cially consumers—will be necessary if we are to negotiate these difficult waters successfully.

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Plutonium's Existence

The article "No easy way to shackle the nuclear demon" (Science after the Cold War, 4 Feb., p. 629) by Gary Taubes states that plutonium is an element that did not exist on the planet before it was made in the laboratory in 1940. Plutonium (^{244}Pu) has existed in nature at low concentrations for eons (*1*). Primordial ^{239}Pu would have long since decayed into ^{235}U. Yet in uranium-bearing minerals small quantities of ^{239}Pu are formed by the action of natural neutrons on ^{238}U to form ^{239}U, which forms ^{239}Np through beta decay. After another beta emission, the ^{239}Np becomes ^{239}Pu (*2*). In fact, we now know the isotope ^{239}Pu was formed in natural reactors in western Africa almost 2 billion years ago (*3*).

Plutonium (later shown to be ^{238}Pu) was first isolated in trace quantities by Glenn T. Seaborg and his co-workers at the University of California, Berkeley, on 24 February 1941 (*4*). It was not until spring 1941 that ^{239}Pu, the fissile stuff of nuclear bombs, was isolated and identified at Berkeley. The element with atomic number 94 was not named plutonium until March 1942.

The article also states that all the isotopes of Pu are fissionable. However, of the 16 isotopes of Pu (*5*), only ^{239}Pu is fissile and used in nuclear bombs. The shorter-lived ^{241}Pu is fissile, but not of importance to nuclear bombs.

Finally, the article refers to tritium as being "short-lived." Actually, its 12.35-year physical half-life, although short by comparison with that of ^{239}Pu, is relatively long compared with the life-span of human subjects. For example, after 30 years, about 19% of tritium atoms still remain.

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Fusion Confusion

James Glanz, in his article "DOE lifts the veil of secrecy from laser fusion" (News & Comment, 17 Dec., p. 1811), refers to "Project Matterhorn" as the early name of the U.S. magnetic fusion program. That was the name of the (originally classified) magnetic fusion program at Princeton University, which became the Princeton Plasma Physics Laboratory. "Project Sherwood" was the overall name for the U.S. fusion program (*1*), which in the 1950s and 1960s was virtually all based on magnetic confinement.

The Princeton fusion program inherited its name (and some key players) from an earlier Project Matterhorn, which under the direction of John Archibald Wheeler studied some