

portant physical and biological systems. U.S. Navy Capt. T. K. Treadwell, commanding officer of the Naval Oceanographic Office, says of Operation CHASE, "The results could be truly catastrophic." He says the effects could be felt in almost any area along the Eastern coast.

One misconception that must be corrected about the capacity of the north-west Atlantic to continue to absorb the waste of the Eastern U.S., he points out, is the idea that the entire northern part of the ocean is just one big continuous mixing system. Treadwell describes the northwestern Atlantic as a semi-closed circulation system which rotates clockwise between the U.S. land mass and an area approximately in mid-ocean. He says this cyclonic movement of water may be more significant than has been supposed, extending down to the deeper currents, and causing a concentration of contaminants rather than an ocean-wide dispersal.

The Navy has oceanographic data from recent studies of deep currents in the vicinity of the proposed disposal which indicate the presence of underwater turbidity sufficient to transport materials across the ocean floor and even upward at a much faster rate than suggested in the Army testimony.

Following the May hearing, the Army agreed to suspend the gas dump pending the evaluation and recommendations of a special group of scientists appointed by the National Academy of Sciences.

But the Army is impatient with the delay. Beyond the month of September, it says, Operation CHASE would no longer be feasible due to the beginning of the winter storm season in the North Atlantic. And, it will require three summer months for some 20 trains to be loaded at four different chemical munitions stockpiles and brought to Earl, N.J., where the ocean phase of the operation begins. If the academy report is not completed by the end of June, ocean burial would probably be ruled out for this year.

It is going to be close. Having been assembled for only a short while, the NAS scientists have much work remaining, although the chairman of the group, Dr. George B. Kistiakowsky, says that his ambition is to have a final report by the end of June. The scientists are finding no easy task in compiling a comprehensive collection of information covering the many ramifications of the Army's gas dump plans.

One of the most difficult areas to evaluate is the effect of a large volume of various toxic chemical munitions upon the physical and biological systems of the ocean.

As one oceanographer put it, "I don't envy them their job." ◇

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GAS AND GERMS

Policy reevaluation ordered

President Nixon is ordering a Government-wide reevaluation of the U.S. chemical and biological warfare program.

The President's action was relayed to Rep. Richard D. McCarthy (D-N.Y.) last week in a letter to him written by Gerard Smith, director of the U.S. Arms Control and Disarmament Agency. Smith wrote:

"Within the U.S. Government, the control of chemical and biological weapons is a subject of major concern. The President has directed the Executive Branch to undertake a detailed review of chemical and biological warfare, including U.S. position on arms control and the question of ratification of the 1925 Geneva Protocol."

Although the U.S. is publically committed to the substance of the protocol banning first use of chemical and biological weapons, it has never formally ratified it. McCarthy has been joined by 25 other House members in urging Senate ratification of the protocol.

McCarthy also said last week he learned of Defense Department tests with biological warfare agents on Eniwetok Island in the South Pacific. McCarthy says that while the island has no native human population, biological agents could be spread to other islands by migrating birds. He has called for a moratorium on all open-air testing of biological agents by U.S. biological-warfare agencies.

VENUS

Still a mystery

Once again instruments sent to Venus by the Soviet Union have descended through the planet's thick and hot atmosphere. And once again, a trail of confusion and minor scientific mystery has followed.

This time, however, the puzzlement is not over whether the instruments continued transmitting until they reached the surface. When Venera 4 dropped into Venus' atmosphere in October 1967, Soviet scientists steadfastly claimed they had achieved a landing. It took many months of detective work by U.S. scientists (SN: 8/24, p. 179) to show that Venera 4 must have transmitted from about 50 kilometers above the surface down to 25 rather than from 25 down to the surface. The fault probably was with its radio altimeter.

When Venera 5 and 6 entered the atmosphere on the nightside of the planet three days apart last month, there were no similar claims of transmission down to the surface.

In the official Soviet report of the preliminary findings, which was reaching U.S. scientists last week, it is made quite clear that no intact landing was achieved by either capsule. In fact, it is obvious none was expected. Although certain modifications had made the packages more resistant to Cytherian conditions, their collapse limit was about 27 earth atmospheres, far below the pressures expected at the surface.

Most of the data returned by the two new probes tend to confirm or refine measurements obtained by Venera 4, Mariner 5 and ground-based observations.



Novosti Press Agency

Venera model: The altimeter again.

But some perplexity is being caused by a disparity in altitude readings. When both capsules were reporting a pressure of 27 atmospheres, indicating they were at about the same level, Venera 5 registered an altitude of 24 to 26 kilometers; Venera 6 read 10 to 12 kilometers. The descents were over different sections of the planet's surface, leading the Soviet scientists tentatively to attribute the difference to "accidents of the Venusian terrain."

U.S. scientists are highly skeptical. High mountains have been discovered on Mars, but no variations of surface features greater than about 2 kilometers have thus far been measured on Venus by radar.

"This is a much bigger variation in altitude than is considered acceptable,"