Herbert (*2*), the size but not the number of preneoplastic foci in livers of rats given aflatoxin was increased by vitamin A to an unspecified extent. Unmentioned by Herbert was the finding that selenium supplementation reduced the focal area by a factor of 5. The third citation reports the effects of ascorbic acid on the in vitro growth of human leukemic cells from bone marrow aspirates (*3*). From 259 cases studied, 169 aspirates were successfully cultured, and in these growth enhancement was seen in 53 and growth suppression in 28. In the discussion section the author cites six studies demonstrating in vitro tumor suppression and one demonstrating tumor enhancement by ascorbic acid.

The fourth of Herbert's references (*4*) is to a dietary study of human colon and rectal cancer patients and their case controls. In this work mean fiber intakes were reported as 22.4 ± 0.8 grams per day in the female colon cancer cases and 19.7 ± 0.6 grams per day in the controls, on the basis of a dietary questionnaire. The difference does not appear to be meaningful. A dose-related positive association between fiber and colon cancer was reported in women when fiber intake was broken down into quintiles with no figures given for the number of individuals in each quintile. A protective effect of vitamin C against rectal cancer was found but was not mentioned by Herbert.

I believe the four references provided by Herbert give little support to his original contentions. This area of research deserves more profound analyses of the literature before public statements are made.

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Hazardous Waste Disposal

Philip H. Abelson (Editorial, 1 Aug., p. 509) has expanded on his earlier editorial about hazardous wastes (7 June 1985, p. 1145). Incineration and biodegradation are indeed preferable to dispersion and deposition, but can be both encouraged and discouraged by technical, economic, environmental, and regulatory constraints (*1*). Concentrated forms of hazardous wastes are destroyed in incinerators; dilute forms are biodegraded in wastewater treatment plants. Halogenated organics are reductively dehalogenated, dehydrohalogenated, and microbially metabolized to CO_2, H_2O, and inorganic halides. Other examples include biodegradations of CH_2Cl_2 (*2*) and $C_6H_6X_6$ mixtures (*3*) and conversions of CH_3CCl_3, $CHCl_3$, and CCl_4, to lower chlorinated homologs by iron (II) porphyrins (*4*).

Reported shortfalls in incineration capacity apply more to commercial offsite operations than to private on-site operations. Most solid wastes generated by the chemical industry over the past 30 years have been successfully managed on-site in currently active facilities under the direct management of the original generators. These include the bulk of on-site incineration capacity. Several large corporations, including the Dow Chemical Company, committed themselves to waste minimization and waste treatment before the current public regulatory focus. Recoveries of energy or material values from process intermediates minimize wastes before they are generated; incineration destroys organics in wastes after they are generated (*5*). Both operations reduce ultimate waste volumes and hazards. Long-term monitoring and remedial actions are mitigated by immediate destruction of combustible portions. Noncombustible residues may require secure land disposal. Wastewater treatment and air emission control are also integral to overall solid waste management.

Priority testing should be mirrored by proper data evaluation. Real-world data often are ignored, "worst-case" despoilage scenarios are assumed, technology-forcing controls are thrust upon the regulated community, and confirmations of environmental improvements are not attempted. The "troublesome" aspects of small halogenated hydrocarbons at Superfund sites are not manifestations of hazard or developments of control technologies, but "selected presence" at very low levels. Because of their unique chemical "fingerprints," they are "found" because they are "sought." Environmental ubiquity at some level above "zero" then triggers extended debate and calls for "action."

I support the resolution of socially troublesome aspects of hazardous waste disposal by multidisciplinary science and engineering. "Multimedia" approaches to defining the distributions, fates, and effects of the significant constituents of air, water, and land have recently been addressed (*5*). We must understand how much of which, where and when, and for how long, might do what to whom and then determine if, how, and what action is appropriate. The hazardous waste "problem" is as much definition and interpretation as it is practice and remediation. The negative perceptions of "dumps for toxics" perpetuated by some of the public and the media must be supplanted by the positive realities of "proper hazardous waste management facilities" practiced by scientists and engineers.

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Mystery Cloud: Additional Observations

After the appearance of our article "Kaitoku Seamount and the mystery cloud of 9 April 1984" (8 Feb. 1985, p. 607), the original data base was supplemented with additional testimony from Captain Van den Berg (KLM Royal Dutch Airlines flight 868) and another pilot (Captain Presley of Flying Tiger Airlines flight 022). Huub Eggen, editor of the Dutch publication *Aarde & Kosmos*, located Van den Berg and supplied us with a transcript of his interview along with six drawings depicting the event as viewed from the cockpit window. We submitted a number of additional questions which were subsequently answered by Van den Berg (*1*). To summarize the drawings we divide the event into four stages: (i) a towering cumulus-like cloud appearing to rise out of the stratiform layer; (ii) fading of the cloud tower and replacement with a small semicircular halo segment; (iii) expansion of the halo to a full circle; and (iv) further expansion and dissipation. The time elapsed from (i) to (iii) was approximately 5 minutes. Stage (iv) lasted for another 10 to 15 minutes, giving a total observation time of about 20 minutes from Van den Berg's vantage point. At the time Van den Berg was flying on air route A90 near the PAWES intersection at a speed of 500 knots. The change in Van den Berg's position from the beginning to the end of his observations, along with Captain McDade's observations (Japan Airlines flight 036; 33 minutes behind Van den Berg on air route A90; approaching the intersection designated PAWES by the Federal Aviation Administration when he first sighted the cloud at 1349Z Greenwich mean time; 48 miles