MONITORING THE DISPERSION OF OCEAN WASTE DISPOSAL PLUMES FROM ERTS-1 AND SKYLAB

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About forty miles off the Delaware coast is located the disposal site for waste discharged from a plant processing titanium dioxide. The discharge is a greenish-brown, 15-20% acid liquid which consists primarily of iron chlorides and sulfates. The barge which transports this waste has a 1,000,000 gallon capacity and makes approximately three trips to the disposal site per week. The frequency of this dumping made it possible for the ERTS-1 satellite and Skylab to photograph the acid plume in various stages of degradation.

Currently ERTS-1 MSS digital tapes are being used to study the dispersion patterns and drift velocities of the iron-acid plume. Careful examination of ERTS-1 imagery disclosed a fishhook-shaped plume about 40 miles east of Cape Henlopen caused by a barge disposing acid wastes. The plume shows up more strongly in the green band than in the red band. Since some acids have a strong green component during dumping and turn slowly more brownish-reddish with age, the ratio of radiance signatures between the green and red bands may give an indication of how long before the satellite overpass the acid was dumped. Enlarged enhancements of the acid waste plumes, prepared from the ERTS-1 MSS digital tapes aided considerably in studies of the dispersion of the waste plume. Currently acid dumps are being coordinated with ERTS-1 overpasses. Sewage sludge plumes dumped by barges from the City of Philadelphia are also being studied.