

be released if the cells are broken by some agent or event.

"Poly I:C," he says, "sequesters in the phagocytic cells of the reticulo-endothelial system and, by damaging those cells, causes them to release interferon along with other cellular components."

Dr. Hilleman, on the other hand, believes interferon is produced when the system is stimulated and that storage accounts for only small quantities of the protein. He argues that the idea that effectiveness and toxicity of inducers is a single mechanism is "nonsense."

The focus of European work is England, where scientists on the 10-year-old Scientific Committee on Interferon are planning new trials of exogenous interferon—that produced elsewhere and injected—in man. "Past studies in man," says Dr. Norman B. Finter of Imperial Chemical Industries, Ltd., "have been equivocal. Animal studies have been much clearer. We will go ahead in three promising areas: eye infections, respiratory infections and acute viral and tumor diseases."

"Dr. Finter's human trials using exogenous interferon should give us a clear understanding of the true interferon mechanism," Dr. Stinebring predicts. Artificial stimulation of the system in man, he explains, can lead to dubious results because it is difficult to tell whether the interferon, the inducer or some other system is at work. He also postulates that producing human interferon in a culture system employing human diploid cells (cells that contain two sets of chromosomes and replicate indefinitely) is a promising route toward mass production.

Some work is going on along these lines, he says, but results will probably come from foreign work.

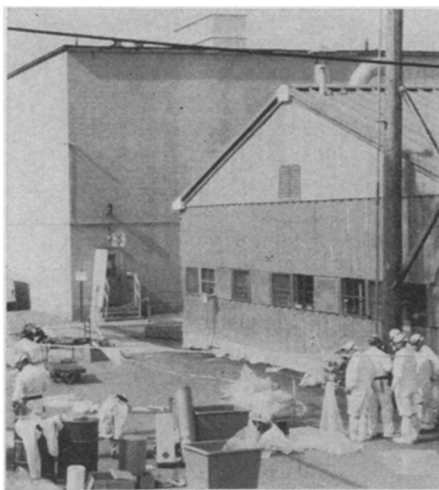
The NIH Division of Biologic Standards opposes use of this cell system on grounds that it may contain unidentified human viruses or that as the cells replicate in culture, harmful mutations may occur. Dr. Stinebring, on the other hand, argues that with available techniques, purification of the interferon, which would be induced in culture by introduction of an inactivated virus, presents no problem and no threat.

The British get their human interferon from a Finnish scientist, Dr. Kari Cantell of the State Serum Institute in Helsinki. Dr. Cantell produces it from white blood cells by a method that yields sufficient quantities for research but is unlikely to ever become a production line operation, because it would require millions of pints of human blood.

The pure interferon tests should, however, reveal much about the action of the substance itself, and whether the results are due to it or to an inducer.

NUCLEAR SAFETY

Plutonium fire raises questions



After the fire: Detoxification needed.

On May 11, fire broke out in the Atomic Energy Commission's nuclear weapons plant at Rocky Flats, Colo., about 12 miles from Boulder. The blaze, which went largely unnoticed until a Senate hearing focused attention on it, is estimated to have cost about \$50 million, the worst fire in the history of the AEC.

An AEC investigating team was sent in to check for radioactive contamination and found that plutonium contamination was confined to the damaged building.

But a group of scientists—representing the year-old Colorado Committee for Environmental Information, and headed by Dr. H. Peter Metzger of Ball Brothers Research Corp., Boulder—is still not satisfied that the area is safe. They call for new measurements.

For one thing, the committee is worried that plutonium could have been carried a good distance downwind by a smoke plume. Although the AEC contends that there was no radioactive smoke, the committee wonders how a \$50 million fire—not including \$20 million in burned plutonium—could fail to produce contaminated smoke. A second reason for the new measurements is that plutonium is difficult to measure. Some contamination, it feels, could have escaped detection.

To allay fears, the scientists drew up and last week submitted a list of written questions that the AEC has agreed to answer in writing. The answers are expected within a month.

The questions reflect two main areas of concern. The scientists are uneasy about whether the radioactivity was confined to the one building and would like that matter finally cleared up. Their concern stems from the fact that plutonium has a half life of 24,400 years,

which means that if there was any radiation leakage outside the plant, it would in effect constitute a permanent contamination.

The group is also worried about day-to-day operations. The plant will be back in operation in a year, and they would like to be sure that no radioactivity does leak out. Such leakage could threaten residents of Boulder and Denver.

The Colorado scientists will make their own evaluation of the AEC answers and deliver it to the AEC and the Dow Chemical Company, which operated the plant.

Because the plant had a unique function, the fire has dealt a temporary blow to U.S. capacity to produce nuclear warheads. In the production of nuclear weapons, each plant in a chain performs a specific function and then sends the weapon to another facility for additional processing. Although the fire knocked out a vital link in nuclear warhead production, the plant will be restored in time to meet its commitments.

Beyond the military implications, the fire raises another question: how safe is the nuclear industry in general and plutonium processing in particular?

As far as the Rocky Flats incident is concerned, Dr. Manson Benedict, professor of nuclear engineering at Massachusetts Institute of Technology, says that "there is no relationship between that unfortunate fire and power plants." He points out that the material used at Rocky Flats is not the same material used as fuel in nuclear reactors. Pure plutonium metal, which is highly flammable, is used for nuclear weapons while today's reactors employ nonflammable plutonium oxide.

Dr. Ralph E. Lapp, a nuclear consultant, thinks, however, that the Rocky Flats fire "calls for a re-evaluation of safety procedures, plant construction and plant operation."

Questions Dr. Lapp, "What happened to their firebreaks? I would think they would want to sectionalize production facilities so you don't get this destruction."

Dr. Metzger is more outspoken on the safety issue. He says that as a result of the incident the AEC, which owns an excellent safety record, has been forced to admit that it had more than one fire a month at the installation, although they have been quickly extinguished. "It's not the impressive safety record they've talked about," he contends, adding, "plutonium is far more difficult to manage than anyone thought."

Dr. Metzger is worried that small fires over a period of years could build up deadly accumulations of radioactivity. As far as he's concerned, the whole subject of nuclear safety is finally being revealed.

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