

RADIOLOGY

Underground Test Hazards

Underground nuclear tests can release into the atmosphere dangerous radioactive clouds from which fallout containing radioactive iodine-131 may sift down within a few days.

► **SOME UNDERGROUND** nuclear blasts can release into the air dangerous amounts of radioactive iodine-131, considered especially harmful to the thyroid glands of young children.

The fallout of iodine-131 in the Midwest during May 1962, originated in Nevada atomic tests, not in a far-away Pacific explosion as previously thought, Dr. E. A. Martell of the National Center for Atmospheric Research, Boulder, Colo., has charged. He bases this conclusion on many factors, including radioactivity levels in milk and the paths that air masses followed at the time.

He said that underground detonations release into the atmosphere radioactive clouds from which the fallout sifts down on relatively close areas within a few days. Radioactive iodine-131 is transferred rapidly from the lower atmosphere to surfaces of plants that are eaten by dairy animals.

Half of any quantity of iodine-131 gives off its dangerous beta rays within eight days, and the part that has done this is as safe as non-radioactive iodine but the other half is still hazardous. Because its half-life is so short, radioactive iodine enters the body mainly in fresh or rapidly processed foods, such as milk.

This rapid transfer means that even small

amounts of radioactive fission products released from underground nuclear explosions can account for the highest observed U.S. levels of iodine-131 on fallout, Dr. Martell believes.

Of the 51 announced Nevada tests between September 1961 and August 1962, ten produced radioactive clouds, Dr. Martell reported in *Science*, 143:126, 1964. Another 15 released smaller nuclear clouds, as did two others on Dec. 10, 1961 and May 7, 1962.

The high number of times radioactive clouds were released to the atmosphere suggests, Dr. Martell states, "that either there was no serious attempt to contain them, or that containment is difficult and uncertain."

However, U.S. Atomic Energy Commission officials pointed out that not all of the tests referred to by Dr. Martell were designed to be contained. Of the 103 underground blasts since Sept. 1961, the AEC said, 100 were supposed to be confined.

Only nine of these 100 produced detectable radioactivity outside the Nevada test station, and six of these were during the first nine months when much was still being learned about containment. During 1963 when there were more than 22 underground blasts, the AEC noted, no radioactive iodine-131 was detected outside the station area.

Despite Dr. Martell's charges, the AEC reiterates its stand that the high levels of radioactive iodine-131 in May 1962 were due to atmospheric tests by the U.S. in the Pacific.

• *Science News Letter*, 85:54 Jan. 25, 1964

RADIOLOGY

Ozone Health Hazard Near Radiation Source

► **OZONE** produced by radioactive sources could be a health hazard, causing respiratory discomfort, headaches and depression.

Damage to plant tissue, blamed on radiation, could also result from exposure to ozone, two scientists of the New York State Agricultural Experiment Station of Cornell University, Geneva, N. Y., reported in *Washington*, D. C.

In *Science*, 142:1289, 1963, Drs. Z. I. Kertesz and Grace F. Parsons urge that the health hazards from ozone be considered for persons working regularly near ionizing radioactivity.

They found that although ozone was present in a concentration of only one part to a million parts of air, this was sufficient to produce damage to lettuce leaves.

• *Science News Letter*, 85:54 Jan. 25, 1964

RADIOLOGY

Copper in Body Cells Linked to Radiation

► **SCIENTISTS** may be able to determine how strong a radiation dose it takes to kill an animal or how to block radiation damage by knowing the amount of copper in his body.

A direct link between the copper found in the cell bodies that provide the cell with energy and the effect of radiation on this copper was suggested by two different biological scientists in *Nature*, 200:376, 1963.

The amount of radiation that is harmful to an animal can be directly calculated from the concentration of cell copper, Jack Schubert, a radiobiologist from the University of Buenos Aires, Argentina, reported.

Radiation causes copper to combine with oxygen. This oxidation in turn influences the response of the cell to radiation.

Radiation will decompose a molecule carrying a copper ion before attacking any other organic solute, M. Anbar of the Weizmann Institute of Science in Rehovoth, Israel, reported.

• *Science News Letter*, 85:54 Jan. 25, 1964

ENGINEERING

Boiling Liquid Cools Faster With Pulses

► **BOILING LIQUID** will cool a hot surface twice as fast if pressure pulses are sent through the liquid, Prof. R. J. Schoenhals of Purdue University, Lafayette, Ind., reported.

The pressure pulses prevent a vapor film from forming in the cooling process, which may have important application to nuclear reactor systems and other generating equipment, he told the American Society of Mechanical Engineers meeting in Philadelphia.

• *Science News Letter*, 85:54 Jan. 25, 1964



Fremont Davis

70-YEAR-OLD HOT ROD—One of the first gasoline autos in the United States was this 1894 Haynes. The original model, a single-cylinder engine with one horsepower, is one of the exhibits in the Hall of Vehicles in the new museum of History and Technology, Smithsonian Institution.