Organic Process Research & Development

Organic Process Research & Development **1998**, *2*, 63

Editorial

Is Your Process R & D Department Under-Resourced?

One of the advantages of being a consultant is that you get to visit many companies, both large and small, multinational or start-up, in most areas of the fine chemicals industry: intermediates, colour chemicals, flavour/fragrance chemicals, agrochemicals and pharmaceuticals. I have noticed a change in these industries over the last 10 years: the pace of working in process R & D has become more frenetic as companies try to fast-track their chemical development in an aim to get processes from laboratory to production in the minimum time. At the same time there are other factors which the process R & D chemist and engineer have had to contend with:

1. The increasing complexity of the molecules coming into development, particularly in the pharmaceutical industry. The corollary is that there will—unless process chemists are incredibly innovative—be more synthetic steps to develop and optimise.

2. More data is required about each individual process step, to cope with the requirements of process validation, hazard evaluation and environmental/registration issues.

3. The quality of the final substance is so much purer than, say, 20 years ago. This applies not only to pharmaceuticals, where impurities of greater than 0.1% need to be characterised, but to all industries. I always feel that the fragrance industry has the most difficult specifications to meet: even when the product passes the chemical tests, it has to pass the "nose" test, where a sensory panel may reject the product owing to a "smelly" impurity hardly detectable by GLC. But the colour chemicals industry, now making products for the electronics/printing industry, also has to cope with specifications of >99.9%, sometimes as high as 99.99%, to meet the stringent needs of the expanding market.

What are the implications of all this? One impact of the high purity of final products is that in the future suppliers of raw materials and intermediates will be asked to produce their products to tighter specifications, and information about every minor impurity—to 0.1%—which occurs in their products will be demanded. A greater consistency of quality during manufacture (possibly via validated processes) will be required.

But the major issue I wish to raise in this editorial is the staffing levels in process R & D departments. Despite the vast increase in work load over the past decade, most departments have increased staff by only 10−20%; some (where mergers of multinational companies have occurred) have effectively been reduced. The conclusion I come to, when talking to process chemists and engineers at symposia, is that most *process R & D departments are understaffed, with many severely understaffed.* The result is that chemists have less time for innovation, and particularly less THINKING TIME, which can hardly be good for the development of new processes.

In many ways this has been good for the smaller contract companies, since much of the work previously done in large multinationals is done outside. (This raises a number of other issues which, owing to space limitations, will be reserved for a further Editorial.)

My view is that process chemists and engineers will pay for themselves several times over, with the cost savings (reduced raw material costs, reduced effluent charges, more efficient piloting, more efficient transfer of processes to production, reduced time to market etc.), and that resources in chemical development departments need to be substantially increased over the coming years. Having discussed this issue with many readers of this Journal over the last few months, I doubt whether many practitioners will disagree with my views. The difficult task of persuading senior management to take action, however, I leave to you! There are occasions when it is nice to be one's own boss!

Trevor Laird
Editor

OP980009+

S1083-6160(98)00009-7 CCC: $15.00
Published on Web 02/19/1998