



# Safety framing and compliance in relation to standards: Experience from the Australian gas pipeline industry



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## ABSTRACT

Safety is conceptualized in different ways across hazardous industries, but it is often expressed in terms of compliance. Compliance is about rules in various forms, including standards. Standards are core reference points that guide the design, construction and management of hazardous infrastructure such as high pressure gas pipelines. While standards are critical, we argue that neither their application nor their relationship to safety should be taken for granted. In this article, we investigate the ways in which safety as compliance in relation to standards manifests, the ways it is contested, its strategic use and implications for major accident risk management. Building on the framing literature, this article reveals where these frames reside and their interactions. We use qualitative methods to examine the framings of safety present in accounts of Australian pipeline industry members. We argue that the frames (compliance as expert judgment and compliance as process) are contested, which leads to the creation of a hybrid or compromise frame – one which integrates the underlying concerns of both frames. Best case, a dialogue between people using both frames results in a hybrid frame involving expert use of standards, with consideration of industry context. Worst case, standards are thoughtlessly applied, or are used as a way to displace organizational responsibility for safety that may be in conflict with business pressures.

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## 1. Introduction

It is about half way through the interview. The engineer has been sharing his professional background and the nature of his work with one of the authors who is interviewing him about his understanding of safety and development of engineering expertise. We get to a more critical question about potential conflict between a sound engineering decision and cost and schedule pressures. He responds: 'Safety always goes first'. This is a common statement, and one that we could take from virtually any of our interviews with hazardous industry professionals. In this case, the engineer supported his claim with an example of making a decision that had the potential to incur additional costs, but was necessary in order to comply with the relevant standards. The engineer explains, 'We just had to make the call. You can't not do it, knowing that you are not complying with standards'. In this interview, as in many others, safety is being discussed in terms of compliance with standards. In this case, this was the end of the story. There was no push back from other key actors involved in the decision.

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If we only examined examples such as this one, we might conclude that major accident risk management in hazardous industries operates in a world without conflict. However, our article reveals that safety management, and indeed the nature of the risks faced by hazardous industries, are not uniformly conceptualized. For example, in the Australian gas pipeline context, some industry members see the potential for catastrophic failure as a non-risk. A senior pipeline engineer commented:

The reality is there are not many risks, and the reason is that pipelines are very forgiving. They are tested to demonstrate that they are very strong . . . Pipelines take a long time for things to go wrong. When they do go wrong we throw them away.

While there has not been loss of life due to a high pressure gas pipeline failure in Australia, catastrophic events like the failure at San Bruno, California draw into question the validity of confidence about integrity management in these systems (Hayes and Hopkins, 2014). At the same time, there is an alternative view among engineers working in this industry of the potential for disaster, captured by another pipeline engineer: 'I keep saying it is not a matter of *if*, it is *when*'.

In light of contestation over the nature of risks coupled with the unacceptable consequences of failure, safety researchers have argued for the use of 'good' rules as a safety management strategy

(for a review, see [Hale and Borys, 2013a, 2013b](#)). Risk levels fall across a continuum, but decisions to take one course of action over another are more definite and so rules provide necessary guidance for decision makers ([Hopkins, 2011](#)). However, the use of rules is not straightforward because actors can interpret and respond to these rules in different ways, which undermines claims that safety is ensured simply via compliance. One way we can examine the complexities is via the lens of framing. In essence, frames are an abstraction; a linguistic and mental short cut for making sense of complex situations ([Goffman, 1974](#)). Based on interviews in the Australian gas pipeline industry, we critically interrogate conceptualizations of safety and safety management via compliance with standards. In this case study, compliance with standards is not framed uniformly. In the first frame we address, safety as compliance is seen as a matter of expert judgment. In this frame, safety is managed and debated in the language of standards, but standards are understood as requiring expert understanding to apply them safely. The second framing of safety as compliance sees compliance with standards as providing a straightforward set of requirements that ensure safety. Digging deeper into standard application is generally thought to be unnecessary given the strong safety record of the industry. In this article we refer to the two frames as compliance as expert judgment and compliance as process.

To examine these framings of safety as compliance, we first start with an engagement of the framing literature in the context of safety and risk research. We establish a conceptual framework, which draws attention to different scales of analysis, the ways in which frames are enacted and issues with power and frame contestation. We then introduce our empirical research, including an overview of the data and a discussion of methods in the context of the conceptual framework. On these foundations in Section 4 we present and analyze the two framings of safety as compliance observed in the research, which are shown to reside at different scales (individual and organizational). Our analysis highlights the potential for conflict between framings of safety as compliance, and in Section 5 we explore the dynamics of this frame contestation by looking at relations between a design consultancy and their clients. We argue that in the Australian gas pipeline industry there are at least two frames (compliance as expert judgment and compliance as process) which are more or less present in different organizations and personal biographies. The two frames are also contested, which can lead to the creation of a hybrid or compromise frame – one which integrates the underlying concerns of both frames. Participants in this research did not often appear aware of this frame contestation, but we suggest that conscious engagement with the underlying assumptions behind frames and their implications is vital to safe outcomes.

## 2. Framing in safety and risk research

Increasingly, frames (and framing) are being used to understand the social construction of risk in a variety of different institutional settings and at different scales. This reflects a broader ‘turn to framing’ seen across many disciplines in the social sciences ([Dewulf, 2013](#); [Hertog and McLeod, 2001](#); [Metze, 2014](#); [Ransan-Cooper et al., 2015](#)). In a general sense, frames organize central ideas of a complex issue, which endow certain dimensions with greater apparent relevance than others. However, the diversity of ways that framing has been used in the social sciences has led to significant conceptual confusion and calls for greater integration and synthesis ([Cornelissen and Werner, 2014](#); [D’Angelo and Kuypers, 2010](#)). A detailed review of the conceptual intricacies is beyond the scope of this article (for reviews see [Cornelissen and Werner, 2014](#); [D’Angelo and Kuypers, 2010](#)). Nonetheless, our brief review finds a similar lack of conceptual cohesion in the use of

framing within safety and risk research, as we will outline below. Taken as a whole, the key problem is a lack of cross-scale analysis; a tendency for framing to be analyzed only at one scale. A consequence of this is that analysis tends to be limited to static descriptions of frames, rather than analysis of how frames are created in social interaction and how they influence social life.

At one extreme, studies of risk and framing focus analysis at the micro scale. For instance, there is a stream of psychology research ([Jefferies-Sewell et al., 2015](#); [von der Heyde et al., 2015a, 2015b](#)) that investigates how individuals respond to the presentation of risk communication. Researchers in this tradition are less interested in where frames reside or how they are used in practice, but rather focus their analysis on what type of language cues particular responses to risk. Another approach to understanding risk behavior at the individual scale situates inquiry within institutional settings. [Morrow et al. \(2015\)](#) used framing to explore why health and safety in the UK continues to remain unaddressed in the design phase of construction, despite the introduction of legislation mandating this. Their findings revealed that design engineers framed health and safety as outside their professional responsibility leading to a tendency to neglect health and safety issues. [Sanne \(2008\)](#) similarly focuses on professional framing of risk and its implications for practice in an ethnography with railway workers. He argues that risk taking, far from being a deviant behavior, can make sense within particular framings of risk. This conclusion obviates claims that railway workers need further training and engagement in improved reporting systems. In this case, railway workers took risks they perceived to be manageable within the context of an occupational responsibility frame. While the pressure of corporate and occupational discourses (in terms of ‘service to the nation’) is explored in [Sanne’s](#) work, there is less insight into how corporate/management action reinforces this discourse. The rich detail on how the framing plays out in specific situations could be complemented by exploring how this frame gets developed, and where and how it might be contested.

Other studies have focused on frame dynamics at institutional and industry scales. This approach to frame analysis explores what sustains particular frames and what provokes shifts in frames. [Behr et al. \(2015\)](#) apply frame theory to several case studies of critical incident inquiries in hospitals. Interestingly, in all case studies, there was a shift in the framing of risk throughout the inquiry process from viewing risk as an individual’s lack of professionalism to a managerial frame which put the onus on management, and, eventually, to a governance frame which focused the story on the laws and regulations governing hospital risk management. Conflict between the different frames throughout the inquiry process was the trigger for these frame changes. This study is an example of how tracing the construction of frames across time necessarily entails an engagement with cross scale analysis. [Metze \(2014\)](#) took a similar approach in a macro analysis of risk framings of hydraulic fracking in the public arena in the Netherlands through an interpretive analysis of peaks of media activity. Her study revealed significant shifts in frames in the public arena with implications for what actors were involved in managing the issue as well as, eventually, putting the broader issue of Dutch dependency on gas on the agenda. Missing from such an analysis is the subtleties and mechanics of how the frame shifts come about. Media articles can only ever be a limited proxy of what people involved in the issue are actually saying and doing, a methodological limitation for frame analysis discussed in more detail in Section 3.

### 2.1. Framing safety: Conceptual pathways forward

All these studies reflect a significant diversity in how framing has been used to explore safety and risk. In many of these studies, the singular focus at one scale of analysis limits the potential of the

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