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# Organic Process

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## Research &

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## Development

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### Editorial

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I was reading some journals over the last week and noticed how few papers put out any safety warnings for handling potentially explosive chemicals. I am particularly concerned over a number of recent papers (I will not quote the references to spare the embarrassment of the authors—and in case of libel actions!) where hydrazoic acid is used in vast excess to carry out selective transformations, usually ring opening of an epoxide. The hazards of hydrazoic acid are never mentioned!

Of course process R&D chemists would always be wary of azide chemistry, though a number of processes involving azides and diazo compounds (even diazomethane) have been successfully and safely scaled up. My first port of call when searching out hazard information is always *Bretherick's Handbook of Reactive Chemical Hazards*, 5th ed., Butterworth-Heinemann, Oxford, UK, 1995, so it is interesting to see what has been written on  $\text{HN}_3$ .

"As the lowest MW azide, hydrogen azide is extremely endothermic ( $\Delta H_f^\circ(\text{g}) +294.1 \text{ kJ/mol}$ ,  $6.83 \text{ kJ/g}$ ). Hydrogen azide is quite safe in dilute solution, but is violently explosive and of variable sensitivity in the concentrated (17–50%) or pure states. Wherever possible, a low-boiling solvent (ether, pentane) should be added to its solutions to prevent inadvertent concentration by evaporation and recondensation. If this is not possible, no unwetted part of apparatus containing its solutions should be kept at a temperature appreciably below

the boiling point ( $35^\circ\text{C}$ ) of the pure acid. The pure acid has often been isolated by distillation, but appears to undergo rapid sensitisation on standing, so that after an hour, faint vibrations or speech are enough to initiate detonation. The solid acid ( $-80^\circ\text{C}$ ) is also very unstable."

In the editorial office, I am now receiving papers on hazard evaluation, and I would encourage chemists and engineers to submit short notes to me (and to Peter Urban, the editor of *Bretherick*) on any incidents or near misses which have happened in the laboratory, pilot plant, or production plant. These will ensure that other chemists and engineers are alerted to dangers.

Of course no one likes to admit mistakes, particularly in public. But when these incidents occur, and are investigated in-house, there is a duty to "spread the word", rather than keep the knowledge to one company. It would be difficult for OPRD to publish "anonymous" or "unattributed" reports, however brief (although Peter Urban could probably do this in *Bretherick*), since it is vital that those interested in the report have a name to contact to get further details.

I would be interested in readers' views on how we might approach this subject—one suggestion I have had is that we have a section entitled "We Blew It!"

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Editor

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