no correlation between any process or process chemical and the brain cancer cases."

Union Carbide and government investigators also have no promising suspects at the Texas City plant. At first, investigators had suspected that vinyl chloride, which is used in the plant and which has been shown to cause brain tumors in animal studies, might be the culprit, but 17 of the 18 afflicted employees had had no exposure to vinyl chloride.

"From our point of view, we would in a sense be better off if it was vinyl chloride because that has already been identified and regulated as a carcinogen," Dr. Utidjian said. "We are left with the more disturbing anxiety that there may be some as yet unidentified agent involved."

Dr. Utidjian said that despite the brain cancer revelation, additional industrial hygiene measures had not been taken. "As chemical plants go, we're quite proud of this plant. Pro-

cesses are kept under control. Health practices are quite good. The reason for this is that part of it is a vinyl chloride unit, and we've had to live with a very stringent standard. I've seen the continuous monitoring records, and we have consistently been in compliance with that standard. Without any other clues to go on, we didn't feel it was justified to tighten up anything else. Also, in almost every case of occupational carcinogenesis, we're looking at very long latency periods between exposure and development of disease. Conditions in the plant today are quite different from what they were in the past."

In addition to vinyl chloride, government investigators noted at the New York workshop that the Union Carbide plant used nine other "recognized or suspected carcinogens in significant quantities": benzene, diethyl sulfate, dioxane, ethylene dichloride, hydrazine, isopropyl oils, trichloroethane, trichloroethylene, and vinylidene chloride.

In addition to the ongoing studies at its Texas City plant, Union Carbide officials are working with

NIOSH on a massive historical prospective cohort study of 44,000 present and past workers in the company's three chemical plants and research center in the Kanawha Valley of West Virginia. That study has been under way for over a year, and Dr. Utidjian expects it to be completed by late 1982. He explained that there had been some reports of health problems in those plants, including a preliminary study which indicated the possibility of excesses of four types of cancer: kidney cancer, multiple myeloma (cancer of the bone marrow), liver cancer, and brain cancer. Dr. Utidjian said the Kanawha Valley study would be the "largest chemical cohort study ever undertaken."

Conflicting results

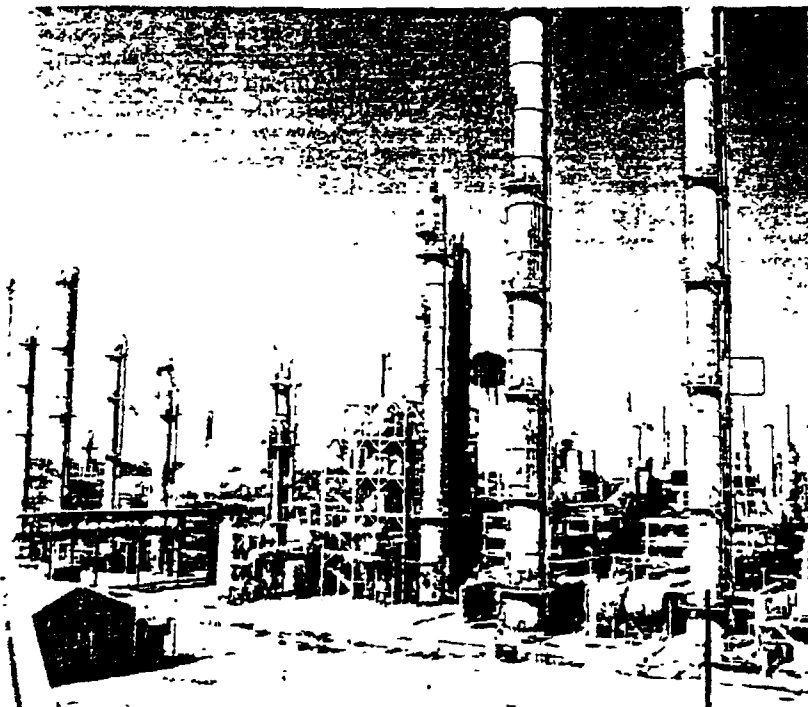
At the New York workshop, health and safety officials in the chemical and petroleum industries had cause both for relief and concern as to whether their industries likely were harboring brain cancer problems.

Dr. Chi-Pang Wen with Gulf Science and Technology's Medical and Health Resources Division reported no increased risk of brain tumors among over 17,000 employees of a Texas refinery employed between 1935 and 1979.

No excess of brain tumors was discovered in a study of eight oil refineries by Dr. Michael Alderson and Leslie Rushton of the Institute of Cancer Research. However, the study did reveal excesses of esophageal, stomach, intestinal, rectal, and nasal cancers, and melanoma.

In contrast to these studies, a study of three Texas refineries by Terry Thomas of the National Cancer Institute suggested that workers might be suffering a brain cancer mortality risk twice what would be expected.

Scientists studying the incidence of brain and other cancers in the chemical and petroleum industries are uniformly cautious about interpreting their data, but it is clear that the circle of investigation will continue to widen in these industries in 1981. ■



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