

NUCLEAR PHYSICS

"Death Sand" Kills Subtly

An invisible death sand which is made by drying fission product salt solutions on sand or metal powder kills quietly. However, use of this weapon would be difficult.

► AN INVISIBLE dust of radioactive "death sand" could spread over cities of the earth and kill their populations by radioactivity without the noisy warning of an atomic bomb.

This specter of radioactive poisons is raised again by Dr. Louis N. Ridenour, dean of the University of Illinois Graduate School, in a report appearing in the *BULLETIN OF THE ATOMIC SCIENTISTS*.

Citing a brief paragraph in the famous Smyth report of 1945 and an Austrian discussion of 1948 by Dr. Hans Thirring, the present analysis concludes that insidious use of the fission products of nuclear reactors would be a difficult weapon to use because of delivery to the target, chemical separation of the poisons and amounts available (enough for only two or three major cities a month).

This use of radioactive poisons in warfare is different from the radioactivity produced by atomic bomb explosions, whether the radiation of the bomb itself, the induced radioactivity in materials of the target city, or in chemical elements placed in the bomb to produce enhanced radioactivity.

What would be done would be to collect the debris of smashed uranium atoms from atomic "furnaces" in which fissionable material is being "burned." About a dozen of these products would be useful in warfare. These emit beta rays (electrons) or gamma rays of substantial energy, and half of their substance would be disintegrated in periods from about a week to a year.

Very fine sand would be coated with these radioactive poisons and spread very thinly over the area where it is desired to wipe out life.

The person in a poisoned area has no way of knowing that he is in danger either by the evidence of his senses or by any unsophisticated tests. He may receive a lethal dose of radiation before he knows that he is endangered, and yet a few days later he may die. Radioactivity detectors would tell of the danger. If a person is aware of the danger he may survive if he flees the area at once with a dampened handkerchief over his nose and mouth. Walls of a sturdy building or even heavy clothing would lower exposure risk, but half an hour of breathing of dust stirred up by passing winds would give a fatal internal dose.

Radioactive "death sand" because of its novel and unique properties may be useful in special situations, but its proper use in war would be very difficult.

The "death sand" is prepared by drying fission product salt solutions on sand or metal powder. It is described as the lightest and most transportable of all the weapons of mass destruction. A highly deadly layer on the surface of the ground would weigh only 12 milligrams per square meter and would be quite invisible.

Secrecy has been clamped down in the United States on any hints about this kind of warfare since 1945, but Dr. Ridenour figures out that enough radioactive fission products are produced each month at the Hanford, Wash., plant to contaminate 144 square miles, or more than six and a half times the area of Manhattan.

Science News Letter, August 5, 1950

NUCLEAR PHYSICS

Radiological Warfare Agents Spotlighted

► ATTENTION was focussed on radiological warfare agents by a sentence in the

latest (eighth semiannual) report of the AEC to Congress. The sentence merely states that "studies on the feasibility of radiological substances as a method of warfare were continued."

But six months ago Secretary of Defense Louis Johnson reported on the subject in some detail.

"The possibility of radiological warfare is another outgrowth of atomic energy applications for national defense," he stated.

"The objective of this form of warfare would be to make a given area untenable through the presence of radioactive particles, called RW agents."

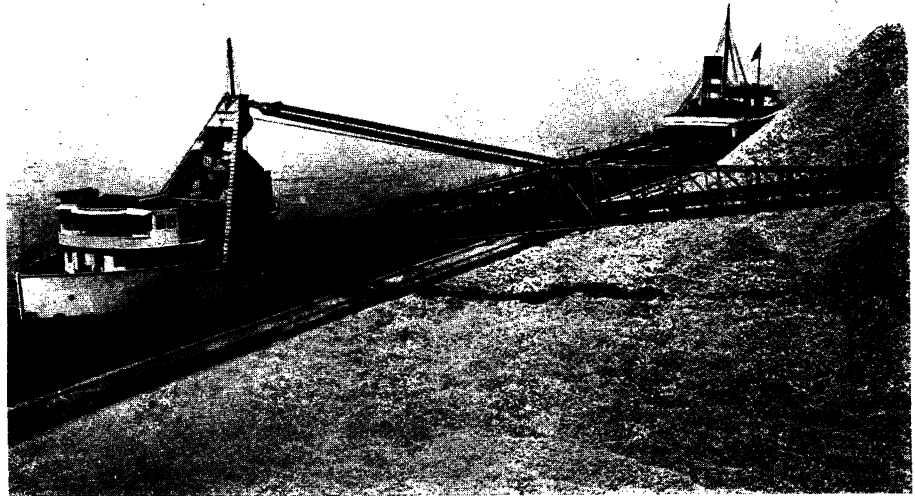
He warned that "every atomic pile of suitable size, irrespective of its design or purpose, is a potential source of significant quantities of RW agents, and RW weapons could become available to another country whether or not they produced an atomic bomb."

At present, RW is a "mystery weapon," he said. It could therefore cause panic unless people are informed about it.

Chief reassurance to those who are frightened by the possibility of RW is his statement that "orderly evacuation from contaminated areas should be possible."

One of the technical problems to be solved before RW could be used is that of separating desired agents from the complex of fission products.

It is not practical now to separate these products, Dr. George G. Brown, director



SELF-UNLOADING SHIP—Ten thousand tons of bulk cargo can be discharged and neatly piled ashore in about five hours, with as few as three men handling the conveyors and, if dock space permits, without assistance of any shore-based equipment. These ships, however, need not be built specifically for self-unloading. Successful conversions have been made of cargo ships that have operated for as long as 30 years by old-fashioned methods of unloading.

of the AEC's division of engineering, stated, adding that it would be difficult to accomplish this but not impossible.

The AEC report consisted largely of

details on measures and devices for protection against radiation injury as practiced in atomic energy plants.

Science News Letter, August 5, 1950

They determine engine wear by measuring the amount of radioactive iron particles in the oil after a test has been run. These iron particles have been worn from the operating engine.

In making tests, the engine need be run for only about three hours. When the test run is completed, a metal cylinder containing a Geiger counter is dipped in the oil sample. This instrument immediately records the amount of radioactive particles in the oil.

Science News Letter, August 5, 1950

GENERAL SCIENCE

No Brains List Now

► OUR government has only an incomplete idea of the reserves of scientific brains at its disposal in this emergency. This is because "economy" in 1946 forced the abandonment of a national science roster which, during World War II, provided up-to-date information on all Americans with scientific and technical backgrounds.

Only recently has there been an attempt to recreate the list. Because of the new scientists who have graduated and received advanced degrees and because of the moving around of many other scientists, the old list is practically useless.

Right now the work has been farmed out by the National Securities Resources Board to the Office of Education in the Federal Security Agency. The National Academy of Sciences is cooperating in this effort. The job of keeping it up will belong to the new National Science Foundation when it is set up.

The National Research Council has a good list of most of the natural scientists with Ph.D.'s—physicists, chemists, etc. A comparable roster of engineers is being developed and work is just beginning on a roster of the social scientists.

A complete roster will be vitally necessary in a general mobilization. The armed forces, other defense agencies and laboratories working on new weapons must be able to know where to get the scientists they will need and how many with a particular talent are available.

Because we probably will have to use our present supply of scientists carefully, a system of allocating them on the list may soon be set up. There have been rumors that the National Science Foundation, designed as a peacetime agency, will be given this task.

Scientists hope that a reasonable method of allocation of their talents will be worked out. During World War II, some of the scientific societies worked hard to see that men were placed where they would do the most good. Most of this work was concerned with getting around Selective Service System and military establishment blunders in individual cases.

A complete roster of scientific talent, in the opinion of most scientists, is the basis of setting up a system which will make impossible the mistakes of World War II.

Science News Letter, August 5, 1950

PHYSICS

Radioactive Materials Help Find Best Oils

► RADIOACTIVE material from the atomic pile at Oak Ridge, Tenn., is playing an important part in Philadelphia in determining the effects of different oils on the wear of automobile engines. The process employed was described by scientists of the Atlantic Refining Company.

These scientists are working with engine parts made radioactive in the atomic pile.

Question Box

ARCHAEOLOGY

What ancient "Whodunnit" is Agatha Christie now tackling? p. 94.

ENTOMOLOGY

What animal is a fiddler? p. 94.

GEOLOGY

What is valuable about the earth in parks and playgrounds in the nation's capital? p. 91.

INVENTION

How can a French opera be heard in English? p. 89.

Why does the cow's tail no longer switch during milking? p. 94.

MEDICINE

What is the medicine given with milk for best results? p. 91.

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