Colin Norman writes that I am skeptical of some of the conclusions of the new study by D. M. Soran and D. B. Stillman (*1*) at the Los Alamos National Laboratory. This is correct. However, I never speculated that the disaster in the Urals was related to a "nuclear explosion, caused by plutonium in waste material which reached critical mass," as Norman writes. In my discussion of the possible role of the residual plutonium in the waste material (*2*), I considered as plausible the similar problem which had developed for the open waste disposal site at Hanford, Washington, and my suggestion was a modified version of the theory from the official report of the U.S. Atomic Energy Commission (*3*). At Hanford the liquid nuclear waste material had been disposed of over many years into the bottomless trenches and the radioactive isotopes absorbed by dry soil. The accumulation of residual plutonium at trench Z-9 reached approximately 100 kilograms in the 1960's. The volume of soil containing plutonium at this trench was approximately 1800 cubic feet. It was calculated that "Due to the quantity of plutonium contained in the soil of Z-9 it is possible to conceive of conditions which could result in a nuclear chain reaction. These conditions would be the rearrangement of the contaminated soil, flooding on the enclosed trench following a record snowfall and rapid melting" (*3*, p. 71). The water-triggered chain reaction could lead to a rapid heat which turns water into steam. The pressure of the steam could produce an explosion, discharging the radioactive soil to the surface. One of the members of the group that investigated trench Z-9 defined this possibility as a "mud-volcano type explosion." In Hanford this possibility was prevented by the removal of the plutonium-rich soil.

However, this type of accident, if it happened in the Urals, is quite different from a "critical mass" nuclear blast. I also considered as possible that the nuclear waste blown to the surface could be dispersed either by snowstorms (during the winter) or by soil (dust) storms (during the spring), which are quite usual for this area. In addition, I suggested some other possible mechanisms of the accident, but neither of them involved the criticality factor.

I also would like to mention that the statement in *Science* (and in the Los Alamos report) that the affected "region was sparsely populated by poverty-stricken people known as Bashkirs, whose chief livelihood was farming and fishing" is not correct. The main population in rural areas between Cheliabinsk and Sverdlovsk is represented by Russian peasants and Ural cossacks (about 80 percent of the rural population of these regions). Among the rather large (and known as prosperous) villages that have disappeared from the maps are Yugo-Koneva, Russkaya-Karbolka, Metlino, Asanovo, Belokataiski, Kuptsovykh, Techa-Brod, and Petrovka; these are typical names of Russian villages. Few Bashkir villages exist in Cheliabinsk region, but they have quite distinct Bashkir names.

Some cases of radioactive contamination in the area around Kyshtym were, of course, possible in the late 1940's and early 1950's. However, all available ecological information, as well as declassified documents from the Central Intelligence Agency, indicate that the large-scale contamination during the winter of 1957–1958 occurred as a result of a single disastrous incident.

In 1979 a group of Los Alamos scientists (including the coauthor of the current report, D. B. Stillman) wrote in *Science* (*4*) that they found it "hard to believe that an area of this magnitude could become contaminated and the event not discussed in detail or by more than one individual for more than 20 years" (*4*, p. 425). I was glad to see that this absolutely unjustified remark has been proved wrong by the same laboratory.

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3. *Contaminated Soil Removal Facility* (WASH-1520, U.S. Atomic Energy Commission, Richland, Wash., April 1972).
4. W. Stratton, D. Stillman, S. Barr, H. Agnew, *Science* **206**, 423 (1979).

Argon in Titan's Atmosphere?

Richard A. Kerr's briefing (Research News, 11 June, p. 1210) on the Saturn Conference at Tucson, Arizona, emphasizes the difficulty in accounting for 10 to 12 percent argon in Titan's atmosphere. It may not be necessary to do so, according to a paper presented at the same conference by Gunnar Lindal of the Jet Propulsion Laboratory. He described the results of the first complete analysis of the Voyager radio occultation experiment, showing that argon is not required to satisfy the radio and infrared measurements of atmospheric structure and temperature. While a small amount of argon cannot be ruled out, essentially a pure nitrogen atmosphere with a very small hydrocarbon content is consistent with the data.

Incidentally, the near-surface density of Titan's atmosphere is about 4.5 times that of Earth's—not the reported value of 1.5, which is the pressure ratio.

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Public Meetings

I disagree with a point made by Kathleen Bennett, assistant administrator in charge of the Office of Air, Noise and Radiation at the Environmental Protection Agency (EPA), in her letter (4 June, p. 1046) responding to criticism directed against EPA's lead phasedown program.

In defending her agency's meetings with industry representatives before EPA's February proposal, Bennett indicates that it is EPA's policy to meet with anyone who requests a meeting on matters pending before the agency. So far, so good. She next states that "No one would insist on 'public observers' at all such meetings."

This is not so. At the Consumer Product Safety Commission (CPSC), we have a meeting policy which has been in effect since the agency's inception that requires that all meetings with non-CPSC employees on matters pending before the agency must be open except where proprietary matters are to be discussed or where "extraordinary circumstances" require closure. In my 9 years as a CPSC commissioner, I have rarely, if ever, seen the "extraordinary circumstances" exception invoked.

We insist that meetings of this type be open both because we feel that the public has the right to see its government in action on matters that affect the public and because we want to avoid even the *appearance* of impropriety that closed meetings create.

I pass no judgment on EPA's actions and intend no criticism of its decisions on lead. However, I want to go on record as indicating that other agencies do open their meetings to the public.

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