



FACTS BEHIND SEVESO

Technical causes apart, the Seveso accident was set into motion by serious management errors a long time before it actually happened. The investigations after the accident established its chemical and technical causes beyond doubt. However, a number of irregularities prior to the accident almost inevitably led to the disaster. These irregularities were never explained. There are two lessons to be learned. The first relates to technical aspects, the second, the more important, relates to company politics. Explaining the latter is the purpose of this book.

The two lessons to be learned from the Seveso disaster are entirely different. The accident is characterized as an uncontrolled exothermal chemical reaction causing the dissemination of highly toxic chemicals over a vast inhabited area. The technical and operational aspects of the accident itself are set down in great detail in the preceding paper.

Let us now look at the background of the accident. The reasons for the run-away exothermal decomposition of the reactor contents and the reaction sequence leading to the rupture of the safety disc have been established beyond any doubt by the authors of the accompanying bibliography (see preceding paper) and others. The chain of physical, chemical, and kinetic events at the time of its occurrence was both unknown and unforeseeable. To this day there is no known or published scientific representation contradicting this statement. The evidence was well presented, although not necessarily equally well interpreted, during the criminal procedures that followed the accident.

However, the technical aspects are one thing. Company politics are quite another. One seems to have received much attention and the other to have been neglected. My book was never intended to demonstrate

new technical facts or to uncover previously unknown or undisclosed operational data. On the contrary, it was written to place on record how an accident such as the one at Seveso was promulgated by serious and almost unbelievable errors, arrogance and politics a long time before it happened.

1) The technical investigations following the accident were all very well planned and managed and provided understandable results. On the contrary, the story of the trichlorophenol-reactor, before it was officially commissioned, is one of gross technical and managerial irregularity. During the development phase of the chemical process no research, including documentary research, worth its name was carried out. So company management had no knowledge of the extent of numerous previous disasters. The company had had no previous experience with phenols manufacturing. It had even less knowledge of the manufacture of chlorinated phenols. The company was a total newcomer in this field. No contacts with other manufacturers were ever made. No information was sought from professional associations. In other words, it entered an entirely new, high-risk field without having done

even a basic search for available documentary evidence. The company's technical management was therefore either not informed or knowingly tolerated this lack of information. Wherever the truth lies, serious development and management mistakes were made.

2) Around 40 tons of trichlorophenol were manufactured during the development stage. A rough estimate, based on the finally adopted Icmesa operation, would have predicted the formation of about 100 g of the by-product dioxin. Where did it go? How was it handled? What was known about the potential dangers? Where are the records about it? Group technical management did not produce and seemingly never had any information.

3) At the beginning of 1970, an extremely critical management report about the serious general situation at the Icmesa factory already existed. Why was it not brought to attention until after the accident? Why did it take 2 years before top management finally took action to bring the factory up to standard? Why did group management not react immediately? Was the potentially incriminating report deliberately put aside?

4) Essential investment in the plant was then diluted for no technical reason. The factory was unprofitable. Its mediocre results were not a positive reflection on the performance of group management. Under such circumstances, investment was regarded as counterproductive, since it had to be drawn from other, more profitable opportunities elsewhere in the group. The only logical conclusion would have been to close or dispose of the factory. Neither was done. Why were there no clear cut management decisions? Were personal agendas involved? Why was the plant allowed just to limp along?

5) The group had no organigrams laying out precise lines of command. Executives could and did intervene at any level or in any function they wished. One manager even boasted that he did not need an organigram because he wanted to be able to do just that. These insubstantial management structures led to design errors in the trichlorophenol installation, shortfalls in factory safety, and chaos in the chain of command.

6) An even greater lack of safety was caused by the never-ending changes in top management positions. Every few years new strategies were devised. Each new strategy called for a new CEO. The new CEO then showed everybody concerned how everything had been badly handled in the past. Within a short time his superiors would have wanted to see improvements in company performance. The new CEO would then

have pushed sales and decreased expenses on staff, maintenance, and investments. If the CEO did not get the results expected of him he would be out of a job in no time. His successor would then start the same process all over again. So, the management mentality created was totally detrimental to continuity. And continuity is essential for chemical plant projects. There simply was no continuity in the ICMESA plant strategy.

7) Group managers were mostly reared in-house. Standardized company thinking was self-perpetuating. Additional *esprit de corps* was acquired at places like Harvard and Insead. A uniform behavioural style and an almost jesuit culture inevitably led to arrogance and a conviction of intellectual superiority. A typical consequence of this culture was the trichlorophenol installation. It was taken for granted that nobody else could it have designed and installed it better or at lower cost. At least that is what everybody believed at the time. This turned out to be the most blatant of management errors.

8) Did group management put revenue before safety? Probably not. However, it was clear to the staff that the factory would be closed if results did not improve. This explains the willingness of the staff to put up with the poor working conditions. However, continuous stop-go policy, accompanied by threats of reducing investment in repairs and maintenance, undermined efficient operation of the plant. Disruptive events, unnecessary frictions and

unforeseen malfunctions occurred. Staff motivation decreased. Careless operational procedures followed. The accident happened. The mistakes leading to this were not made on the day of the accident itself, but many years previously. But then nobody had noticed. Management did not even imagine that an accident might occur. The big chief had decided to proceed, so nobody asked questions.

9) In the country where the trichlorophenol installation was designed, the army is seen as the nation's behavioural model in general terms and of management in particular. In the army, discussion and analysis are less important than carrying out orders.

However, there are directives to the contrary. 'A manager who undertakes to carry out a plan which he considers wrong is at fault. He must put forward his reasons, insist on the plan being changed, and finally give in his resignation rather than become the instrument to his company's downfall.' This is a loose translation of part of Napoleon's military maxims and thoughts. Managers must also have loyalty to the general public. The authorities and ordinary people should be fully informed about accidents and their likely consequences. Suppression of vital information is at once criminal and immoral. Anything less can only be bad management and counterproductive for the company. Even if the big chief dictates silence.

10) Finally let me make an unorthodox footnote. We consider qualified, conscientious employees to be a chemical company's "backbone". Why shouldn't these employees be given a channel to report safety shortcomings to a neutral authority (for instance, an ombudsman) within the company? Surely, a well structured, non-punitive reporting system would be helpful for chemical companies. Assuming the organizational and legal basis has been established? In other words, can an individual "blow the whistle" without fear of legal, personal, or professional penalty?

The Seveso accident could have been avoided if people had talked without fear of reprisal.



Reference

1) F. Trifirò, *Chimica e Industria*, the same number.