Accident Analysis and Prevention 72 (2014) 351–358

Contents lists available at ScienceDirect

Accident Analysis and Prevention

journal homepage: www.elsevier.com/locate/aap

Why do organizations not learn from incidents? Bottlenecks, causes and conditions for a failure to effectively learn

Linda Drupsteen[a,b,*], Peter Hasle[b]

[a] TNO, Schipholweg 77-89, Leiden, The Netherlands
[b] Centre for Industrial Production, Department of Business and Management, Aalborg University Copenhagen, A.C. Meyers Vænge 15, 2450 Copenhagen SV, Denmark

ARTICLE INFO

Article history:
Received 14 January 2014
Received in revised form 12 June 2014
Accepted 23 July 2014
Available online 11 August 2014

Keywords:
Organization
Safety
'Failure to learn'
Causes
Cases
Accident

ABSTRACT

If organizations would be able to learn more effectively from incidents that occurred in the past, future incidents and consequential injury or damage can be prevented. To improve learning from incidents, this study aimed to identify limiting factors, i.e. the causes of the failure to effectively learn. In seven organizations focus groups were held to discuss factors that according to employees contributed to the failure to learn. By use of a model of the learning from incidents process, the steps, where difficulties for learning arose, became visible, and the causes for these difficulties could be studied.

Difficulties were identified in multiple steps of the learning process, but most difficulties became visible when *planning actions*, which is the phase that bridges the gap from incident investigation to actions for improvement. The main causes for learning difficulties, which were identified by the participants in this study, were tightly related to the learning process, but some indirect causes – or conditions – such as lack of ownership and limitations in expertise were also mentioned.

The results illustrate that there are two types of causes for the failure to effectively learn: *direct causes* and *indirect causes*, here called *conditions*. By actively and systematically studying learning, more conditions might be identified and indicators for a successful learning process may be determined. Studying the learning process does, however, require a shift from learning from incidents to learning to learn.

1. Introduction

"Every day, 6300 people die as a result of occupational accidents or work-related diseases" states the International Labour Organization ILO on their website (ILO, 2013). They also state that this means that "every 15 seconds, somewhere around the world a worker dies from a work-related accident or disease" (ILO, 2013). Employers have a legislative responsibility to look after the health of workers and many employers also want to prevent injury or loss. Therefore employers put effort into the prevention of accidents and incidents (such as near-misses). Besides the prevention of personal injury, employers also aim to prevent material damage and process disturbances. In recent years, both researchers and practitioners have become increasingly interested in "learning from incidents" as a strategy to prevent incidents and accidents. Learning from incidents involves both the analysis of incidents and a follow-up on this analysis (Drupsteen and Guldenmund, 2014).

In the analysis of incidents, causes that led to the incident are identified. A well-known distinction in the causes of incidents is the distinction between active failures–or direct causes- and latent conditions (Reason, 1990; Groeneweg, 2002). Active failures are the activities that directly contribute to the emergence of an incident, such as human errors. Latent conditions are the weaknesses in the organization that contribute to the situation in which an accident could occur. For the prevention of accidents, both active failures and latent conditions in the organization need to be addressed. Many ways to identify these failures and conditions are described in the safety literature (e.g. by Kontogiannis et al., 2000; Reinach and Viale, 2006; Sklet, 2004; Le Coze, 2008).

For successful learning, the analysis of an incident should be followed by remedial actions that address the identified causes. This follow-up is necessary for the prevention of future incidents (Lindberg et al., 2010; Jacobsson et al., 2011), because if the causes are addressed effectively, they cannot lead to repetition of similar incidents. Effective learning from incidents is therefore also part of the safety management system. Despite the attention for

* Corresponding author at: TNO, Safe and Healthy Business, Schipholweg 77-89, 2316 ZL Leiden, The Netherlands. Tel.: +31 888665182.
E-mail address: linda.drupsteen@tno.nl (L. Drupsteen).

http://dx.doi.org/10.1016/j.aap.2014.07.027
0001-4575/

learning from incidents as a strategy to prevent incidents and accidents, many organizations fail to effectively learn from incidents (Drupsteen et al., 2013).

Some reasons why organizations fail to learn effectively from incidents are considered in earlier studies (e.g. Pidgeon and O'Leary, 2000; Choularton, 2001; Lampel et al., 2009; Hovden et al., 2011). According to these studies, causes why organizations don't learn are for instance: too little incidents are reported (Mancini, 1998; Sanne, 2008; Rasmussen et al., 2013), too little information about the incident is given (Sanne, 2008), latent conditions are not identified (Jacobsson et al., 2009; Körvers and Sonnemans, 2008) or the implementation of remedial actions was impeded (Cedergren, 2013). These causes directly contribute to a failure to effectively learn, just like active failures directly contribute to the emergence of an incident. Conditions that hinder learning from incidents have also been studied, such as a lack of trust (Pidgeon and O'Leary, 2000; Chevreau et al., 2006), a blame culture (Dekker, 2009), a limitation in the competences of the people involved (Hovden et al., 2011) or resistance to change (Lundberg et al., 2012). Especially trust and openness are considered to be necessary values within an organization. Without these values, incidents will be kept secret, investigations will focus only on a selection of factors, and learning opportunities will remain unused.

Although these studies highlighted several causes for a failure to effectively learn from incidents from a theoretical perspective, there are not many studies that systematically investigated why organizations fail to learn in practice. In this study we aim to identify causes for the 'failure to learn' in seven organizations. The objective of this paper is to determine what causes and conditions need to be addressed to improve learning from incidents and so to contribute to the prevention of incidents.

2. Theory

The aim of this study is to identify causes and conditions that contribute to problems in the learning from incidents process. An incident is in this study defined as any unwanted event, irrespective of its consequences. This definition encompasses accidents, near-misses, operational disturbances, errors etc. The main difference between these events is whether they led to damage or injury, or not. In our opinion, all those events are preceded by similar causes and conditions. Therefore, although these events require different responses after they occur, they all provide similar lessons to learn from.

Before explaining how we studied the learning from incidents process, we will briefly discuss the theories that are used in the development of this study. As was pointed out in the introduction to this paper we use the concepts of direct factors and indirect factors to study the failure to effectively learn. This concept is known from accident causation theory where Reason (1990, 1997) introduced the active failures and latent failures as factors that contribute to an accident. Latent failures create sub-optimal conditions in an organization and are the real target for improvement in order to control the environment (Groeneweg, 2002). Other commonly used terms that describe the causes that are not directly linked to the accident, are indirect causes, root causes or underlying causes. The systemic latent failures may lie dormant for years before they align with the active failures, meaning the operational 'direct' failures, and contribute to an incident (Reason, 1997). In this study we use the term causes to describe the factors that directly contribute to negative events, and the term conditions to describe the factors and issues that indirectly contribute to negative events.

Some theorists argue that traditional models of accident causation, such as that of Reason, are not able to capture the dynamics of the real world (Hollnagel et al., 2006; Leveson, 2004; Rasmussen, 1997). They have presented systemic models that focus on the complexity and interactions that may lead to accidents. Two well-known systemic modeling approaches are Rasmussen's hierarchical sociotechnical framework (1997) and Leveson's (2004) Systems-Theoretic Accident Model and Processes model: STAMP. Despite the differences, these models also emphasize that the weaknesses in the organization or system allow actions (causes) on an operational level to result in an accident. These weaknesses (conditions) are the issues that we aim to identify through studying incidents, and in this case through studying learning from incidents.

The distinction between causes and conditions relates to the concept of single and double loop learning as developed by Argyris and Schön (1979). Addressing the conditions that contributed to an incident, is important for so-called double loop learning. If an organization exhibits single loop learning, only the specific situation or processes are improved. However, when an organization exhibits double loop learning, improvements are not limited to the specific situation but the values, assumptions and policies that led to actions in the first place, are questioned (Argyris and Schön, 1979). If only the direct cause of an incident is addressed, this relates to single loop learning. In practice, this would mean that recurrence of a specific situation is prevented, whereas if the conditions that contributed to an incident are addressed, this is likely to increase safety in general, and so to prevent multiple future incidents.

In this study, we applied the distinction between direct and indirect factors to explain difficulties in the learning from incidents process itself. This means that instead of identifying causes and conditions that contributed to an incident, this study focuses on the learning process itself. By identifying and addressing conditions for learning from incidents, the learning capability of the organization can be improved. This learning to learn process (called Deutero learning by Argyris and Schön, 1996) enables an organization to continually improve (Senge, 1990). Building on Argyris and Schön (1979), learning from incidents therefore encompasses both the study of incidents to identify weaknesses, and addressing those weaknesses (single loop learning), and in a similar way, learning to learn from incidents encompasses both studying the learning process to identify weaknesses, and addressing these weaknesses. Addressing weaknesses that are identified through studying incidents is likely to prevent future incidents and so contribute to safety, and addressing weaknesses that are identified through studying the learning process, is likely to prevent failure to learn, i.e. it will contribute to safety, through increased learning capability.

To study the causes and conditions that contribute to a failure to learn from incidents, we used a simplified model of a learning from incidents process, that is described in an earlier study (Drupsteen et al., 2012). In the model of the learning from incidents process, learning is represented as a process with five phases (Drupsteen et al., 2012): acquiring information, investigation and analysis, planning interventions, intervening and evaluating. The first phase, *acquiring information*, consists of reporting and registration of incidents. In some organizations this includes only the registration of accidents, in others also near-misses, dangerous situations or process deviations are registered to learn from. In the second phase of the learning process, *investigation and analysis*, lessons are identified. In this phase, a first prioritization of incidents is made, because some are investigated and others are not. This phase also includes choices on the method of investigation and the people to involve in the investigation process. In the third phase, *planning*, identified lessons are translated into actions. In this phase choices are made on what causes to address, how to address them, which resources to allocate and when to perform actions. The fourth phase, *intervening*, consists of performing and monitoring actions, to see if they are performed as planned. In the fifth phase, *evaluating*, both the effect of the actions, and the learning process itself are evaluated. In each phase, the learning