

Even more warnings

CONSTANCE HOLDEN

First it was physicians telling the world that, in the event of a nuclear attack, there could be no adequate

medical care for survivors. Now biologists and atmospheric physicists, bolstered by new calculations, say the ecosystem itself would be gravely and

permanently damaged by a full-scale nuclear war.

The findings were presented at a 2-day conference, "The World After Nuclear War," held in

Washington at the end of October. The central figures were Cornell astronomer Carl Sagan and biologist Paul Ehrlich of Stanford.

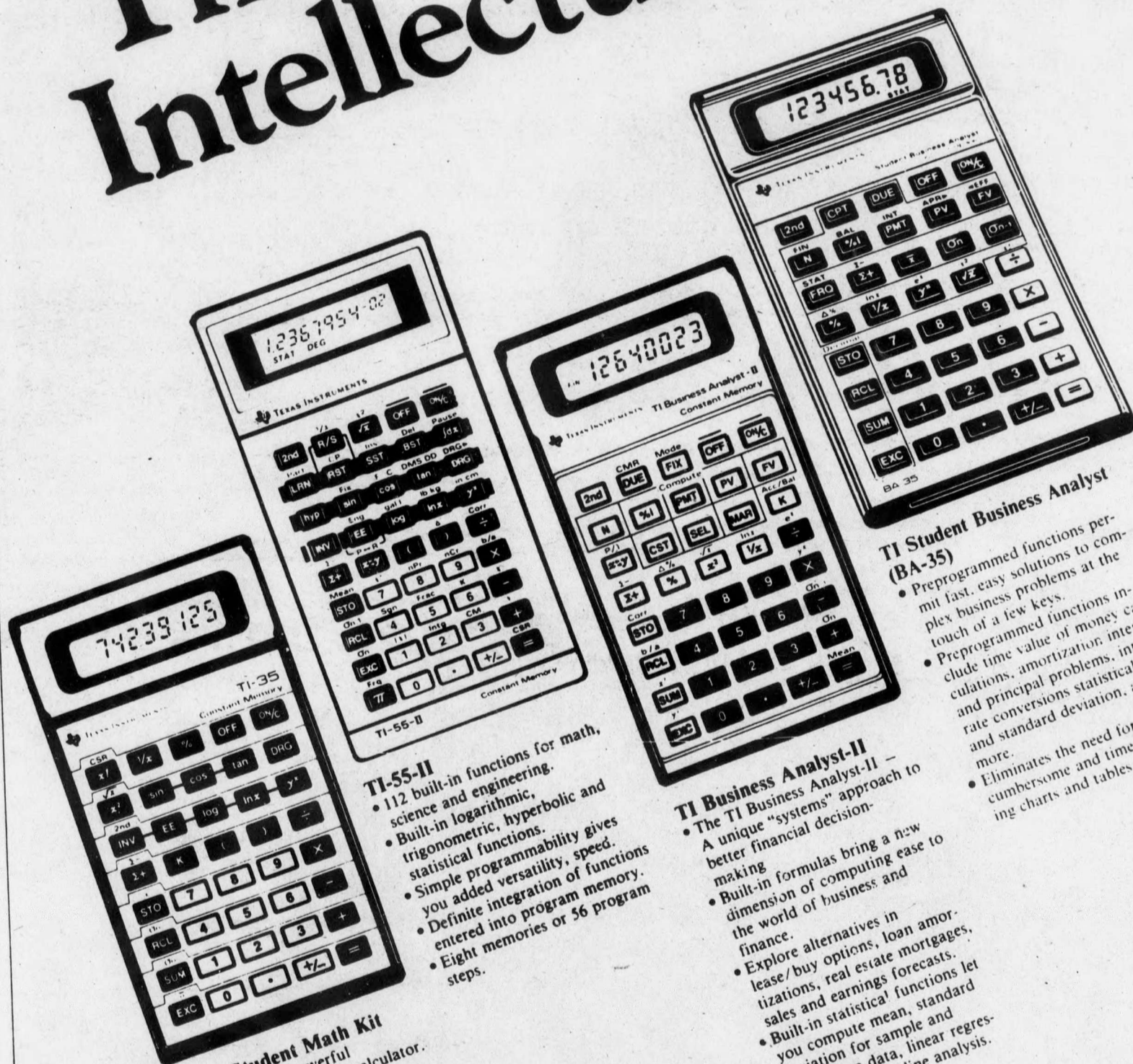
Although policy questions were carefully avoided, there were at least two implications. One was that a single nuclear counterforce strike, even if unilateral, would be suicidal to the nation launching it. The other was that no one in the world would be unaffected by such an event. Some Third World nations would be compelled to abandon the idea that it would not be all bad to have the two great powers finish each other off.

Sagan, describing climatological effects, said things would be a lot worse than indicated by any prior calculations, including a 1975 report by the National Academy of Sciences. He and his colleagues, in a paper known as TTAPS* evaluated numerous scenarios of attacks ranging from 100 megatons (the equivalent of 8000 Hiroshimas) to 10,000 megatons. In the 5,000 megatons case - approximately that required for a preemptive counterforce strike - they predicted that clouds of dust would create a ball of darkness with sunlight about 5 percent of normal in the mid-latitudes of the Northern Hemisphere. Temperatures would drop precipitously to as low as -23°C and remain subfreezing for months. Radioactivity would be more lethal than previously estimated, with up to 250 rads - half the human lethal dose - covering 30 percent of the area. The atmosphere would be further polluted by poisonous fumes emanating from urban fires. Depletion of ozone by oxides of nitrogen would raise the level of ultraviolet radiation, damaging immune systems and causing blindness.

One of the major findings was that effects would not be confined to the Northern Hemisphere. Disturbances in global circulation patterns would result in the interhemispheric transport of hundreds of tons of nuclear debris, resulting in light and temperature reductions as well as radioactive fallout in the Southern Hemisphere as well.

*Named after the authors: R.P. Turco of Marina Del Rey, California; O.B. Toon, T.P. Ackerman, and J. B. Pollack of NASA Ames Research Center; and Sagan. The paper will soon be published in Science along with a 20-author paper on the biological consequences.

The Intellectuals



TI-35 Student Math Kit
 • Contains the powerful 54-function slide rule calculator.
 • Performs Roots, Powers, Reciprocals, Common and natural logarithms.
 • A "systems" approach to math and science problem-solving.
 • Automatic conversions for degrees/radians/grads.
 • Special functions such as pi, factorial and automatic constant help you calculate faster.

TI-55-II
 • 112 built-in functions for math, science and engineering.
 • Built-in logarithmic, trigonometric, hyperbolic and statistical functions.
 • Simple programmability gives you added versatility, speed, definite integration of functions entered into program memory.
 • Eight memories or 56 program steps.

TI Business Analyst-II
 • The TI Business Analyst-II - A unique "systems" approach to better financial decision-making.
 • Built-in formulas bring a new dimension of computing ease to the world of business and finance.
 • Explore alternatives in lease/buy options, loan amortizations, real estate mortgages, sales and earnings forecasts.
 • Built-in statistical functions let you compute mean, standard deviation for sample and population data, linear regressions and trend line analysis.

TI Student Business Analyst (BA-35)
 • Preprogrammed functions permit fast, easy solutions to complex business problems at the touch of a few keys.
 • Preprogrammed functions include time value of money calculations, amortization, interest and principal problems, interest rate conversions, statistical mean and standard deviation, and more.
 • Eliminates the need for many cumbersome and time-consuming charts and tables.

TEXAS INSTRUMENTS
 INCORPORATED

© 1982 Texas Instruments Incorporated