

L t t r s

Lessons needed in economy

SIR: It is disturbing to read an article on energy conservation (C&EN, April 1, page 8) that not only avoids discussion of real conservation measures but actually recommends a continued 1.4% effective growth rate in per capita energy consumption. Why do these energy experts think that each U.S. citizen wants, or should have, 50% more energy in the year 2000 than he consumes today? Surely a reduction in per capita consumption is possible through such measures as more reliance on public transportation, more effective building insulation and lighting, and improvement in industrial processing.

Instead of just extrapolating the overall growth in energy consumption based on 1947 to 1972, which is what Mr. Peterson and his group have done, projections for the future should be obtained by combining detailed analyses of energy consumption in each sector of the economy. Publicizing past trends and projections for future usage would help focus attention on specific industries or sectors where conservation measures are sorely needed. Some of the chemical industries have shown that they can produce more products with less energy than formerly used, which should serve as a challenge to others. The shift to smaller cars and somewhat lower speeds would reduce gasoline consumption, as would changing airline schedules to eliminate flights with many empty seats. It would be interesting to know the current trends in energy usage for transportation, and it seems appropriate for the government to set some specific conservation goals. Detailed comparisons of energy usage also should be made between regions of the U.S. and between countries. We use twice as much energy as the average European, and although some of this is due to climatic differences, there may be lessons to learn in studying their economies.

Peter Harriott

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Safety and morals

SIR: The practice of reporting hazardous procedures and materials in a periodical of wide circulation such as C&EN is admirable and should be encouraged. However, the recent eloquently worded report (C&EN, Jan. 14, page 5) of the violent explosion of 1 mole of HN_3 leads me to suspect that the levels of safety consciousness and moral values among contemporary chemists may have reached new lows and something ought to be done about it.

The experiment as described seems incredible, reminiscent of drying CCl_4 with sodium metal. How anyone could get to the level of a senior organic research chemist

without being aware of the instability and explosive nature of covalently bound azides, whether to metal or carbon, is quite beyond me. Common reference books (e.g., the Merck Index) note that HN_3 is a deadly poison and *extremely explosive*.

It may be Monday morning quarterbacking to point out that mixing 1 mole of NaN_3 with 1 mole of con-HCl will give a solution of NaCl above the saturation point which will force HN_3 (b.p. 37°) out of the water. Why react 1 mole of azide with 0.01 mole of ketone anyway? Further, I had thought for years that it was common knowledge to avoid ground glass joints when working with volatile, explosive compounds such as the related diazomethane.

It is nothing less than moral negligence to assign a technician to do an experiment without making at least a modest attempt to investigate the dangers. The negligence of the senior chemist involved, whoever he or she is, should not pass unnoticed and, hopefully, in the future, maybe the rest of us will think twice lest we fall into the same pit.

It would be worthwhile if the safety news columns published in the *Journal of Chemical Education* were collected and reprinted in paperback form and made available at cost to every member of ACS. A substantially increased emphasis on safety during formal chemical education is also both necessary and desirable.

Edwin A. Chandross

Murray Hill, N.J.

SIR: A further point should be made regarding the hydrazoic acid explosion reported in the Jan. 14 issue of C&EN (page 5). It is generally a good idea to avoid the use of ground glass joints when handling hydrazoic acid. If the hydrazoic acid comes in contact with the joints, the pressures resulting at the joint-stopper interface when inserting or removing ground glass surfaces are sufficient to cause detonation. This was apparently the case in the explosion reported, since a ground glass stopper was being removed at the time of the explosion. It is much safer to use a cork stopper unless it is certain that the hydrazoic acid will not come in contact with the ground glass joints.

Howard Gunderson

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Reaping the fruits?

SIR: When, as chairman of the ACS Council Committee on Professional Relations, I initiated the first investigation of a "mass-layoff" such as those described in C&EN, March 18 (page 18), no "Guidelines" existed. The problems involved in satisfactorily dealing with such matters led to my leading an effort to draft the first "Guidelines for Employers." The fruits of this effort were born in the adoption by the ACS Council of the first set of "Guidelines" at the New York ACS meeting in 1970. I am gratified to see the constructive results shown in the C&EN article.

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