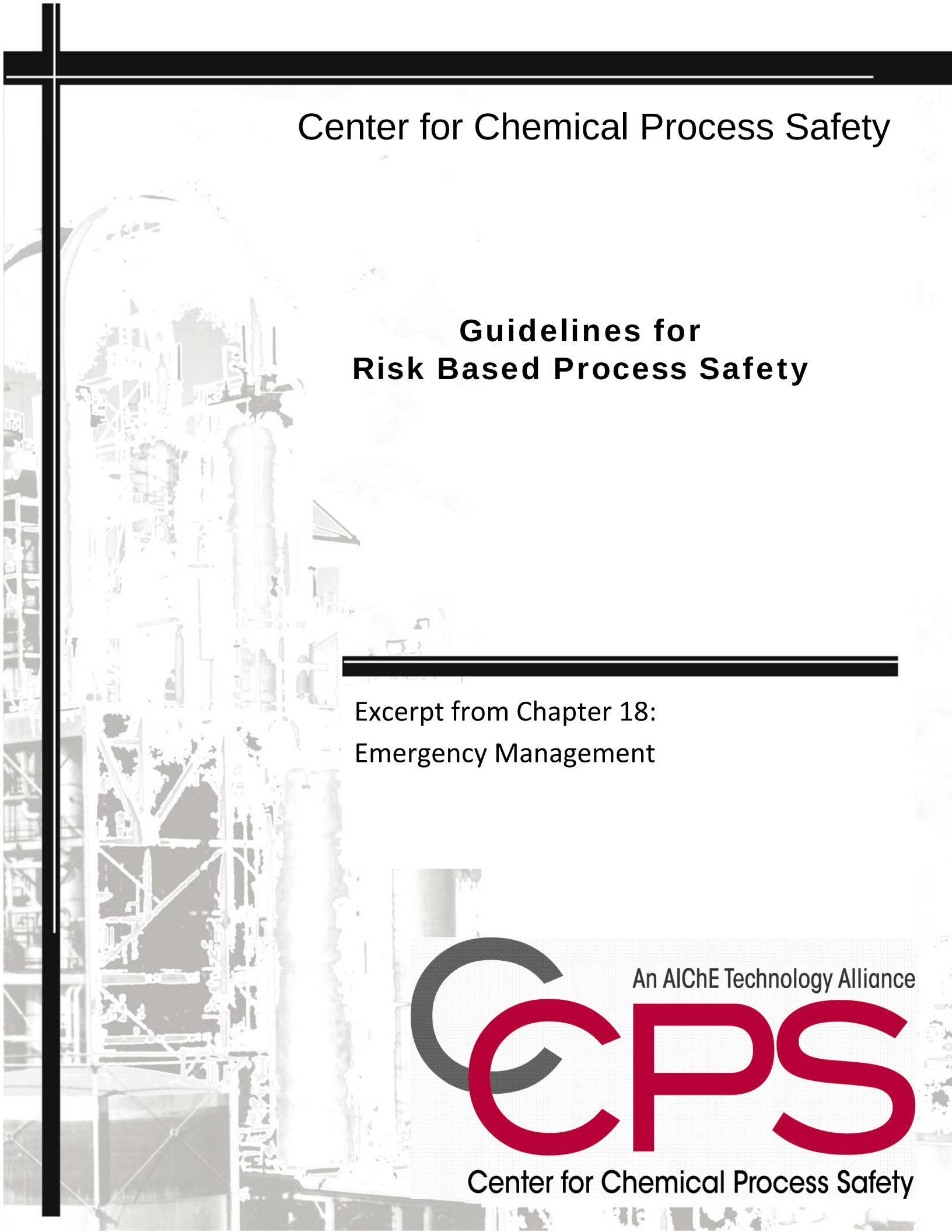




Center for Chemical Process Safety

Guidelines for Risk Based Process Safety

Excerpt from Chapter 18:
Emergency Management



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18.1 ELEMENT OVERVIEW

Developing appropriate emergency management and response capabilities is one of nine elements in the RBPS pillar of **managing risk**. This chapter describes the attributes of a risk-based management system for emergency management. Section 18.2 describes the key principles and essential features of a management system for this element. Section 18.3 lists work activities that support these essential features, and presents a range of approaches that might be appropriate for each work activity, depending on perceived risk, resources, and organizational culture. Sections 18.4 through 18.6 include (1) ideas for improving the effectiveness of management systems and specific programs that support this element, (2) metrics that could be used to monitor this element, and (3) issues that may be appropriate for management review.

18.1.1 What Is It?

Emergency management includes (1) planning for possible emergencies, (2) providing resources to execute the plan, (3) practicing and continuously improving the plan, (4) training or informing employees, contractors, neighbors, and local authorities on what to do, how they will be notified, and how to report an emergency, and (5) effectively communicating with stakeholders in the event an incident does occur.

The scope of the *emergency* element extends well beyond “putting out the fire.” This chapter focuses on three aspects of emergency planning and response:

- Protecting people, including people who are onsite, offsite, and emergency responders.
- Responding to catastrophic accidents involving explosions, large releases of chemicals, or other large releases of energy.
- Communicating with stakeholders, including neighbors and the media.

This chapter does not specifically address accidents caused by natural disasters or malevolent actions (e.g., intentional attack, public demonstrations, sabotage), although managing the consequences of many of these events will be similar to what is done in the event of a process safety incident. This chapter also does not address related issues such as business continuity planning, recovery, or requirements to preserve forensic evidence that may be useful in an incident investigation. Reference 18.2 provides a thorough treatment of these issues.

18.1.2 Why Is It Important?

The consequences of any particular incident can be significantly reduced with effective emergency planning and response. Failure to establish and enforce a perimeter to keep bystanders and nonresponders at a safe distance from the *Grandcamp* on April 16, 1947, directly contributed to several hundred fatalities. Even if no one is killed or seriously injured by an incident, the facility’s license to operate within the community may come into question, and the answer will be strongly influenced by the public’s perception of the competence of emergency response activities. Effective emergency management saves lives, protects property and the environment, and helps reassure stakeholders that, in spite of the incident, the facility is well managed and should be allowed to continue to operate.

18.1.3 Where/When Is It Done?

Emergency management activities typically occur at the facility and in the community where the accident might occur. These activities include (1) planning and training, which occur frequently, (2) drills and exercises, which typically occur once or more each year, and (3) actual responses, which should occur rarely if other RBPS elements are effectively implemented. Activities also include coordination with local authorities, for example, by attending monthly meetings of the local emergency planning committee (LEPC).

18.1.4 Who Does It?

Emergency planning is typically performed by specialists, both within and external to the facility. Planners consult with the operations group and review work products from the *risk* element to identify and select planning scenarios. Emergency response plans should be developed in concert with potentially involved or affected work groups, and they should be frequently reviewed with all potentially involved or affected workers. The operations group is typically responsible for immediate emergency response activities, such as shutting down the process and isolating hazardous material inventories, and they are assisted as quickly as possible by specially trained teams whose activities are coordinated by an incident commander. These teams often include facility-sponsored response teams, outside agencies, including fire departments, medical responders, hazardous material (HAZMAT) teams, and, in some locations, mutual aid response teams from nearby facilities. Crisis management, which is beyond the scope of this book, is normally led by a senior manager and focuses on issues beyond mitigating the immediate effects of the incident.

18.1.5 What Is the Anticipated Work Product?

Effective *emergency management* should reduce the magnitude of effects of an incident, including any loss of good will with stakeholders. An intermediate, more tangible work product is effective and tested emergency response plans, trained and equipped response teams, and effective methods of protecting (1) personnel who could otherwise be harmed by the incident (including emergency response personnel), (2) the environment, and (3) property, both offsite and onsite.

Emergency management is closely linked to the *risk* element. In fact, risk was considered in emergency planning long before risk was proposed as a basis for developing any management system. When developing emergency plans, one intuitively asks the three fundamental risk questions:

- What can go wrong – What types of emergencies should we plan for?
- How bad could it be – Will operators be able to put out the fire with portable extinguishers or do we need professional firefighters with a pumper truck?
- How often might it happen – Is the likelihood of a particular accident scenario high enough to justify in-house response capability or should we depend on local authorities?

Effective emergency response also requires trained personnel and dependable equipment; it is very dependent on the *training* and *asset integrity* elements.

18.1.6 How Is It Done?

Emergency management activities are largely “done” well in advance of an incident. They include:

- Thorough planning.
- Effective training.
- Realistic drills.
- Effective two-way communication with stakeholders.
- Establishing the culture and operational discipline needed to ensure that personnel adhere to emergency plans and procedures.

If all of these pieces are in place when an incident occurs, emergency management activities will be based on carefully developed plans, proper training, and well defined roles and responsibilities. Failure to plan for emergencies, or failure to execute the plan when required, can quickly transform an accident into a disaster.