

ACCIDENT INVESTIGATION – A TEST OF YOUR ETHICS, PRINCIPLES, PROFESSIONALISM AND DETERMINATION?

Roderick Prior, SHExcellence cc, Dowerglen, South Africa

Accident investigation is an important part of process safety management. It is usually regarded as being an objective analytic process aimed at establishing the root causes of the incident and then the corresponding corrective action. In practice experienced accident investigators of major incidents find that a number of pressures arise which are aimed at influencing the process. The influence may be accidental or deliberate.

The parties influencing the investigational process may include senior personnel in the client organisation, Regulator representatives and lawyers. By using case studies the author illustrates examples of the influencing process where the scope of the investigation was changed, where the objective of the investigation was changed to find the 'guilty party' and where a senior person's tries to convince the investigator of the importance of his view of the causes. In addition the difficulties of dealing with parallel investigations and the role of lawyers are covered.

The paper covers the rationale behind the influencing processes and the actions that the professional investigator might take to deliver results which reflect an ethical and principled approach.

INTRODUCTION

Employees in the process industries from the highest policy making to the lowest operating level have to make important decisions and carry out actions which can have a significant impact on health and safety of operations. In a perfect world, these decisions continuously reduce the health and safety risks whilst meeting requirements for the enterprise to remain profitable over the long run. However, reality may be quite different. The events in the Gulf of Mexico in mid-2010 illustrate the perceived external public impression of 'production versus safety' decisions.

The conflict of competing pressures on decision making applies equally to specific activities such as accident/incident investigation. Accident (and incident) investigation is a critical process for any organisation. It is often assumed that the investigator of a significant event will execute or has executed an objective analysis of the event resulting in meaningful actions being recommended to prevent a repetition of the event. This applies whether the investigation is done in-house or a professional external investigator is used. In addition there may be multiple investigations of the same event, usually by regulatory bodies or other government structures. These legal investigations may not have exactly the same objectives as the in-house investigation.

The author, in his experience as a senior manager in the process industries and as a consultant to the same industries, has been involved in and has conducted many major accident investigations where such issues have arisen. With reference to a number of practical cases the author will illustrate how some of these issues arise and what solutions might be useful. Some of the issues arise because of the specific legal structures in South Africa and other countries where the examples have occurred but there are learning points for all.

A TEST OF PRINCIPLES IN THE AFRICAN BUSH

The author was requested to carry out an investigation in an explosion on a developing gold mine in Central Africa, some distance from Lake Victoria. The explosion had involved the destruction of waste explosives used for mining. Fatalities resulted from the incident. The mine was North American owned and had a multinational workforce of Australians, South African and local Tanzanians. I arrived a few days after the accident.

In line with my accident investigation methodology I set out to collect the facts around the explosion. The technical (superficial) causes were established quickly. Waste explosives were set alight by an employee but the pile detonated with the person in close attendance. In moving through the cause – effect analysis the work moved away in time and distance from the actual event. In search of the root causes, questions were asked around the systems (instructions, procedures and recordkeeping) and people (training, competence, accountabilities, responsibilities and culture). A growing sense of disquiet was detected amongst senior management particularly when the role of management was discussed.

Matters reached a head when the top management team called me in to inform me of their unhappiness with the scope of the investigation. In their opinion I should have restricted my work to the events on the day only. Great pressure was put on me to confine my work to the immediate events only. Following a lengthy debate I managed to get agreement to the scope remaining 'broad' because there could be no gainsaying that it was necessary to prevent the accident or similar event from reoccurring. However they were adamant that no written report with this scope should be written within the country. There was concern about prosecution in the particular country.

We agreed that I would write the report in South Africa and they would fly a senior person down to view it.

This happened and I passed over a summary of actions without names and identification. The Mine would not take possession of the report.

Did I behave ethically? Perhaps I should have refused the assignment when asked to limit the scope of my work. In some ways this would be an easy way out. A pragmatic solution was found and I felt that the Mine albeit at arm's length, was given the relevant information to prevent the accident happening again.

WHO IS TO BLAME/WHO CAN WE FIND RESPONSIBLE?

Even in large companies with mature safety cultures, the accident investigation is often influenced to find the 'guilty party or parties'. This has happened in several investigations that the author has conducted.

This common pressure on an investigation has a number of origins. Of course, the legal investigation throughout the world, is aimed at identifying the deviations from legal requirements and who, collectively and individually, is to 'blame'. This is paralleled by some senior managers preferring to see an incident in the simplest terms and, in particular, looking to link the accident to an individual's actions. This approach, of course, runs counter to the (multiple barrier failure) understanding of major accidents and the modern understanding of human error/violations. Whilst it may be true that human error contributed to an accident, it may be that management has failed to provide training, tools for the job or got acceptance from the employee of his accountability for a task. The human error might then be a management one and this might be unwelcome news.

"I KNOW WHAT HAPPENED!"

Influencing the outcome of an investigation can come about in subtle forms and from a variety of key people associated with the event. Senior managers, often experienced in the particular process and plant, will let you know early in the investigation process that a particular cause/effect chain had happened. You might be told "I know what happened!" This might be of use but if the view is expressed very early in the investigation and forcibly with the authority of the senior position behind it, an inexperienced and easily influenced investigator could take this view more seriously than say the view of a lower level operator who was closer to the incident.

In a recent incident the author investigated a titanium heat exchanger fire involving two fatalities. A fire and set of explosions followed a flame – cutting task where the titanium tubes were being cut up for resale of the metal. The Inspector from the relevant Regulator was on site at the same time as me. It was clear from statements and a video clip captured on a mobile camera by an onlooker that 3–4 explosions took place during the fire over a period of about a minute.

The Inspector declared from the start that he knew what happened and there was only a fire and no explosions.

He does not have possession of the video clip. The investigation revealed several mechanisms which could have led to explosions. The reasons for the Inspector taking the simplistic line are probably to make life easier for his work and a weakness in selecting evidence to suit his particular line.

In the Central African case described earlier a chance meeting with the authorities (Police Department) revealed that they had decided the explosives accident was clearly caused by someone bent on committing suicide. My investigation showed no ground for this but the view taken by the authorities was helpful to the Mine.

Well-meaning people and others with agendas may attempt to influence investigations with early adoption of a fixed position and statements relevant to the likely cause/effect chain. The investigator has to be vigilant and uninfluenced by these positions. This requires maturity, continued emphasis on being objective, being lead by the evidence and giving all views a hearing.

PARALLEL INVESTIGATIONS

The phenomenon of having simultaneous or parallel investigations into major incidents is well known. In the Toulouse ammonium nitrate explosion of 2001 four investigations were in place and the Texas City Refinery accident of 2005 parallel investigations were carried out by BP and the US Chemical Safety Board. This situation may well differ in different countries.

In South Africa a company has to carry out a full investigation to determine the root causes of the accident and set out corrective actions to ensure the accident or a similar one does not occur again. This is the classic remit for any fundamental investigation and typically covers plant, safety systems and people related aspects. Other investigations into the accident may be initiated by the legal system. The author has experience of Trade Unions also launching their own investigations into incidents. In the legal process the Regulator investigation is aimed, in my experience, at finding culpability in terms of the relevant Acts and Regulations. As the objectives of these two types of investigations differ, it is a natural outcome that the evidence collected and scenarios developed may be significantly different. However, the two investigations may 'interact' with complications for the investigator and the company.

In a major explosives incident with 7 fatalities some years ago, the Production Director (author) had to initiate the internal investigation whilst being a participant in the legal process. A senior manager was tasked with the internal investigation. Full cooperation was given to the legal process and all requested information provided. The advice of the company's legal team was followed in that all questions were honestly answered but no extra information was volunteered. The internal investigation was much more thorough and had information that was not requested by the legal route. The internal investigation team met well away from the 'legal team'. It was a very uncomfortable time and the company was aware that the

work of the internal team could be subpoenaed. The internal investigation team was very nervous whilst doing the work. The legal process did not request or demand any extra information from the internal investigation team.

More recently in 2009, in the titanium fire/explosion mentioned before, the same situation arose. The full investigation for the affected company was done in parallel with the Department of Labour (Regulator) process. At an early point in the investigation it was made clear to the company by me that my in-depth investigation could create legal problems for them if my work was accessed by the Regulator. This threat to the company was heightened by the Inspector, a new appointee, suggesting to me that we work together on aspects for the investigation. Whether this was an act of naivety or co-option, it was an immediate concern. I declined the offer but was told my work could be subpoenaed anyway! Ultimately the company, who were inexperienced in these matters, consulted specialist external lawyers. As my investigation was effectively complete the work could not be stopped. The investigation was redirected towards the lawyers as being the client and the appropriate lawyer/client privilege established over the information. The company has access to all the information. In a later step the legal firm provided the 'technical analysis' section of the report with the other root causes lying in people and systems excluded. It remains to be seen how effective this tactic will be.

There is clearly a potential clash between the parallel investigations described above. A danger of incriminating the client or involved company exists. Legal advice is critical in ensuring that this risk is minimised. This may be different in different legal situations. Care has to be taken not to be co-opted by the legal investigation if one has been commissioned by the company to do the investigation. Companies inexperienced in such matters need the advice of experienced legal firms.

LAWYERS – FRIENDS OR FOES (TO THE ACCIDENT INVESTIGATOR)

The role of actions of lawyers can be a source of problems for the professional investigator. Whilst the lawyers, no doubt, have the best interests of the client at heart, they do not have the same objectives as the investigator and use very different methods to do their work. A lot of hard work and careful communication is needed to ensure both can achieve their aims. Legal obstacles and issues can affect the accident investigator in several different ways. These examples are drawn from recent examples that the author has been involved in.

Pressure to Stick to the 'Technical Content' Only

Major accidents usually have multiple root causes. An equipment failure may be accompanied by failures in systems and people (multiple barrier model). Systems failures and people failures (including management) make lawyers uncomfortable. Of course people develop and maintain systems (or fail to!). For example in a current

aluminium powder explosion the author has categorised the safety culture at the company as being very poor and undeveloped. There are few procedures, no safety training and the plant has few provisions for dealing with the specific explosion risks of aluminium powder. They might be at the lowest level of the Safety Culture Maturity Model. The investigator makes subjective judgements about these aspects using his professional skills and experience. These views may not be legally defensible. Pressure is put on to stick to the facts and the 'technical facts' in particular.

Rewriting the Report in 'Legalese'

The legal profession and the technical functions involved in investigational work use different languages to convey their concepts and proposals. The investigation may follow a formal investigational method like TOPSET™ or MORT and have its own flow of logic. In a recent case a lawyer attempted to rewrite the investigation report in language more suited to them. The result was a report that one that I had trouble claiming ownership of. I had to consider whether I should sign off on the report.

Support for One Causation Scenario Above Others and as Many Options as Possible

When the investigation report has been accepted by the company's lawyers either as an intermediary for the client or en route, perhaps as a selection, to the Regulator pressure can be put on the investigator to pick or emphasise a certain causation scenario. Not surprisingly this scenario may be one that favours the client legally. It may also be that the legal tests for evidence and opinions are different to the tests used for professional investigations. The resulting form of the report has to be acceptable to the investigator. He (or she) has to be able to stand back from the report and check that the net result is one that is wanted and that the integrity of the work is protected. If not, a firm stand has to be taken with further dialogue with the legal representatives being needed. If still unsatisfactory, in the extreme one can refuse to sign the work.

The opposite situation occurred in the titanium incident described earlier. On discovering further more complex reaction mechanisms for the incident this line of investigation was encouraged by the lawyers. They made it clear that multiple accident mechanisms were welcome as this helped the company to show that it was not reasonably practical for them to have foreseen these complex technical issues. The law poses a 'reasonably practical' legal test. Great care had to be taken not to 'invent' new alternative mechanisms which had a very low probability of happening. The acid test is to investigate and analyse situations as seen relevant to the agreed objective and scope of the investigation not to be taken off-course by legal interests. This can be a subtle pressure which has to be recognised and dealt with.

Insertion of Non-Technical Phrases with Different Meanings

In a recent investigation into an alcohol warehouse situation, intimate dealings with lawyers were needed as they

initiated the work and paid for it. Whilst they agreed that the investigation should be open and objective they were very clear that they anticipated a certain outcome. This makes preserving objectivity very difficult and perhaps, in such situations, if one thinks that client pressure is too high such assignments should not be undertaken.

In this case the 'struggle' between the different interests was manifested in the wording of the final report. Debates and arguments took place over words. One event was described by me as being as being of low probability (possible but say 1×10^{-3} per year). The words 'almost impossible' or 'practically impossible' were substituted. This was not acceptable. Changes were accepted in the text where I felt the meaning remained the same. However one had to stand back from the individual changes and then look at the overall sense of the document and decide whether the sense remained acceptable. The phenomenon of 'creeping change' is just as dangerous to investigational work as for an operating hazardous plant.

THE MORE OBVIOUS TRAPS

Investigators also have to deal with the more obvious attempts to divert the process. Tampering with the evidence and the accident scene are not unheard of. Plant log sheets were altered in the Bhopal, India, disaster of 1984. Standard approaches of isolating the accident scene and locking up the evidence can be applied. The investigator needs to maintain a critical and questioning approach to the information and evidence presented to him. The experienced person develops a sixth sense about aspects which don't seem quite right. A follow-up on such feelings is always needed.

In reviewing previous serious accident reports in a mining company recently, clear evidence was found of the reports being 'censored' when passing from junior to senior management ranks. Aspects which might have led to individuals being potentially legally liable were excised. The reports were significantly skewed by this. Presenting these deviations to the senior management team required some boldness and careful preparation.

Experienced investigators are generally aware of such difficulties and are unlikely to be caught out.

A POSSIBLE CODE OF ETHICS AND PRINCIPLES FOR ACCIDENT INVESTIGATORS

In "Lees' Loss Prevention in the Process Industries" a quality investigation should have the following validation principles (Ref 1):

- Is the scenario logical?
- Is it comprehensive in addressing all known evidence?

- Are the identified causes sufficient to cause the result?
- Can it be replicated?
- Does it have honesty and integrity?

This could be considered as a set of core ideas for a code for investigators. To deliver these an investigator needs the following characteristics:

- determination
- resilience
- self confidence
- ability to remain objective under any conditions
- ability to create practical alternatives when confronted with roadblocks
- strength of character to walk away rather than be compromised

CONCLUSIONS

Accident investigation is a key activity in the overall process of safety management. Ideally it is an objective analytic process which follows a logical flow aimed at establishing root causes and appropriate corrective action. The author has shown that in practice this process can be influenced by a number of players including the client's senior personnel, the Regulator and lawyers.

Attempts can be made to change the scope of the investigation, favour one or multiple causation scenarios and find someone to blame. Parallel investigations are problematic and can cause liability problems for the company unless correctly managed. In addition lawyers, though generally well meaning, may create issues and challengers for the investigator. It is imperative to keep an open mind till the latest possible moment in an investigation.

The author has tabled responses to these situations and suggests how a professional investigator can remain ethical, principle based and yet deliver the desired results. A determination to deliver an excellent objective investigation and the strength of character to resist attempts to derail the process are important in this process.

The experiences which have shaped this paper have been largely gained outside the UK. The common theme has been that there is scope for companies to 'prove' their innocence with the assistance of the legal profession. This may not be possible in the UK or parts of Europe. However, the subtle and not-so-subtle pressures put on accident investigators are prevalent everywhere in the world.

REFERENCE

1. Mannan, S., 2005, Lees' Loss Prevention in the Process Industries, Third Ed, Vol 2:31/22.