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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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In the March issue of *Organic Process Research & Development*, I commented on the resources gap in process R&D in many companies. A consequence of that gap, particularly when fast-tracking the chemical development process, is that the processes which are scaled-up may be less developed and not so “robust”. This may, of course, have safety implications, too. I was reminded of this whilst reading a new book<sup>1</sup> entitled *Safety and Runaway Reactions* published by the Major Accidents Hazards Bureau in the Institute for Systems Informatics and Safety at the Joint Research Centre of the European Commission. The 200 plus page volume represents the proceedings of a European Union seminar held in Frankfurt (in 1994!) to discuss how to ensure the safety of chemical processes capable (as many are) of deviating into runaway reactions. Case studies of particular incidents are covered, some in great detail, others rather brief, with recommendations on how these incidents could—and should—have been avoided. (Hindsight is a wonderful thing!) The volume is enhanced by some excellent photographs of incidents, explosions, and the aftermath of events, showing the damage caused to reactors and buildings. These photographs are reminders to us all of the potential hazards of our chosen profession. One photograph is used on the front cover and several times throughout the book—it is an aerial photograph of a plant in Cork, Ireland, as an explosion and resultant fire are in progress. This incident took place in an 2-propanol solvent recovery plant where the solvent residues (nitro and possibly polynitro derivatives) were probably unstable. Of course, as always in such incidents, it is a unique combination of unusual circumstances which lead to runaways. My worry when companies are increasing

the throughput of projects in chemical development, with ever more complex chemistry, is that the hazardous reagents and processes (which we all use on laboratory scale and are typical of discovery chemistry synthetic routes) are not designed out and have to be scaled-up to pilot plant and beyond.

It is likely, of course, that many of these hazardous reactions will be contracted out to smaller companies for manufacture of kilogram or tonne quantities on a short time scale. Let us ensure that this does not lead to a lowering of safety standards by providing full hazard evaluation data on all processes contracted out, especially when the contract company does not have a fully equipped hazard evaluation laboratory. (Hazard evaluation can, of course, also be contracted out by those who have not the resources in-house, and there are some excellent companies who will advise in this area).

I can hear the accountants moan that this is expensive to do at the early stages of a new project. The question I ask of accountants is, “what is the cost of not doing it?”

Our journal can help to prevent hazardous incidents and runaways if companies will only publish their “near-misses” as well as those incidents which lead to runaways. We can all learn from other’s mistakes and help to prevent accidents happening repeatedly. One way to anonymously report such incidents is to contact the editor of Bretherick’s *Handbook of Reactive Chemical Hazards* (Butterworth Heinemann, Oxford). Or you could send a letter to me for publication (possibly without attributing the company) in this journal.

I welcome your views on this important topic.

Trevor Laird  
*Editor*  
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(1) The book can be obtained from the European Commission Joint Research Centre, EU-JRC-ISIS, MAHB-TP 670, I-21020 Ispra (Va), Italy, contact P. Duffield. The authors are N. Mitchison and B. Smeder. There is no ISBN number.