

FACT SHEET

CONNECTICUT DEPARTMENT OF
PUBLIC HEALTH

Pratt & Whitney North Haven: Investigation of a Possible Brain Cancer Cluster



February 2001

Background

This fact sheet was written to explain recent activities of the CT Department of Public Health (DPH) in studying a possible brain cancer cluster in employees who worked at the Pratt and Whitney (P&W) North Haven facility. This study was conducted at the request of the International Association of Machinists and Aerospace Workers (IAMAW) Local Lodge 707, with full cooperation of the management of Pratt and Whitney. The fact sheet summarizes the findings of the DPH study.

The machinists union contacted the Connecticut Department of Public Health to assist them in evaluating a concern of their members and families regarding a cluster of brain cancer cases at the North Haven facility. Those who were concerned had developed a list of persons they suspected had brain cancer who had worked at the facility. Since the number of cases was consistent with a need for follow-up, the DPH conducted a formal investigation during the summer and fall of 2000.

There were several purposes in conducting the study:

- Confirm the diagnoses of these cases medically. If tumors were found, see if they were malignant brain tumors.
- Determine if there were any other cases.
- Determine whether there were more cases of brain cancer occurring in P&W employees than would be expected based on comparison with the overall population in Connecticut.

What Were the Main Findings of the Study?

- Many of the cases initially suggested by the union were ruled out because they were not malignant brain tumors. Some were brain tumors that were either benign (non-cancerous) or were a metastasis from another type of tumor. The brain is a common site to which a malignant tumor (a metastasis), which begins in another part in the body, can spread. Only malignant brain tumors were considered part of the investigation. Benign tumors have different risk factors.
- There were four cases of primary, malignant (cancerous) brain tumors confirmed among white male employees at the P&W North Haven facility during the period 1991-1999. Three of these were the same type. The four individuals with primary brain tumors had worked in either the Vane or Blade Grinding Departments before 1990.
- There was not good information on the numbers and characteristics of people who had worked at P&W North Haven over the years. Therefore it could not be determined if the rate of malignant brain tumors was higher than would be expected based on comparison with the Connecticut general population.
- Two of the four brain tumor cases occurred during 1999, so ongoing monitoring for brain tumors will be conducted. Since diseases may appear to cluster in time by chance, one way to evaluate this is to continue monitoring.

How Was the Brain Cancer Cluster Investigated?

- What kinds of brain tumors were included in the study?

Only malignant (cancerous) brain tumors were counted in this cluster. Benign tumors are non-cancerous and do not spread to nearby tissues or other parts of the body. They appear to have different causes and they were not included in the investigation. Also, only primary cancers were counted in the investigation. The brain is a common site to which a malignant tumor, which begins in another part in the body, can spread. The original tumor is called the primary cancer. If a tumor spreads to another part of the body, it is the same type as the original tumor and is called a metastasis. Although these tumors may be located in the brain, they come from other kinds of tissues.



- How were the reports confirmed?

The Connecticut (CT) Tumor Registry was used to confirm diagnoses of brain tumors. It contains information on persons who have been diagnosed with cancer at a primary location in the body. It does not usually list a cancer if it has spread from another part of the body. It includes both malignant and benign brain tumors. The information in the CT Tumor Registry is collected in a consistent and standardized way. Since all residents of Connecticut are included, rates are available by age, race, and gender. Overall state rates can be used to evaluate rates in specific areas to see if they may be different.

Because it takes time for the CT Tumor Registry to obtain and confirm complete reports from all reporting hospitals, medical records were also obtained for the most recently occurring malignant brain cancer cases.

- Were all malignant brain tumor cases found?

We can't be certain. A major effort was made to reach out to the P&W insurance carrier which covered the majority of persons at the plant. It provided information on other suspected brain cancer cases from records going back to 1994. Additional efforts are being made to verify that no other cases exist by contacting other insurance carriers which have records for P&W employees going back to 1999.

What Was Done to Look at Where People Worked?



It is known that brain tumors take 10 to 20 years to develop, so it was important to look at where people worked since they began at P&W.

One member of the DPH team was an industrial hygienist from UCONN who worked with a joint P&W labor-management team to look at job histories. Job titles and work locations were located from a computer search of personnel records for all the cases initially described by the union. A more complete manual search of records was done for the four individuals who had the malignant brain tumors.

Where these employees worked was mapped on layouts of the plant. All of them had worked in either Vane or Blade Grinding at some point in their career. However, it is not possible to say whether working in these areas was significant. It is important to note that changes in the production process have been made over time.

How Was the Rate of Malignant Brain Tumors Looked at for P&W Workers?

To find out if the rate of workers at P&W who had malignant brain tumors was more than would be expected, two pieces of information are needed. (1) How many employees there were at P&W and (2) the rate of people in Connecticut who developed brain tumors in the 1990s. Comparisons of the rate of brain tumors in P&W workers was made to the rate in the state for people in the working age population, such as between 20 and 65 and 40 and 65 years of age.



The number of employees at P&W has changed over the years, as well as the race and gender of employees. The number of production workers in the 1990s was used in the comparisons with the state figures, since all the persons with malignant brain tumors had worked in production at one time. The rate of malignant brain tumor cases at P&W was compared to the rate for the Connecticut *white male* population.

Limitations of the Study

- It was not possible to obtain information for everyone who had ever worked at P&W since it opened. It was not part of the investigation to check every name with the CT Tumor Registry, so some cases could have been missed.
- Workers may have left Connecticut and later developed cancer in another state. These cases also would not have been identified.
- Cases may have been missed if the person were not insured with the insurance carrier which covered the majority of persons at the plant.

What Risk Factors Are There for Brain Tumors?

The causes of most malignant brain tumors are not known. Researchers are trying to solve this problem. Ionizing radiation is the only certain risk factor that has been identified. A wide range of environmental, lifestyle, and genetic factors are currently being studied to see if they could increase a person's chance of developing a brain tumor. In most cases, patients with a malignant brain tumor have no identifiable risk factors. Often exposures that may have contributed to the development of malignant brain tumors could have occurred many years before the disease is recognized. The disease could be the result of several risk factors acting together.

Some suspected risk factors for malignant brain tumors include:

- Family history of cancer
- Dietary factors, such as eating cured meats
- Medical history, such as radiation exposures, or exposure to certain viruses
- Occupational exposures, such as working in oil refining, the rubber industry, or with embalming fluids

It is important to realize that in an investigation with a small number of cases, such as this current one at P&W, it is usually not possible to make any clear conclusions. It is only by studying large numbers of patients that researchers have found certain risk factors that increase a person's chance of developing a malignant brain tumor.

What Do We Know About Possible Risks to Workers In Grinding Operations?

The National Institute for Occupational Safety and Health (NIOSH) has analyzed and reported on studies of worker populations that use metal working fluids, such as in grinding operations. Some potential risks include slightly higher chances of developing skin, laryngeal, rectal, pancreatic, or bladder cancer. Some studies had looked at malignant brain cancer in machinists/cutters, but they were not consistent in finding an increased risk. Although all the cases in this investigation worked in grinding, we don't know that this was associated with their diseases. Many changes have been made over time in metal working fluids used in grinding and other operations, so current recommendations for safety standards for workers who engage in grinding operations are mostly to prevent respiratory and skin diseases, not cancer.

Recommendations

- Since two of the four primary malignant brain tumor cases occurred during 1999, there is a need to continue monitoring. Diseases may appear to cluster in time by chance, and one way to evaluate this is to continue monitoring.
- Employees of P&W North Haven should follow traditional recommendations regarding a healthy lifestyle, eating nutritious foods, not smoking, and getting exercise.
- If a person has questions about changes in their health status, he or she should follow-up with their primary care physician.
- P&W Health and Safety personnel should continue to assure the safety of the work place by making sure that potential health hazards are controlled.
- The Connecticut DPH is committed to continuing this investigation, will continue to monitor for additional cases, and will continue to work with P&W management and machinists union.

If you have additional questions about this investigation, would like to report cases you may be aware of, or would like more information, please contact:

**State of Connecticut Department of Public Health
Division of Environmental Epidemiology &
Occupational Health
410 Capitol Avenue, MS#11OSP
PO Box 340308
Hartford, CT 06134-0308
Phone: (860) 509-7744
Fax: (860) 509-7785**



If you have additional questions about this investigation, or would like more information, you may contact:

**IAMAW Lodge 707
Chief Health & Safety Representative
Debbie Belancik, Gary Frattalone
(203) 239-5877**

Or

**North Haven Site, Environmental Health &
Safety Manager
(203) 234-4582**

