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# CHEMICAL LINKS TO CANCER CITED

## Doctors Tell of Problems in Detecting the Causes

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Special to The New York Times

SAN ANTONIO, March 21—When Dr. Percival Pott, a British physician, linked chimney soot with one type of human cancer almost 200 years ago, he made doctors aware of the importance of environmental factors in producing cancer.

Today, with the knowledge that a few other chemicals can cause some cancers, there is growing concern among scientists about biological hazards caused by the polluted environment.

Doctors at the American Cancer Society's 12th science writers seminary here yesterday recalled Dr. Pott's classic observation in 1775 as they pointed out the difficulties in checking the population at large to detect possible chemically induced cancers. They also noted complexities in studying the interactions of these chemicals.

Since Dr. Pott recognized that chimney sweepers got scrotal cancer, doctors have described many other cancers, usually of the skin and bladder, resulting from occupational exposure to chemicals and other substances capable of producing cancer in susceptible individuals. They also know of about 600 carcinogens in animals.

### Many Wrong Diagnoses

Cancer was known, but not always correctly diagnosed in the 18th century when Dr. Pott recognized an unusual number of teen-agers and young adults with malignancies of the scrotum. The victims were chimney sweepers.

Doctors called their scrotal cancer "foot-wart," Dr. Pott wrote, adding, "I never saw it under the age of puberty, which is, I suppose, one reason why it is generally taken both by patient and surgeon for venereal" disease. Dr. Pott diagnosed it as cancer.

In those days, small boys about four to six years old had the unpleasant task of removing soot from chimneys. "The fate of these people seems singularly hard," Dr. Pott wrote. "In their early infancy, they are most frequently treated with great brutality, and, almost starved with cold and hunger, they are thrust up narrow, and sometimes hot chimneys, where they are bruised, burned and almost suffocated."

Seldom did they have a chance to clean off the grimy soot that Dr. Pott, a surgeon at St. Bartholomew Hospital in London, suspected caused many of these chimney sweepers to get their cancers a dec-

Doctors do not know why the chimney sweepers got cancers of the scrotum instead of the face, neck or hands. But they know that carcinogens can produce cancers at specific sites regardless of where they entered the body.

Just as Dr. Pott learned from the chimney sweepers, doctors have since gathered evidence about other carcinogens from the industrial exposures of workers.

A partial list of ailments and known carcinogens to which the ailments are linked include skin cancers from severe, chronic exposures to arsenic, crude coal wax and tars, shale oil, X-ray, sunlight, creosote and crude mineral oil; bladder tumors, from aromatic amines contained in aniline dyes; bone cancers from radium; lung tumors, called mesotheliomas, from asbestos, and nasal cancers from chromate dust. Best known is lung cancer, from cigarettes.

Dr. Jonathan E. Rhoads, the cancer society's president, said: "To the extent that protective measures have been taken, the danger from these sources has been proportionately reduced."

Scientists said here that long interval periods and exposures to many ubiquitous chemicals, which in large doses could exert subtle yet lethal manifestations, such as cancer, made it very difficult to detect carcinogens in the general environment. Further, past experiments have focused on a single chemical.

Dr. Umberto Saffiotti, associate scientific director for carcinogenesis at the National Cancer Institute in Bethesda, Md., said, "Relatively little work has been done to study the combined effects of exposure to two or more chemicals on the same animal."

Therefore, he, Dr. Phillips Shubik and Dr. R. Montesano used hamsters to study the effect of a carcinogen called diethylnitrosamine (DEN) and a common dust, ferric oxide.

DEN injections are known to cause lung cancers in about 5 per cent of test animals, Dr. Saffiotti said. Ferric oxide dust, alone, does not cause cancers in animals. But when these experimenters challenged the DEN injected hamsters with small doses of ferric oxide dust, 70 per cent of the animals developed lung cancers.

Extrapolating from such studies to humans is difficult, the scientists said.

Results from these continuing studies, however, are making some cancer investigators look harder at the environment for carcinogens, such as the one [illegible] observed in

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