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Managing Records, Investigation and Recommendation Management and Closure

David Janney

37.1

Introduction

Regardless of the investigation and root cause analysis method used, all processes must be fully defined and integrated into the business. Beyond individual investigation efforts, data compilation, trending, and corrective action programs can only be effective with a consistently applied approach and defined methods for records management. The process for management of information after completion of an investigation should be well documented with a written policy that includes reporting, recommendation or corrective action approval and closure, communication, legal and regulatory considerations, storage and protection, and confidentiality.

37.2

Reporting

The type and structure of investigation reports has to be developed along with report approval processes. Reports should be as short as possible (Asfahl, 2004) but still be long enough to provide all the facts. Reports should have all pertinent information relating to the incident and have key deliverables such as what happened (Paradies and Unger, 2008), causal factors, root causes, and corrective actions (with projected cost savings/avoidance).

A typical report is likely to begin with some level of generic information regardless of industry, country, or organization, such as incident dates and times, incident classification (serious, minor or safety, environment), investigation method used (Oakley, 2003), costs and injuries sustained, location, investigation team names, the name of the person preparing the report, and, in some cases, an executive summary. Industry, organization, country, and regulatory information may also be needed; therefore, the organization should ensure that reports are developed to include everything required and also information that is helpful to the reader of the report. Standard reporting allows for the meeting of expectations of the stakeholders (the readers) and provides consistency when reports are to be written by multiple investigators.

For lengthy investigations, it may be necessary to issue an interim report. While an interim report should be as accurate and thorough as possible, it must also be sensitive to the inclusion of updated information (CCPS, 1992) as the investigation progresses and new information is learned. Interim reports should be clearly marked as such so that no confusion exists after the investigation has been completed and the final report is issued. The same holds true for any “draft” reports that may be prepared and distributed for approval purposes.

An example of a standardized investigation report is presented in Figures 37.1 and 37.2.

37.3

Storage and Protection

For legal, regulatory, and business reasons, storage is important, and for electronic documents, a backup system should be developed. System security ensures that only those authorized to access the information can access it; a simple electronic password-protected folder that is on an automatic backup schedule will be sufficient in many cases. In larger organizations with many investigations and strict confidentiality requirements, a more robust system would need to be employed. For hardcopy documents, fireproof, lockable cabinets can be easily obtained. Based on the facility, need for access, and retention period, it may be necessary to store paper files in offsite storage locations; use of a data storage and disposal firm (Scammell, 2001) is an option available. In the author’s experience, mismanagement of records is common. Kahn (2004) states that this is particularly true for electronic records. Auditing of records can help prevent problems.

37.4

Retention

A retention policy should be incorporated into the written investigation and record-keeping protocols. Some considerations when developing retention requirements include primary (legal) considerations such as regulatory requirements or possible litigation, and secondary (business) considerations such as data needed for trending purposes. Records should be kept as long as needed, but no longer (Scammell, 2001). A lower volume makes management of records easier and requires less storage, and an organization would not want a regulator to find discrepancies in documents that are not required. There should be a retention schedule prepared and followed, with appropriate disposal methods stated.

For multinational corporations, it can be difficult to comply with the laws of each country in which they operate; however, compliance is necessary. Compliance generally is more difficult in the United States (Stephens, 1995) as many countries do not have robust reporting and retention laws.

DRAFT, INTERIM or FINAL	
Investigation Report – XYZ Company	Company Logo
Incident # 1	Incident date: January 1, 2012
Location: Plant 123	Classification: Serious
Report prepared by: John Jones	Report date: January 15, 2012
Investigation team: John Jones (team leader), Sam Smith	
Executive summary: (short narrative) Cost of incident, injuries, property damage: (costs and organizational impact) Investigation method used: (list method) Interim corrective actions: (short term or immediate fix) Sequence of events: (timeline presented in flowchart or bullet form)	
Investigation results: Causal factors: (list causal factors) 1. 2. 3. Root causes: (list root causes) 1. 2. 3. Generic/Systemic causes: (list systemic causes) 1. 2.	

Figure 37.1 Sample investigation report (page 1).

DRAFT, INTERIM or FINAL							
Page 2 Corrective Action #1: (detailed corrective action) Root causes fixed with this corrective action Cost of corrective action and return on investment Implementation: (name of person who will implement) Implementation date: Verification: (name of person who will verify implementation) Verification date: Validation: (develop a plan to ensure effectiveness) Validation date: Corrective Action #2: (etc.)							
Signatures (optional) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border-bottom: 1px dashed black; padding-bottom: 5px;">John Jones, team leader</td> <td style="width: 50%; border-bottom: 1px dashed black; padding-bottom: 5px;">Date</td> </tr> <tr> <td style="border-bottom: 1px dashed black; padding-bottom: 5px;">Sam Smith, team member</td> <td style="border-bottom: 1px dashed black; padding-bottom: 5px;">Date</td> </tr> <tr> <td style="border-bottom: 1px dashed black; padding-bottom: 5px;">HSE Manager (name), report approver</td> <td style="border-bottom: 1px dashed black; padding-bottom: 5px;">Date</td> </tr> </table>		John Jones, team leader	Date	Sam Smith, team member	Date	HSE Manager (name), report approver	Date
John Jones, team leader	Date						
Sam Smith, team member	Date						
HSE Manager (name), report approver	Date						

Figure 37.2 Sample investigation report (page 2).

Organizations should keep documents to meet regulatory burdens but also be aware of the need for documents in future litigation; having easy-to-find, accurate documentation not only protects the company but also saves time and money (Apke, 2007) when those documents are needed for litigation or organizational purposes.

37.5

Confidentiality

Organizations may find a need to keep all or certain reports restricted to only those who need the information. Lessons learned are very important and can be disseminated in different ways (this was discussed in Chapter 36); however, confidentiality needs to be defined for reports and appropriate measures used, such as locked cabinets or password-protected electronic folders to protect the data based on organizational needs. For organizations with very sensitive material contained in reports, it may be necessary to have those who prepare and receive reports sign a confidentiality agreement or, at the very least, be required to adhere to a written confidentiality policy that restricts access to those with a specific business need. An organization can ill afford to have sensitive data disseminated throughout the company when litigation or regulatory action is likely, for example.

37.6

Legal Issues

Investigators encounter a dilemma when preparing reports – balancing problem solving and protecting the organization from litigation – at times it may seem that these are competing goals (Ferry, 1981). Corporate counsel may be involved in the review of reports prior to publishing; however, the purpose of the report is to document accurately what happened and how the problems identified will be corrected, so this must be the overriding consideration. Nevertheless, loss prevention engineers/professionals have to be aware of the legal pitfalls of report contents and wording considerations. Indeed, in countries where reports are discoverable in court proceedings, the person writing the report is the one who may be deposed at a later time to defend the contents, not counsel. One only needs to be deposed once to understand this dynamic fully. Using legal resources wisely can help mitigate damage to the organization for significant incidents when litigation may result. Nevertheless, a good, comprehensive, report with accurate records can be the best defense (Goetsch, 2005) against legal problems.

Company policy should dictate what is contained in company reports, what is saved for possible litigation purposes, and also account for any chain of custody issues (CCPS, 1992). A comprehensive report with pictures, diagrams, and so on can be very helpful to the overall understanding of an incident; however, it can also be used against the organization in legal proceedings. An organization may choose to save everything used for the investigation in its records (such as investigator notes), or can consider these items as “tools” used to create the official document (Skupsky, 1993) or “work in progress,” and destroy them after the final report has been approved.

It is wise for loss prevention engineers/professionals to be aware of the particular laws governing discovery in their jurisdiction, as laws vary by state, province, or country and the medium (electronic/hardcopy); for example, a comparison of

discovery rules and precedent in the United Kingdom, Canada, and Australia (Tyler, Neill, and Clark, 1998) reveals both distinct and subtle differences, particularly for electronic records.

37.7

Regulatory Considerations

Certain regulatory burdens must be met with respect to reporting and depending on local requirements. As with potential litigation, regulatory penalty potential has to be considered. In this case, legal counsel can be a valuable resource for report preparation. If regulators are likely to see a report, addressing regulatory questions or problems (such as non-compliance) in the report thoughtfully may mitigate questions and potential action later. When regulatory burdens not being met have been discovered through the investigation process, legal counsel should be consulted for appropriate presentation in the report.

When considering occupational safety and health, each country has specific regulators such as the Occupational Safety and Health Administration (OSHA) in the United States and the Health and Safety Executive (HSE) in the United Kingdom, and these typically will be what the regulator loss prevention engineers/professionals will be most concerned with. However, there are likely to be other regulators that must be considered such as industry-specific regulators and local enforcement agencies (a city fire department, for example). It is important to ensure understanding of reporting requirements and consider this in the development of investigation reports. In specialized industries, the industry-specific regulator may take a greater role in some cases than the country's main safety regulator. For example, in the rail industry in the United States, companies have specific reporting requirements (Brauer, 1994) to both the National Transportation Safety Board (NTSB) and the Federal Railroad Administration (FRA).

37.8

Types of Records

While the focus of this chapter is investigation records, it should be noted that other important records exist, and it may be beneficial to employ similar recordkeeping for these also. Audit results, regulatory citation and response, hazard reports, and product safety reports are a few examples where problems are identified, and root cause analysis and corrective action performed. Beyond pure recordkeeping considerations, there may be like data that can be used together for trending and continuous improvement purposes. Having the data stored in a similar fashion facilitates these activities. Document control is an essential part of a management system (Sullivan and Wyndham, 2001), whether it be the safety management system (SMS) or environmental management system (EMS). It should also be noted that ISO 9000 requires robust document recordkeeping systems (Stephens, 1995); many companies are or are seeking to be ISO 9000 registered, particularly in Europe.

37.9

Recommendation Management and Closure

It is widely accepted that in order to have investigations that result in elimination of root causes identified, organizations must employ a “closed-loop” process. The assignment of completion of corrective actions or recommendations, due dates, and closure of findings or recommendations should be part of the overall design of the process. Tracking of status and reporting are also important considerations. Data can be tracked through something as simple as a spreadsheet, or as comprehensive as an automated recommendation assignment and closure system. Such a system can be designed in-house or purchased from a variety of sources, and can keep records and track status. The system can also be queried for specific data during corrective action analysis or trending endeavors; see Figure 37.3 (TapRoot[®] Enterprise software).

Appropriate documentation of the closure of findings and recommendations is one of the most important recordkeeping considerations. In some organizations, an approval by someone other than the person responsible for the corrective action may be required by policy. Either way, in the author’s opinion, the process must be fully defined to ensure closure. Having an independent review of corrective actions before closure can help spot weaknesses in corrective action plans; however, for lower level incidents, it may not be necessary. A tracking mechanism for open recommendations with due dates and responsible parties ensures that backlogs do not occur. Follow-through from all levels of the organization is essential (Heinrich, 1950) and should be built into the process. ISO standards also require a closed-loop process for managing corrective actions – as more companies and more parts of the world move in this direction, standardized processes will become even more important.

Some organizations have organized management review processes – a formal review of each accident report (Seivold, 2004) for continuous improvement purposes. This can help both to prevent implementation of ineffective corrective actions and to provide valuable feedback to investigators. A checklist (with or without scoring) that includes all of the items the organization desires in its reports and has been carefully developed can be used to complete the review and to provide that feedback. When considering management review, the corrective action program itself becomes an example of a feedback and improvement process (Loud, 2004).

37.10

Escalation

In order to avoid backlogs and close corrective actions as soon as possible, a process to escalate recommendations that have not been closed should be employed. Due dates must be defined on any corrective action documents and the escalation process clearly stated in company policy. The escalation can occur in stages; for example, an overdue recommendation generates a message to the appropriate manager, and a 2 week overdue notification goes to a higher level such as a director or vice

TapRoot® Software

REPORTS->Corrective Action List

CORRECTIVE ACTION STATUS REPORT

☒ Audit ☐ Investigation

REPORT TYPE

☒ Implementation Status Report ☐ Verification Status Report ☐ Validation Status Report

REPORT SCOPE

Corrective Action Assigned To: ☒ All ☐ Specific Location ☐ Specific Classification(s)

Responsibility Of: Responsible Person and/or Responsible Department

REPORT DATES

Choose Report Dates: ☐ Due Dates From To
☐ Completion Dates From To
☐ Past due as of
☐ Omit Complete Items ☐ Omit Blank Dates

TapRoot® Root Cause Distribution Report

For All Investigations (26 total)

Reference the TapRoot® Root Cause Tree® Dictionary for Root Cause Definitions.

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Basic Cause Distribution

For Human Performance Difficulties



Figure 37.3 Corrective action status report screen and root cause distribution report (TapRoot® Enterprise software). (Copyright © 2011 by System Improvements, Inc. Used with permission.)

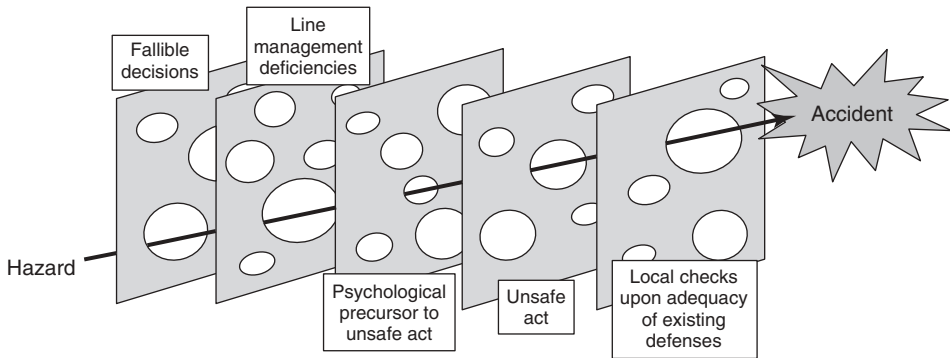


Figure 37.4 Swiss Cheese Model. (Copyright © 2008 by System Improvements, Inc. Used with permission.)

president. Automatic notifications may be possible through the company incident management system or something as simple as an outlook calendar reminder.

37.11

Corrective Actions

Both those writing and approving correction actions should look for actions that prevent recurrence of the root causes identified in the investigation (Ammerman, 1998). In fact, the purpose of accident investigation is to implement corrective action (Vincoli, 1994), and collecting data and performing investigations without taking effective action are a waste of resources (Okes and Westcott, 2001). Corrective actions should be specific in detail (Paradies and Unger, 2008), so that those tasked with implementation have a clear understanding of what is to be accomplished.

In most situations, there are several different ways to solve a given problem. To decide which solution is best, assess the feasibility (Ferry, 1981) and cost of each solution (Mager and Pipe, 1997) and strive to implement fixes that will best work for the specific situation. Several experts (Paradies and Unger, 2008) and regulatory bodies (Health and Safety Executive, 2006) give guidance on this topic, with hazard removal and engineering controls being the strongest, and administrative control and personal protective equipment being the weakest. Asfahl (2004) stated that eliminating hazards is one of the most overlooked aspects of many corrective action reports.

The “Swiss Cheese” model holds that multiple layers of barriers or safeguards are normally breached in order for an accident to occur (Reason, 2008); therefore, corrective actions should add layers of protection while strengthening existing layers. This is known as “defense in depth.” Paradies and Unger (2008) presented a variation of Reason’s model with breached layers as in Figure 37.4.

Other considerations to remedy the root cause of incidents include long-versus short-term and targeted versus generic (systemic) solutions (Wilson, Dell, and Anderson, 1993). In the author’s experience, developing corrective actions for generic/systemic causes is generally more time consuming and costly, because

more people/departments are involved and fixes are broader in scope (and therefore greater in cost). However, effective management of these issues reduces multiple incidents and ultimately is the best way to solve organizational problems.

37.12

Implementation, Verification, and Validation

Corrective actions should have clear implementation, verification, and validation plans (Paradies and Unger, 2008); implementation – who will perform the actions and by when; verification – who will check to make sure the actions were completed and by when; validation – a detailed plan describing how the organization will know that the corrective actions worked as intended.

Tracking of implementation and verification status and dates should be incorporated into the tracking mechanism being employed. For validation, as mentioned, a plan must be developed – auditing (either special audits or incorporation into existing audits) of results is one example of how this might be accomplished. If it is at all possible, measurements (goals) to establish effectiveness should be incorporated into the plan. A formal, written review process greatly increases the likelihood of success (DeFeo, 1999).

Timeliness of corrective action implementation is important; problems should be fixed as soon as possible to prevent recurrence; however, it is more important to have a good solution than a quick one. Nevertheless, the benefits of corrective action do not materialize until the corrective actions have been implemented (NSC, 1994). In instances where the desired corrective action will take long periods of time, an interim corrective action should be implemented.

37.13

In Review

The way an organization manages its investigation reporting and corrective action processes can be a major factor in the success of the organization solving problems that have been identified through accident investigation. Since the purpose of any investigation is to prevent recurrence, a thoughtful approach is required. And while solving problems is the overriding consideration, other aspects of records management are also important, such as storage, protection, and legal and regulatory requirements. A well-documented process and a closed-loop corrective action system are essential.

References

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|---|---|
| <p>Ammerman, M. (1998) <i>The Root Cause Analysis Handbook</i>, Productivity Press, New York.</p> <p>Apke, T. (2007) <i>Rev. Bus.</i>, 27 (3), 64–71.</p> | <p>Asfahl, C.F. (2004) <i>Occupational and Industrial Safety Health Management and Engineering</i>, 5th edn, Pearson, Boston, MA.</p> |
|---|---|

- Brauer, R. (1994) *Safety and Health for Engineers*, John Wiley & Sons, Inc., New York.
- CCPS (Center for Chemical Process Safety) (1992) *Guidelines for Investigating Chemical Process Incidents*, American Institute of Chemical Engineers, New York.
- DeFeo, J. (1999) Strategic deployment, in *Juran's Quality Handbook*, 5th edn (eds J.M. Juran and A. Blanton Godfrey), McGraw-Hill, New York.
- Ferry, T. (1981) *Modern Accident Investigation and Analysis*, John Wiley & Sons, Inc., New York.
- Goetsch, D. (2005) *Occupational Safety and Health for Technologists, Engineers, and Managers*, 5th edn, Prentice Hall, Upper Saddle River, NJ.
- Health and Safety Executive (2006) *Five Steps to Risk Assessment*, Health and Safety Executive, Bootle.
- Heinrich, H.W. (1950) *Industrial Accident Prevention*, 3th edn, McGraw-Hill, New York.
- Kahn, R. (2004) *Inf. Manage. J.*, **38** (3), 28–36.
- Loud, J. (2004) *Prof. Saf.*, **49** (12), 32–36.
- Mager, R. and Pipe, P. (1997) *Analyzing Performance Problems*, 3th edn, Center for Effective Performance, Atlanta, GA.
- NSC (National Safety Council) (1994) *Accident Prevention Manual for Business and Industry* (ed. P.M. Laing), 10th edn, National Safety Council, Itasca, IL.
- Oakley, J.S. (2003) in *Accident Investigation Techniques* (ed. C.T. Coffin), American Society of Safety Engineers, Des Plaines, IL.
- Okes, D. and Westcott, R. (2001) *The Certified Quality Manager Handbook*, 2th edn, ASQ Quality Press, Milwaukee, WI.
- Paradies, M. and Unger, L. (2008) *TapRooT® – Changing the Way the World Solves Problems*, System Improvements, Inc., Knoxville, TN.
- Reason, J. (2008) *The Human Contribution*, Ashgate Publishing, Farnham.
- Scammell, A. (2001) *Handbook of Information Management*, Aslib-IMI, London.
- Seivold, G. (2004) *Saf. Dir. Rep.*, **4** (4), 2–3.
- Skupsky, D. (1993) *Rec. Manage. Q.*, **27** (2), 40–44.
- Stephens, D. (1995) *Rec. Manage. Q.*, **29** (2), 69–76.
- Sullivan, R. and Wyndham, H. (2001) *Effective Environmental Management: Principles and Case Studies*, Allen & Unwin, Crows Nest, NSW.
- Tyler, M., Neill, D., and Clark, S. (1998) *Def. Counc. J.*, **65** (2), 208–225.
- Vincoli, J. (1994) *Basic Guide to Investigation Loss and Control*, Van Nostrand Reinhold, New York.
- Wilson, P., Dell, L., and Anderson, G. (1993) *Root Cause Analysis; a Tool for Total Quality Management*, Quality Press, Milwaukee, WI.