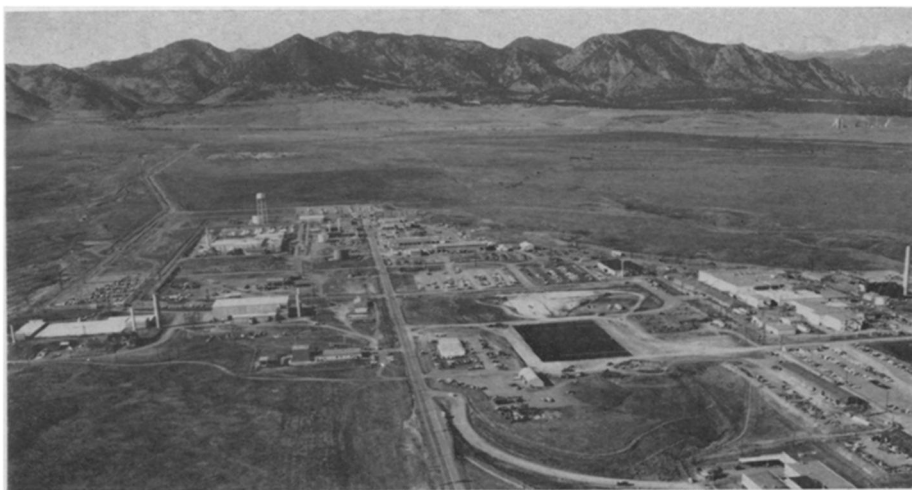


Rocky Flats still smolders



Dow Chemical Co.

Rocky Flats arsenal; curie levels of radiation in the surrounding soil.

Last year the worst fire in the history of the Atomic Energy Commission devastated the nuclear weapons production facility at Rocky Flats, Colo. (SN: 7/12, p. 25). Although the flames have long since disappeared, the controversy over radioactive contamination, both independent of and resulting from the fire, is still causing the AEC some embarrassment.

The AEC reported that, despite the blaze and the smoke cloud it emitted from the plant's stack, no escaping radioactivity was detected outside the immediate plant area. Unsatisfied, a group of local scientists from the Colorado Committee for Environmental Information undertook its own investigation (SN: 11/29, p. 496), and last week announced its findings, which differ sharply from the AEC's.

Drs. Edward A. Martell and S. E. Poet, both of the National Center for Atmospheric Research, carried out plutonium measurements in the one environment the AEC had not explored: the ground outside the site. In offsite samples taken between two and ten miles from the plant, they found curie quantities of plutonium. Most of it was in a thin layer on the surface of the soil, suggesting a recent release.

The AEC acknowledges the finding, although it argues that the plutonium might have come from plant leakage over the years. At any rate, it insists that the plutonium does not pose a health threat.

One reason is the low levels. Says Maj. Gen. Edward B. Giller, assistant AEC general manager for military application, "You could live in that stack and breathe and still be below AEC limits (0.04 picocuries per cubic meter of air)."

Even Dr. Martell admits that, but

he takes a cautious view nevertheless.

"It is very likely that the amount present now is not harmful," he says, but "we have to evaluate carefully to be sure of that, and know what safety margin we have—if any—to take every practical step to eliminate future releases of this kind."

The AEC's calm is partly based on the nature of plutonium itself. It combines readily with oxygen to form plutonium oxide, a fairly inert substance. Thus, there is little concern about it being chemically incorporated into the food chain by being dissolved in water or metabolized by plants. Furthermore, its radioactivity is of the weakest kind: alpha particles.

A potential worry, however, comes if plutonium particles are inhaled. Once in the lungs, they might cause cancer. But the crucial question is how many particles it takes, over how large an area, to cause lung cancer. The question of what constitutes a dangerous dose has been around, and controversial, since the 1940's.

One school of thought contends that a large dose of radioactivity over a small area is enough to cause cancer. Opponents say no; it must be a large dose over a large area. The theory is that as long as there are many normal cells, the cancer cells cannot grow. "If the theory were wrong," says Dr. Chester Richmond of the AEC's medical research branch, "no one would be alive anywhere."

"We think the effects could be greater than those from a uniformly distributed dose throughout the lung," counters Dr. Arthur Tamplin, biophysicist at the Lawrence Radiation Laboratory, one of a group of renegade scientists there who have become gadflies on the AEC rump (SN: 1/3, p. 8).

To support his contention, he cites the work of numerous investigators who have subjected laboratory animals to large doses of radiation over small areas of their body; in practically every case, cancer developed. However, in these experiments the radiation was from beta and gamma sources and X-rays, not alpha particles.

But the other side has its experiments too. Its partisans point to dogs who have had plutonium particles in their lungs since 1966 without ill effects. In addition, autopsies of plutonium workers with particles in their lungs have turned up no lung cancer.

Despite this evidence and AEC assurances based on it, the committee of scientists considers the Rocky Flats plant a threat and recommends that it close down, a recourse not being seriously contemplated.

"The AEC is quite convinced that the plant in its present location and operating conditions poses no health and safety hazard either to its own workers or the local population," says General Giller. "And the AEC, therefore, can see no rationale for considering relocation of the plant." □

TOXINS

Closing the CBW loophole

Shortly after President Nixon's Nov. 25 decision renouncing United States' development of biological weapons (SN: 11/29, p. 495), both critics and developers of chemical and bacteriological weapons found a loophole: Toxins—the nonliving end products of microorganisms such as those that cause plague and botulism—continued to be developed by the Department of Defense. Pentagon officials justified the continuation because toxins, whether natural or synthetic, are, strictly speaking, chemical rather than biological agents (SN: 12/20, p. 576), and thus not covered by the ban.

This week the President closed the loophole. In an announcement aimed as much at the reconvening disarmament talks in Geneva as at the Pentagon, he added toxins to the list of banned substances.

"... The production of toxins in any significant quantity would require facilities similar to those needed for the production of biological agents," the White House said in explaining the new prohibition. The decision brought widespread support from earlier critics, including Sen. Edward Brooke (R-Mass.), Rep. Richard D. McCarthy (D-N.Y.) and Harvard biochemist Dr. Matthew Meselson, a longtime and vigorous opponent of chemical and biological warfare (SN: 10/25, p. 373). In a letter to the President Dr. Meselson said the