

medical sciences

DIAGNOSIS

Tantalum for X-rays

Within the next few years, persons having chest X-rays may be asked to inhale a bit of tantalum powder first. The metallic dust will help physicians spot lung tumors too small to find by present X-ray techniques and detect other abnormalities of the lung. At this time, a lung tumor must measure at least one centimeter before it can be seen.

Investigators at the Johns Hopkins University in Baltimore, working under a grant from the National Cancer Institute in Bethesda, Md., plan tests of the value of tantalum dust as a contrast agent for lung X-rays.

In the past other compounds, including barium agents and iodinated oils, have been sprayed or blown into the lungs to coat them with an X-ray-opaque layer of material that will show structural details, but these irritate the bronchial tree. Coughing may spoil the X-ray photograph; worse, the irritation may decrease respiratory processes in an already distressed patient.

Tantalum is about 25 times more radiopaque than iodinated materials, Dr. Nadel points out, so only minute quantities are needed to coat the tiniest lung passages. He and his co-workers have tested the powder over the past 18 months in dogs and rats and recently used it in humans.

PESTICIDES

Agriculture cuts DDT use

Less persistent pesticides will be substituted for DDT and two other long-lasting bug killers in several Federal-state pest control programs, the Agriculture Department announced last week. Campaigns to limit the use of DDT and other persistent insecticides have been climaxing in recent months (SN: 5/3, p. 423).

In programs to control the spread of Japanese beetles and European chafers, dieldrin and heptachlor will be replaced by chlordane. The use of DDT and dieldrin will be reduced in the white-fringed beetle program.

Private use of pesticides is not affected by the move.

Still under study is a plan to eliminate spraying of airports with persistent pesticides.

CANCER

Estrogen suspected

Excessive doses of the female hormone, estrogen, in birth control pills cause cancer in experimental animals. Whether or not this can happen to human beings is a subject of considerable medical speculation, with no firm evidence pro or con. A recently reported case of cancer in a 77-year-old man who had been taking unusually high doses of estrogen for six years may have some bearing on the estrogen-cancer question.

Though his physicians cannot state an unusual incidence of cancer of the nipple in this patient was caused by the estrogen he was taking to control a cancer of the prostate gland, the implication is there.

The breast cancer, reported by Drs. William P. O'Grady and Robert W. McDivitt of the New York Hospital-Cornell Medical Center in the August issue of

ARCHIVES OF PATHOLOGY, is thought to be the first such case. The form of cancer developed, known as Paget's disease of the nipple, has been reported in only 14 men, though it accounts for approximately three percent of all breast cancers in women. Estrogen therapy was not implicated in any of the other male cases; they probably developed as tumor cells from another site spread to the breast. In this incident, careful examination of the prostate tumor ruled out that possibility.

During the course of six years the man received doses of estrogen of up to 30 milligrams a day. Oral contraceptives generally contain less than 10 milligrams of hormone and in many brands the dose has been reduced to two milligrams.

SMOG

Nitric oxide dangers increase

Nitric oxide, a main ingredient of Los Angeles-type smog, may seriously diminish the blood's capacity to carry oxygen under prolonged exposure.

A series of tests at the University of California's Air Pollution Facility in Los Angeles exposed rabbits to photochemical smog of roughly the same concentrations encountered on Los Angeles freeways on a smoggy day. Prof. Albert F. Bush of the UCLA School of Engineering and Applied Science reports the blood's oxygen-carrying capacity was reduced by an average of 20 percent, and up to 38 percent, after the third test run.

Prof. Bush says the body's protective system will apparently withstand a single smog exposure, but weakens under continuous assaults. The blood's hemoglobin is believed to have 300,000 times greater affinity for nitric oxide than for oxygen, so that only a few parts of nitric oxide can present a threat.

The dangers of nitric oxide increase, rather than lessen, with the use of current antismog devices that were fixed about 10 years ago when driving was slower and standards were not aimed at nitrogen oxide emission.

IMMUNIZATION

Milk substance tested in Israel

A group of new immunizing compounds that protect laboratory animals from staphylococcus and streptococcus organisms are being tested by researchers in Israeli institutions.

The substances were obtained by applying a suitable enzyme to the main protein of milk, casein, from which their name, caseidins, is derived. The caseidins are not a single substance but a family of compounds that differ from each other according to the mammalian milk used. Cows, sheep and gazelles provided the milk.

The most dramatic experiments were carried out by Dr. Michael Cana'an of the Israeli Government Veterinary Services, on a group of sheep that had been infected with staphylococci. Sheep that had been previously injected with caseidin did not develop any signs of disease, but those that were unprotected died in two or three days with infection of the liver, spleen and kidneys.

A study on the mode of action of caseidins is being carried out by Prof. David Weiss at the Hebrew University Medical School.