

Not reporting successful recoveries from self-made errors ?

An empirical study in the chemical process industry

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Introduction

Incident Reporting Schemes have a long history as part of an organization's overall safety management structure, especially in sectors like civil aviation, the chemical process industry, and, more recently, in rail transport and in a few healthcare domains such as anesthesiology, pharmacy, and transfusion medicine.

Their vulnerability in terms of the quantity and quality of the incident reports have led to guidelines for designing and implementing such schemes. Reason (1997, p 197) lists five important factors to "engineering a reporting culture": Indemnity against disciplinary proceedings; confidentiality or de-identification; separating the agency who collects and analyses the reports from the regulatory authority; rapid, useful, accessible and intelligible feedback to the reporting community; and finally, the ease of making the report. Similarly, Lucas (1991) identifies five organisational factors: the nature of the information collected (simply descriptive, or also causal); the use of information in the database (feedback, statistics, and error reduction strategies); analyst aids to collect and analyse the data; the nature of the organisation of the scheme (centralised or local, mandatory or voluntary). She also stresses the importance of the organisation's model of why humans make errors, as part of its overall safety culture.

These are just two examples of the well-documented "organisational design perspective" on reporting schemes. Much less is known about the "individual reporter's perspective": when and why is one inclined to report a work-related incident to a formal scheme, and if so, what aspects exactly is one able and willing to then contribute? The starting point for the investigation described in this paper was the observation that during a re-analysis of part of a large database of voluntarily reported incidents at a chemical process plant in the Netherlands, we hardly encountered any report of self-made errors (Kanse, van der Schaaf & Rutte (2002)). This was surprising as this particular plant had been highly successful in establishing a reporting culture, where, apart from small damages, and dangerous situations, also large numbers of "near-misses" (i.e. initial errors and their

subsequent successful recoveries) were freely reported. Not only the plant employees themselves, but also those temporarily stationed there by contractors, equally contributed to this “Near-Miss System”, which had been operational for some 7 years by then, and was regarded to be a “safe” system in terms of guaranteed freedom from punishment.

As a result, this plant could perhaps even be labelled a “High Reliability Organisation” (Roberts & Bea, 2001). Even more puzzling was the fact that these references to self-made errors were also absent in the particular subset of the database we were looking at: successfully recovered (initial) errors and mistakes, which were thus completely inconsequential. Our question therefore was: what are the reasons on the part of the plant operators for not reporting successful recoveries from self-made errors at this plant?

In this paper we will first briefly summarise the (small amount of) literature on possible reasons for failing to report incidents in general, and evaluate it’s relevance for our particular research question. After generating a relevant set of possible reasons, we describe a special diary-study where plant operators were asked to report their recovery of self-made errors under strictly confidential conditions, outside of the normal “Near Miss System”. We will conclude by discussing the implications of the results, for the plant, but also in more general terms.

Reasons for not reporting

We have grouped the factors influencing incident reporting from the perspective of individual employees, that were mentioned in the literature, into 4 groups:

- FEAR (as a result of a “blame culture”) of disciplinary action;
- USELESS (perceived attitudes of management taking no notice, not likely to do anything about it);
- RISK ACCEPTANCE (incidents are part of the job, cannot be prevented; or the “macho” perspective of “it won’t happen to me”);
- PRACTICAL REASONS (too time-consuming; too difficult).

Adams & Hartwell (1977) mention the blame culture (as does Webb et al., 1989) and the more practical reasons of time and effort (as does Glendon,1991). Beale et al. (1994) concludes that the perceived attitudes of management greatly influence reporting levels (see also Lucas, 1991), and also that certain levels of incidents are accepted as the norm. Similarly, Powell et al. (1971) finds that incidents may be seen as “part of the job” and cannot be prevented. This last point is supported by Cox & Cox (1991), who also put forward a belief in personal immunity (“accidents won’t happen to me”; see also the “macho” culture in construction found by Glendon, 1991).

Probably the most comprehensive study so far was undertaken by Sharon Clarke (1998) with train drivers. She asked them to indicate their likelihood to report each of a standard set of 12 realistic incidents (a mix of dangerous situations, equipment failures, and other’s errors). Also the drivers were offered a predefined set of 6 possible reasons for not reporting in each case (tell a colleague to report it; part of the job; avoid getting

someone else in trouble; nothing would get done about this type of incident; too much paperwork; managers would take no notice).

In what way can the above results be useful in generating a relevant set of possible reasons not to report recoveries from self-made errors? Taking the four groups of reasons reported in the literature (fear; useless; risk acceptance; practical reason) as a starting point, we discussed this with three sections of the chemical plant's employees: management, safety department staff, and operators. Their opinions on possible reasons for non-reporting converged as follows.

- The chemical plant operators, being part of an HRO (or at least something close to that) were seen to be highly unlikely to put forward some of the reasons mentioned earlier; the idea of accepting incidents as part of their job, unavoidable, and not happening to them.
- Also the concept of the plant's management systematically ignoring reported risks, making the whole idea of coming forward with such information useless, was not considered realistic.
- However, in a somewhat softened version most thought it could still be possible that operators would be afraid or ashamed to report their own initial errors and mistakes triggering the necessity for subsequent recovery actions.
- Also they could consider it of less importance to report incidents that would be indicative of risks that they considered "no news", as they would be widely known amongst colleagues, minimizing their learning potential.
- It was further proposed that some types of incidents could be regarded as not applicable for the aims of the reporting scheme.
- That the fact that they themselves, through their successful recovery, "took care" of it, would make it superfluous to report.
- The fact that there were no real remaining consequences in the end could possibly turn it into something unimportant.
- Finally, the time consumption aspect ("always busy") could of course play a role, as could other practical reasons (i.e. not yet fully aware of the system).

Integrating all of the above considerations we proposed the following 6 possible reasons for not reporting recoveries from self-made errors:

- AFRAID/ASHAMED
- NO LEARNING
- NOT APPLICABLE
- RECOVERY
- NO REMAINING CONSEQUENCES
- OTHER

The Diary Study

Methods:

Following the methods of previous human error researchers who used personal diaries to get reports of everyday errors (Reason & Mycielska, 1982; Reason & Lucas, 1984; and especially Sellen, 1994) we asked a total of 21 operators (all members of one of the five shifts) from the same chemical plant if they would cooperate. For a period of 15 working days (5 afternoon shifts, 5 night shifts, and 5 morning shifts) they would fill out a small form for every case of a recovery after a self-made error, which contained items such as: describe the self-made error(s); what were the potential consequences; who discovered the error(s); what recovery action(s) were then taken; any remaining actual consequences; and finally: “Would you have reported such an incident to the existing Near Miss System, and if not: why?”. For this vital last question we did not offer any of the preselected possible reasons as options, as we wanted to leave the operators as free as possible to express themselves in this respect.

Results:

In the period of the diary study the 21 operators completed forms relating to 33 recoveries from self-made errors. In only 3 cases they indicated that this incident would also have been reported to the “normal” Near Miss System, while for 5 of the remaining cases no reason(s) for not reporting were listed. Thus 25 cases remained.

The literally transcribed answers of the operators to the last question were then given to two independent coders; one of them being one of the authors, the other one another human factors expert (not being the other author) with ample experience in human error analysis. Firstly, each of the coders identified the separate reasons from the transcripts: one coder identified 32 reasons in the 25 cases, while the other found two additional reasons. They then reached consensus on 32 identifiable reasons. Secondly, the two coders independently were able to classify each of these 32 reasons into one of the 6 categories. They agreed on 28 of the 32 reasons and easily reached consensus on those reasons coded differently. A typical example of each of the statements and the resulting code are shown in Table 1. The overall results are shown below in Figure 1.

Code assigned	Example from transcript
No learning	The unclear/ confusing situation is already known
Not applicable	System is not meant for reporting this kind of event
Recovery	Because I made and recovered the mistake myself
No remaining consequence	Mistake had no consequence
Other	Not reported at the time: too busy then

Table 1: Examples of coded transcripts

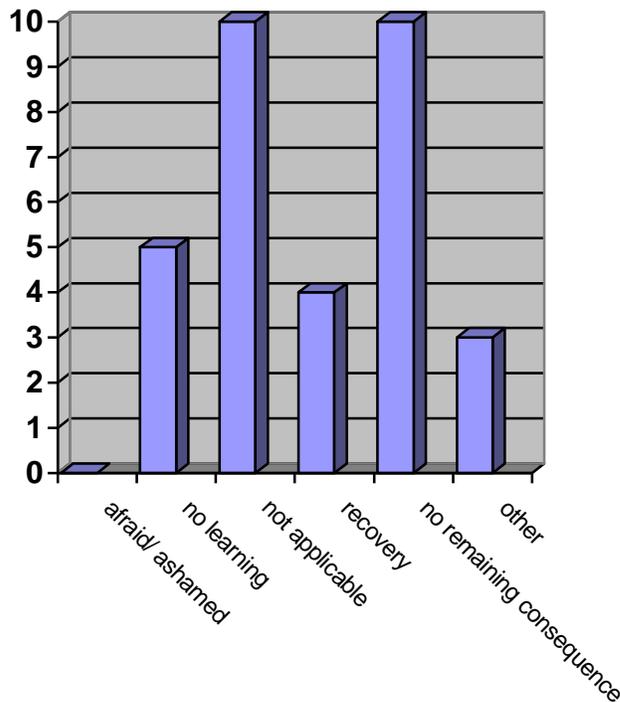


Figure 1: Distribution of 32 reasons given by 21 operators for not reporting 25 ‘diary incidents’ to the existing near-miss reporting system

In addition to the results shown above, it is also worth mentioning that, as one of the items describing the details of the recovery process, operators on average judged the *potential* consequences of the incidents in the diary study (had they not been recovered from) at the same level of seriousness as the incidents normally reported to the existing Near Miss System (Kanse et al.,2002).

Discussion and Conclusions

In terms of the trustworthiness of the results, the diary study was a success in complementing/checking the existing Near Miss database: respondents were very open and frank with the author who collected these data from them, which otherwise they would not have shared with the plant’s management and safety staff. They also were quite clear in describing their reasons for not reporting. The fact that the second, totally independent, rater had no problem at all in using this taxonomy of reasons seems to indicate it’s potential usefulness in the future.

Looking at the results in Figure 1, the plant’s management and safety staff were somewhat surprised: some of them had suspected still some level of fear or shame to

report one's own errors, and/or a lower level of perceived *potential* consequences as the major reasons for not reporting successful recoveries. Rather, the results show a genuine difference (between operators and management) in *perceived importance*, as measured by the options of No Learning, Not Applicable, Recovery, and No remaining Consequences. It's up to the plant now to set up a program to clearly communicate their sincere interest in learning of the personal and system factors that make such successful recoveries possible, in stead of an attitude "all is well that ends well", which according to Kanse et al.(2002) is not compatible with an HRO. On the other hand the complete lack of mentioning being afraid or ashamed to report one's own errors may be seen as a very positive indicator of the plant's safety culture.

The success of this limited (in time and resources) diary study would suggest to repeat this procedure sometime after the implementation of a program to convince operators of the importance to report (especially!) successful recoveries: both to measure the impact on operator perception, and to monitor from time to time for other, possibly new, reasons for not reporting.

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