Environment

Hazards in Love Canal monitoring

The Congressional Office of Technology Assessment (OTA) has added its voice to the chorus expressing doubts about the habitability of the Love Canal neighborhood in Niagara Falls, N.Y. (SN: 8/14/82, p. 102). Last summer, the Environmental Protection Agency (EPA), after surveying the area around the Love Canal hazardous waste landfill, concluded there was no clear evidence of canal-related contamination. On this basis, the Department of Health and Human Services (HHS) stated that houses near Love Canal were as habitable as those in control areas in Niagara Falls with which they were compared (SN: 7/24/82, p. 52). At the request of Sen. Alfonse M. D'Amato (R-N.Y.) and Sen. Daniel P. Moynihan (D-N.Y.), OTA analyzed EPA's monitoring data and examined the technical basis for the HHS decision.

OTA's principal finding is that "with available information, it is not possible to conclude either that unsafe levels of toxic contamination exist or that they do not exist" in the Love Canal area.

The OTA report argues that the design of the EPA monitoring study, especially its sampling strategy, was inadequate to detect the true level and pattern of toxic chemical contamination. Current cleanup and other remedial measures are insufficient to guarantee future safety, the report also states. "There remains a need to demonstrate more unequivocally that the [Love Canal area] is safe immediately and over the long term for human habitation," says the report. "If that cannot be done, it may be necessary to accept the original presumption that the area is not habitable."

Assessing risk assessments

At a time when many communities "are gripped by something approaching panic" about the hazards of toxic chemicals in the environment, William D. Ruckelshaus, Environmental Protection Agency administrator, has called for a uniform federal policy to assess and deal with risks to human health. "What I'm after is a government-wide process for assessing and managing health, safety and environmental risks," Ruckelshaus recently told a National Academy of Sciences audience of scientists and engineers in his first major policy address since becoming EPA administrator in May (SN: 5/28/83, p. 343).

Ruckelshaus' speech was, in part, a plea to scientists for their help in finding ways to estimate better the association between exposure to a particular substance and the incidence of some disease. For some pollutants, especially those associated with cancer and reproductive disorders like birth defects, a safe level is difficult to establish, he said. Advice from the scientific community outside government is needed, for example, on how best to focus accelerated research efforts on the health effects of substances regulated by EPA, he added.

Ruckelshaus also saw danger in the spectacle of federal agencies taking opposing views on the potential health risks of a given toxic substance and "then arguing about it on television." He pointed out that various laws apply different standards and techniques and often fail to distinguish between risk assessment and risk management. "Scientists assess a risk to find out what the problems are," Ruckelshaus said. "The process of deciding what to do about the problems is risk management." There is a need to coordinate procedures across all federal regulatory agencies, he said, and a need to amend the laws to make them more consistent. Other administrators have tried to do the same in the past but with little success.

Many of Ruckelshaus' comments drew on a National Academy of Sciences report, released earlier this year (SN: 3/5/83, p. 152), that recommended the development and use of uniform guidelines for risk assessments. That report noted, "The basic problem in risk assessment is the sparseness and uncertainty of the scientific knowledge of the health hazards addressed, and this problem has no ready solution."

Earth Sciences

Fool's gold leads to unique fossil

Sometimes "fool's gold" is better than the real thing. Recently a deposit of iron pyrite, the bane of generations of gold prospectors, led to the discovery of the first known fossil ctenophore. Ctenophores are swimming marine organisms whose soft bodies defy fossil preservation. The recently described animal is lauded in the June 9 NATURE as the "rarest of all fossils." It is the sole fossil representative of the phylum Ctenophora, which until now was the only one of 21 generally recognized living animal phyla unrepresented in the fossil record.

The fossil is embedded in a rock extracted from the fossil-rich Hunsrück Slate formation in West Germany. The slate entombs millions of animals, exquisitely preserved through the conversion of organic sulfur to iron sulfides and iron pyrite — fool's gold. For more than a decade retired physicist Wilhelm Stürmer of Erlangen, West Germany, has been taking high-resolution X-rays of rocks from the formation, and has accumulated a file of "UPO's" or Unidentified Paleontological Objects. When he invited George D. Stanley Jr. of the University of Montana in Missoula to look at an X-ray image of an unclassified trilobite, Stanley's attention was diverted by a speck in the background. When the image was blown up, it proved to be a fossil of a 400-million-year-old ctenophore, 13 millimeters high and 9 mm in diameter, and with tentacles intact. The animal is of the cydippid form, the most primitive ctenophore living today. "Our discovery demonstrates that the basic ctenophore body plan has changed very little over the past 400 million years," Stanley and Stürmer write, "and suggests that the origin of the phylum must extend even further back in time."

Amoco Cadiz oil is almost gone

On March 16, 1978, the supertanker *Amoco Cadiz* impaled itself on rocks off the Brittany shore of France, spilling a total of 223,000 metric tons of oil into French coastal waters. It was the worst oil spill in maritime history. For the most part, the environment has recovered, but what became of the oil? Its fate through 1981 is summarized in the July 8 SCIENCE. Erich R. Gundlach of Research Planning Institute, Inc., in Columbia, S.C., and colleagues report that the seawater claimed 30,000 tons of oil. Eighteen thousand tons found their way into submerged coastal sediments, while 62,000 tons were carried into zones shoreward of the low tide lines. Sixty-seven thousand tons evaporated, and an additional 10,000 tons of oil were consumed by microbes before ever reaching the coast. The energetic waves along the Brittany shore proved efficient at scouring the residue from open areas, but subtidal and intertidal stretches fared less well, because the tides and the seasonal advance and retreat of beach sand may have enhanced the dispersion of oil, which penetrated as deep as one meter beneath the surface. While waves and humans cleaned moderate- to high-wave action beaches, in sheltered environments, microbes took over the job. Ronald M. Atlas of the University of Louisville in Kentucky, one of the authors of the study, says that most of the oil is gone, and that what remains in sediments is inert, but may persist indefinitely.

While the *Amoco Cadiz* spill was massive, he says it was "the most rapid degradation and removal of an oil spill that has ever been documented."

Project to test tsunami warning system

The Agency for International Development and the National Oceanic and Atmospheric Administration have announced that they are beginning a project to develop ways to warn coastal residents in developing nations that a seismic sea wave, or tsunami, is approaching. The three-year program will focus initially on a pilot system for Lima, Peru and Valpariso, Chile, which are in an area considered prone to tsunami damage.