Dioxin strategy announced by EPA

The U.S. Environmental Protection Agency (EPA) announced last week a long-awaited national strategy for locating and cleaning up dioxin-contaminated ground areas. Several politicians and environmentalists suggest that the strategy lacks a concrete plan for decision-making in cases of contamination.

Dioxin, used in the manufacture of Agent Orange and other herbicides, is "one of the most perplexing and potentially dangerous chemicals ever to pollute the environment," according to an EPA statement. Its threat has pushed people out of their homes in several areas and caused the federal government to "buy-out" Times Beach, Mo. (SN: 4/23/83, p. 270; 9/3/83, p. 156).

The EPA's strategy focusses on pinning down the remaining sites where the 2,3,7,8-TCDD polymer of dioxin and precursors to herbicides containing it were manufactured as well as associated waste-disposal sites. "We believe 80 to 90 percent of dioxin generated to date is located," an EPA spokesman says. The agency estimates that 10 to 20 dioxin and 30 herbicide-precursor production sites exist, and will use the Superfund to firm up these estimates. EPA will also spend $8 million to analyze other dirt as well as air and water samples for dioxin contamination over the next two years.

When 1 part per billion of dioxin is found in the soil, an EPA spokesman says, then the agency will check for contamination in humans, other animals and plants. He adds, "If we find human exposures to dioxin that we find dangerous then we'll take action." Dioxin causes chloracne in humans and laboratory animals. It has been known to cause, according to the EPA, cancer, reproductive failure, reduced effectiveness in the immune system and significant changes in the enzyme system.

Once the contaminated sites are located, the EPA's Superfund will additionally provide the money for cleanup, according to Alvin L. Alm of the EPA. A previous draft of the strategy suggested this could cost $250 million over the next four years, but Alm says the EPA will wait until they know the extent of contamination before estimating what the cost of cleaning it up will be.

The strategy proposes four possible cleaning techniques: site containment (such as covering the area with a tarp), removing the contaminated soil to a secure landfill site or a concrete vault, incineration after digging the soil up and moving it, or employing a solvent to isolate and then dissolve the dioxin.

The strategy does not specify what actions to take at specific levels of contamination because, according to an EPA document, "National standards or levels at which 2,3,7,8-TCDD may cause adverse health or other environmental effects have yet to be established. But Ellen Silbergeld of the Environmental Defense Fund, a Washington, D.C.-based public interest group, wonders what will happen between the 1 part per billion level that signals possible danger to the EPA and the 100-200 part per billion level at which the federal government bought out Times Beach. She wonders whether the undefined turf will lead to "a terrible game of environmental chicken," she says.

Congressman Robert Young (D-Mo.) who represents Times Beach, says that although the strategy is a very prudent course of action, it lacks specifics which, he says, makes "everybody very vulnerable." —*J.C. Amatniek*

Panofsky to retire; Richter to succeed

SLAC

Panofsky (left) and Richter

The Stanford Linear Accelerator Center (SLAC) contains the world's most energetic linear accelerator and two sets of storage rings and colliding beams. For years it provided the most energetic electrons in the world for physics experiments. (It now shares that distinction with the DESY laboratory in Hamburg.) Since its beginning in 1961, SLAC has had one director, Wolfgang K. H. Panofsky. On Sept. 1, 1984, Panofsky will retire. Burton K. Richter, one of two winners of the 1976 Nobel prize for physics, will succeed him.

Richter is now Technical Director of SLAC and has been a member of the SLAC staff since 1963. He was selected after a nationwide search by a committee of distinguished physicists headed by Stanford University provost Albert Hastorf. Recently Richter has been most closely involved in the design of the Stanford Linear Collider (SLC), a new departure in accelerator design (SN: 7/30/83, p. 71). Construction of the SLC began in October.

Richter was educated at Massachusetts Institute of Technology, where he received his Ph.D. in 1956. He has been associated with Stanford University ever since. A native of Germany, Panofsky came to the United States as a youth and was educated at Princeton University and California Institute of Technology. He has held positions at Caltech, with the Manhattan District Project and at the University of California at Berkeley. He will remain as a Stanford Professor at SLAC. □

Solid material found around another star

A few months ago, scientists working with the U.S.-Dutch-British Infrared Astronomy Satellite (IRAS) reported that observations of the star Vega had unexpectedly provided the first direct evidence of solid material around a star other than our sun—not planets, necessarily, but at least sand-sized, solid grains (SN: 8/13/83, p. 100). Now the IRAS data have yielded a second example: Fomalhaut, brightest star in the constellation Piscis Austrinus.

Fomalhaut is a little closer to earth than Vega (about 22 light-years distant versus 26), a little cooler (8,800K versus 9,600K) and dimmer. In general, however, says Frank Low of Jet Propulsion Laboratory (JPL) in Pasadena, Calif., "it's a near-cousin," right down to the pattern of "excess" far-infrared emissions that were the IRAS researchers' first clue that Fomalhaut should be checked for Vega-like surroundings. If the excess from a star of a given temperature is truly due to re-radiation of the star's energy by solid particles in its vicinity, notes Low, it should mean that the particles are a certain distance from the star. And careful, repeated scans of Fomalhaut by IRAS showed the excess-emitting area to cover the expected span. (At JPL early this week, scientists were still waiting for the actual numbers to be sent from England's Rutherford Appleton Laboratory, where many IRAS data are still being analyzed — including nearly 50 other "Vega candidates," some of them multiple stars.)

The story of Vega itself, meanwhile, continues to evolve. The original IRAS observations showed that Vega's IR excess increased with wavelength up to the satellite's limit of 100 microns. Al Harper and colleagues from Yerkes Observatory in Williams Bay, Wis., however, have used the National Aeronautics and Space Administration's Kuiper Airborne Observatory (a telescope mounted in a C-141 jet) to scan the star at 200 microns—with striking results. If Vega were indeed surrounded by sand-sized grains as the IRAS team initially proposed, Harper says, there should have been a 25-to-30-fold excess in its 200-micron emissions. Instead, he reports, it is only about 10-fold. This suggests to Harper's group that the grains may actually be from 10 to 100 times smaller than sand. The problem is that such tiny grains would presumably spend only a short time around the star, soon being either drawn in to destruction or blown away by radiation pressure, unless somehow they are continually replenished. One possibility, the researchers propose, could be that Vega is surrounded by something like comet nuclei—ice-and-rock chunks large enough to stay around longer, but which, as they are heated by the star, could release additional grains. —*J. Eberhart*