

PUBLIC HEALTH

Avoid "Routine" X-Ray

Hazards such as a malformed fetus, genetic damage and mutation, or leukemia face the pregnant woman who is subjected to too many X-rays.

X-RAYS should definitely be avoided during the early months of pregnancy, four experts warned.

This means that they should be avoided whenever possible in at least the first three months, and there should be no such thing as "routine" X-rays.

Doctors should also pay more attention to pregnant patients who call them to say that they are going to visit the dentist. Dental surveys are usually recommended at this time, and obstetricians should be particularly on guard to prevent dental X-rays to the mouth from hitting the pelvic area. It has recently been discovered that one of the largest doses to the reproductive organs is received in the dental chair where 15 or 20 exposures are shot in a sitting position and the rays are directed downward towards the pelvis.

Drs. Martin L. Stone, Louis J. Salerno, Frank J. Borrelli, and Abner I. Weisman, all of the New York Medical College, list the following known hazards of radiation in *New York Medicine*;

1. Gross malformation in the fetus.
2. Subtle changes that are not immediately spotted such as the development of leukemia, other tumor-like abnormal

growths, shortening of life, sterility, psychologic or mental defects, development of cataracts and increased susceptibility to disease.

3. Genetic damage and mutations which may not be apparent.

Dr. Salerno points out that geneticists advise no more than ten roentgens to the reproductive organs during the first 30 years of life. Since natural radiation takes 4.3 of these roentgens, only 5.7 are left for medical, occupational and environmental doses.

Commenting upon the effects of X-rays to medical men, the problem of radiologists dying from leukemia at the rate of eight or ten to one, as compared to other doctors, however, is probably not as accurate as at first appears, Dr. Borrelli explains. A large number of these deaths were found to be among physicians using X-rays in their practice, not qualified radiologists, he adds. X-rays should be restricted to those who are qualified to use them.

That does not mean a restriction to radiologists, but, rather, that doctors in general practice should be qualified in the use of them not only for their own protection, but for the protection of the patient also, Dr. Salerno concludes.

Science News Letter, August 22, 1959

PUBLIC SAFETY

Nitrate Causes Explosion

AMMONIUM NITRATE, generally harmless and an excellent fertilizer, not only blasted out eight city blocks of Roseburg, Ore., but also was responsible for three of the five greatest accidental explosions of the past.

The white solid substance has such peculiar detonation properties that it was not recognized as an explosive for centuries. In fact, in its relatively pure form, it is almost impossible to explode.

Only recently, it has been found that when mixed with fuel oil, ammonium nitrate becomes extremely sensitive to heat and shock. Its explosive power may equal that of TNT. In the past two or three years, the ammonium nitrate-fuel oil mixture has become quite popular as a useful explosive because it is cheaper than dynamite.

Victor E. Haninger, an Interstate Commerce Commission explosives expert, told SCIENCE SERVICE that two of the more important safety precautions for storage of ammonium nitrate are:

1. Do not keep it in unventilated confinement. A build-up of heat and pressure in a container could cause an explosion similar to that in the Texas City disaster 12 years ago.

2. Store it away from sources of fire and other explosives.

A full report on the Roseburg disaster has not yet been made. An explosives-laden truck, parked near a building that caught fire, blew up. The truck was carrying ammonium nitrate and dynamite. It is not known what exploded first, something in the building, the dynamite, or the nitrate.

The Texas City explosion originated in the hold of the ship Grand Camp, possibly due to a lighted cigarette butt. The hold, loaded with millions of pounds of ammonium nitrate fertilizer, was closed while the fire smoldered.

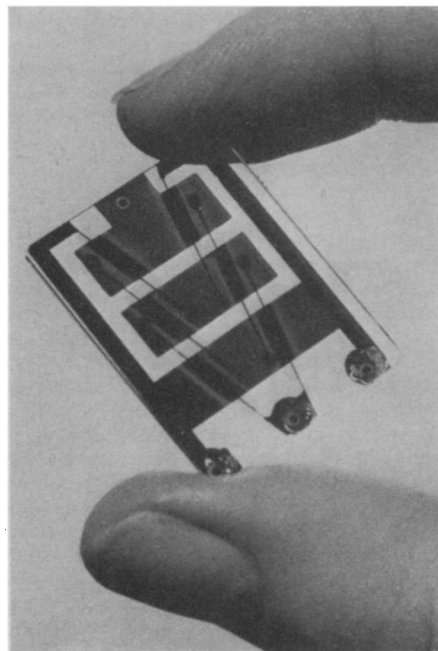
Upon discovery of the burning nitrate bags, the ship's crew attempted to smother the flames with steam. Water might have ruined some of the cargo. Steam served only to make the hold hotter, and the nitrate blew up. A second ship exploded the following day, adding to the catastrophe that almost totally destroyed the city and killed more than 560 persons.

In the same year as the Texas City disaster, 1947, a ship also loaded with ammonium nitrate fertilizer exploded at Brest, France. Twenty-one deaths resulted, and

major destruction spread over a three-mile area.

The worst of the ammonium nitrate explosions took place in 1921 at Oppau, Germany. About 9,000,000 pounds of the substance blew up. The blast left a lake one-third of a mile in diameter where a warehouse and a nitrate plant had been. Major damage covered an area of four miles. Some 1,000 persons died.

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TINY SWITCH—A six-cryotron circuit of tin and lead vaporized and deposited as thin films on glass has been developed as a miniaturized electronic switch by scientists at Arthur D. Little, Inc., Cambridge, Mass. Using superconductivity, these devices are expected to make possible drastic reductions in computer construction costs.

ASTRONAUTICS

Vegetable Seeds Retrieved From Space

See Front Cover

HUNDREDS of seeds were specially packaged and included as part of the "pay load" of an Office of Naval Research balloon.

The photograph on the cover of this week's SCIENCE NEWS LETTER gives an underneath view, through a sheet of glass, as a Republic Aviation Corporation engineer prepares spinach and turnip seeds for their flight into outer space.

The seeds were tested for their reaction to the lethal cosmic rays known to exist at altitudes of 100,000 feet or 20 miles. With their recovery they were planted in a special "lunar garden" designed by Republic engineers. There the seeds will be studied for any abnormalities in growth.

Such research is important to future manned space flight.

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