Polymer Publishing

I am concerned about the ranking in the Random Samples item "Top ten in materials science, 1990–1994" (20 Oct., p. 379). How can the Random Samples table be so different from that of the 1995 National Research Council (NRC) report "Research-Doctorate Programs in the United States: Continuity and Change" (*1*)? Both studies cover similar periods and use the same database.

The Random Samples table is based on a study performed by the Institute for Scientific Information (ISI) and is a portion of the information in a piece in ISI's *Science Watch* (*2*), whose editor, Christopher King, was kind enough to send me information about the database. According to King, the *Science Watch* article is based on "approximately 150 ISI-indexed journals of materials science and metallurgy." Many of the premier journals in the polymer field are missing from the ISI-indexed journals for materials science. There is an ISI-indexed listing for polymer science, but polymer science does not appear to be considered as materials science by ISI.

The annual volumetric production of polymeric materials exceeds that of all metals and ceramics, and some of the nation's largest materials companies produce exclusively polymers.

The subtitle in the Random Sample correctly states that "Citations matter." It would help if the citations for materials science were based on the entire field.

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References

1. *Research-Doctorate Programs in the United States: Continuity and Change* (National Research Council, Washington, DC, 1995).
2. *Sci. Watch* **6**, 9 (1995).

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Smoke and Rainforests

The Random Samples item "Burning questions" (20 Oct., p. 379) about SCAR-B (for smoke, cloud, and radiation in Brazil), a major study of smoke from biomass burning in Brazil, emphasizes measurements taken from the air and space by investigators from the University of Washington. Ground measurements are essential to understanding the attenuation and scattering of sunlight that reaches the ground.

Brent Holben from NASA's Goddard Space Flight Center led a team of university and independent workers who conducted a wide range of such ground studies. On some days the smoke from distant fires attenuated as much as 80% of the solar ultraviolet-B and more than 30% of visible light at 500 nanometers from the ground. Portions of the ecologically sensitive Pantanal, a swampy region with an abundant population of birds and other wildlife, were under thick smoke for several days during our stay.

The University of Wyoming participated in SCAR-B by launching balloon dustsondes. The Brazilian Institute for Space Research (INPE) was a major participant in SCAR-B. INPE scientists flew at least one research aircraft, launched numerous ozonesondes, made ground measurements of ozone and UV-B, and provided facilities for U.S. researchers.

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Local Chinooks

Lisa Busch does a good job of explaining a thorny fisheries management problem in her article "Scientific dispute at center of legal battle over salmon catch" (News & Comment, 15 Sept., p. 1507), but to state that "over 80% of Alaska's commercial chinook catch . . . comes from streams in Washington, Oregon, or British Columbia" is misleading. That may be true of Southeast Alaska, but the Southeast produces only about a third of Alaska's commercial chinook catch, which this year totaled nearly 530,000 fish. Most of the chinooks landed in the other parts of the state were of local origin. (Some fish taken in the Yukon River originate in Yukon headwaters in Canada.)

To further give perspective to the issue, it is noteworthy that the whole chinook catch this year comprised only about a quarter of 1% of Alaska's all-species catch of 200 million salmon. Practically all of those fish originated in Alaska's own streams.

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Hydrolytic Destruction of Nerve Agents

A Random Samples item in the issue of 4 August ("Refining a toxin breaker," p. 637) states that the exact chemical structure of the active site in phosphotriesterase has been worked out. That is an achievement worthy of salute. The item goes on to suggest that enzymatic hydrolysis might someday be used to destroy stockpiles of obsolete nerve gas, "for which the best option is now incineration."

There are problems with this statement. First, the nerve agents are liquids, not gases. Second, opinions differ as to whether incineration is the best option; although the engineering is excellent, the U.S. incineration plan is expensive and politically unpopular. It is vigorously opposed by many would-be neighbors of planned nerve agent incineration plants. And finally, it is unclear that enzymatic hydrolysis of the nerve agents would be superior to other methods of hydrolysis. The dreadful nerve agent VX undergoes facile *uncatalyzed* hydrolysis during weeks at ambient temperature (*1*). Another nerve agent, Sarin, is hydrolyzed readily by aqueous sodium hydroxide. Hydrolysis of 1400 tons of Sarin would form two rather strong acids: 200 tons of hydrofluoric acid and 1380 tons of monoisopropyl methylphosphonate; they probably would need to be neutralized before further treatment, and sodium hydroxide might well be the alkali of choice for that purpose.

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References

1. Y.-c Yang, L. L. Szafraniec, W. T. Beaudry, J. B. Samuel, D. K. Rohrbaugh, *Scientific Conference on Chemical and Biological Defense Research* (Abstracts, Aberdeen Proving Ground, MD, 15 to 18 November 1994), pp. 64–65.

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Depicting Epidemiology

As president of the International Society for Environmental Epidemiology, I have been asked by our Board of Councillors to write concerning the Special News Report by Gary Taubes "Epidemiology faces its limits" (14 July, p. 164). At our recent annual meeting in the Netherlands, members noted that many good points were raised in the article, but that it focused primarily on problems.

Environmental epidemiology seeks to identify human evidence for health effects of exposures affecting large segments of the population. In doing so, it must run the gauntlet between crying wolf and procrastination in reaching conclusions about real health risks affecting large numbers of people. In view of the size of affected populations and the high cost of interventions to reduce exposure, epidemiological studies have been, are now, and always will be controversial. The real problems of epidemiology are compounded when the findings and opinions of epidemiologists are distorted or quoted out of context. We suggest