

Organisation

“Human Factors in Incident Investigation”



Human factors in incident investigation focuses on the management system failures and human failures that can make people lose control over hazards. To prevent or reduce the chance of such failures, we have to know what the failures are and what causes them. These failures often form a ‘chain’ that leads from people in the company who made decisions, long before an incident, to the person who seems to be immediately responsible. We need to understand this chain and be able to move logically forwards along it – to do risk assessments; and backwards – to do incident investigations.

Root causes are the underlying primary reasons for an incident.

Root cause analysis methods are a means of tracing the origins of incidents. They help organisations to learn from these experiences and indicate what steps to take to prevent future occurrences. Many incidents are blamed on the actions or omissions of an individual who was directly involved in operational or maintenance work. This typical, but short-sighted, response ignores the fundamental failures which create the situation leading to the incident. These are usually rooted deeper in the organisation’s design, management and decision-making functions.

Active failures have an immediate consequence and are usually made by front-line people such as drivers, control room staff, cylinder fill operators or machine operators. In a situation where there is no room for error these active failures have an immediate impact on health and safety.

Latent failures are made by people whose tasks are separated in time or space from operational activities, e.g. designers, decision makers and managers. Latent failures are typically failures in the design, implementation or monitoring of health and safety management systems. Examples of latent failures are:

- Poor design of plant and equipment;
- Ineffective training;
- Inadequate supervision;
- Inadequate or insufficient preventative maintenance;
- Ineffective communications;
- Inadequate resources (e.g. people, time or equipment), and
- Uncertainties in roles and responsibilities.

Latent failures provide as great, if not a greater, potential danger to health and safety as active failures. Latent failures are usually hidden within an organisation until they are triggered by an event likely to have serious consequences.

Learning more about human factors in incident investigations

If the answer to any of the questions below is 'no', then you need to take action.

1. Are incident investigations carried out by multi-functional teams? ☐
2. Are one or more task performers included in the investigation team where appropriate? ☐
3. Do investigations recognise that incidents normally have more than one cause? ☐
4. Do investigations identify underlying causes, human factors and management systems failures? ☐
5. Do investigations recognise that there are different types of failures that involve human factors, and take appropriate remedial action (i.e. avoiding superficial answers, such as "mistake" rather than exploring the factors leading to that "mistake")? ☐
6. Do investigations of failures look for root causes involving human factors or performance influencing factors [10]? ☐
7. Are individuals **only** "blamed" when an incident investigation determines that they have knowingly breached a rule or procedure? ☐
8. Are the people carrying out investigations properly trained and do they collectively have the right skills and competence? ☐
9. Do identified corrective and preventative actions address human factors and management system failures? ☐
10. Are the investigation findings and actions communicated to similar facilities, within the company and where there are learnings, shared with industrial and medical gas associations? ☐

What can I do about it?

- Report all incidents, near misses, unsafe conditions and unsafe acts.
- Actively participate in incident investigations.
- Help to identify all causes of the incident including potential Human Factors.
- Ensure evidence from an incident is preserved for the investigation team.
- Help communicate the incident, findings and actions to fellow employees and contractors.
- Act on the actions identified from the investigation process.

What should my company do about it?

All EIGA member companies should have an incident management system in place and:

- Have a culture where it is 'safe' for people to report incidents; reporting is encouraged.
- Have a good system to allow personnel to report incidents.
- Have competent incident investigators, whose experience includes interview techniques to ensure all facts are revealed.
- Thoroughly and systematically investigate all incidents, ensuring that human factors are properly identified during root cause analysis of incidents (see reference list for examples of methods identifying human factors).
- Identify corrective and preventive actions that people accept and that are effective in addressing the human factor causes.
- Always act on the actions items identified by the investigation team.
- Communicate the outcomes of the incident investigations and completion of key

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