1
THE BUSINESS CASE FOR PROCESS SAFETY

A business case for process safety should not be necessary. The need to protect workers, the community, and the environment is as obvious as the need to protect market share, provide and protect shareholder value, and make payroll. But with the many daily demands of business, leaders can sometimes leave the obvious behind. When a company and its leaders leave process safety behind, they lose out on the significant financial and organizational benefits described in this chapter. Before you embark on improving your leadership skills related to process safety, you need to understand these benefits.

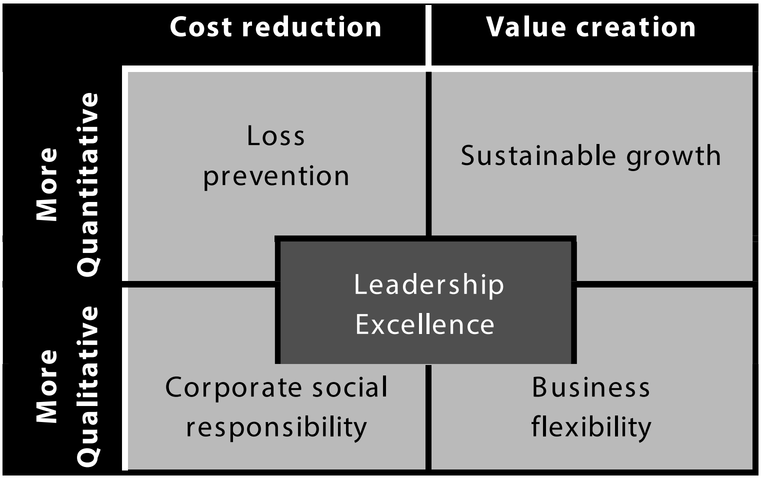
> Process safety is an ethical imperative that comes with significant financial benefits.

A benchmark survey of CCPS member companies (Ref. 1.1)[1], combined with data from other sources (Refs. 1.2-1.4), has provided conclusive evidence that methodically implementing process safety delivers five benefits that help a company to

[1] A full-color designed pamphlet covering this chapter and more can be downloaded free of charge from www.aiche.org/ccps/business-case or with the downloadable files accompanying this book.

sustainability. These benefits are summarized Fig. 1.1 and discussed in this chapter.

Figure 1.1: The Five Benefits of Process Safety



1.1 Corporate Social Responsibility

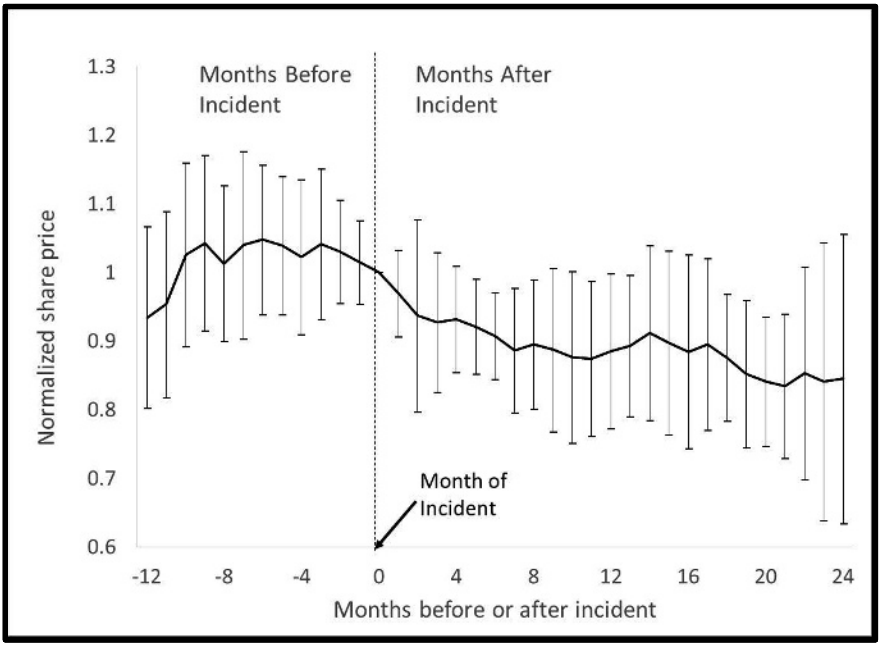
Consistently strong process safety performance helps make your company more attractive to investors, employees, communities, governments, and insurers. Maintaining a strong process safety commitment over time tells critical stakeholders that you care about them and your employees, and that you are managing the company well.

These benefits reflect directly in the primary measurement of value – share price. A review of 12 recent major incidents in 4 countries and 4 industry sectors shows the impact of these incidents on share price [2].

[2] Incidents occurring in Germany, India, Japan, and USA. Normalized to the applicable country's stock market sector index (chemical, petroleum, pharmaceutical, or utilities, as applicable). See Sec. 1.8.

As Fig. 1.2 shows, after incidents, share prices immediately begin to drop relative to the market. The losses can continue for a year or more. Following Bhopal, Union Carbide's stock price dropped continuously relative to the market for 15 years.

Figure 1.2 Impact of Process Safety Incidents on Share Price



Share price compared to month-end before incident, normalized by the relevant market index to eliminate gross market trends.

The decrease in share price includes losses well beyond tangible losses alone. The difference, simply put, is shareholder perception. Nearly every stock is priced well above the value of its tangible assets. This premium reflects the confidence of investors in the company's ability to manage, control risk, innovate, and continue to grow sustainably. Practices for showing this premium on balance sheets vary. In some cases, balance sheet terms such as Intangible Assets or Goodwill are used to describe all or a portion of this premium.

This shareholder confidence premium is built – or destroyed – by factors directly linked to process safety:

- Actual risk and perception of risk.
- Corporate image.
- Support for the company in the communities in which it operates.
- Employee engagement and attitudes: is the company a preferred place to work?
- Trust in the company from investors, politicians, regulators, activists, and the press.

Privately owned? This still applies.

Your company valuation reflects more than the bottom line. It also depends on the external perception of your ability to manage, control risk, and grow sustainably.

1.2 Business Flexibility

Companies that manage process safety effectively earn the flexibility to freely manage their businesses and grow profitably, while satisfying all stakeholders – local communities, the public, regulatory authorities, governments, investors, and customers. Business flexibility results from earning the trust of the public and especially of the local community. It is your company's license to operate. And as with any license, those who award it can also revoke it.

Every incident represents a lost opportunity. When a major incident occurs, the company must divert resources to investigation, clean-up, and recovery, as well as legal and regulatory challenges. These resources could otherwise be focused on growth.

Major incidents can also significantly drain available cash. This can force companies to sell valuable assets, often at a fraction of their value – an additional lost opportunity. And for many companies, this can lead to the loss of the company and the livelihoods of every employee.

This flexibility benefits a company by:

- Allowing you to focus on growth and productivity, rather than damage control and recovery,
- Protecting cash flow from unexpected disruption,
- Proving your worthiness to hold a license to operate,
- Strengthening and maintaining good relationships with the local community; and
- Helping you obtain approvals for expansion permits or new facilities more quickly – a critical strength when implementing the new projects needed to compete effectively.

A major incident can weaken a company's ability to respond to competitors' business actions. A company in a weakened state may also become subject to an undesirable takeover. Additionally, incidents can lead to new regulations. This impacts your company and everyone throughout the industry.

1.3 Loss Prevention

Companies that display strong process safety leadership through competence, culture, and disciplined management receive a windfall benefit every year. This income shows up on the bottom line in the savings from incidents that did not occur.

Some companies may avoid major incidents for a time through luck alone. Even then, the costs of smaller incidents and near-misses continue to add up. And luck eventually runs out. A strong PSMS, coupled with strong process safety leadership, is the only way to sustainably avoid large and small incidents alike. Loss prevention benefits include:

- **Lives saved and injuries prevented:** Painful personal and financial impacts of human loss.
- **Reduced property damage loss:** Major incidents cost an average of $330 million each (Ref. 1.2).
- **Reduced business interruption loss:** Business interruption losses typically range from 2 – 3 times the property damage loss and can be as much as 11 times greater (Ref. 1.2).
- **Protected market share:** After an incident, market share may be lost, regained only slowly after production has been restored. Companies that sell direct to consumers may also see market share lost until the company's reputation is restored.
- **Reduced fines and litigation costs:** For many incidents, fines can be in the millions of dollars. The costs of lawsuits brought by victims and affected communities can be significantly greater. And, in recent years, new laws such as the UK Corporate Manslaughter Act allow senior executives to be tried criminally for serious incidents (See Sec. 2.6).
- **Reduced regulatory attention:** A major incident usually results in increased regulatory inspections, which can lead to additional fines and tie up resources.
- **Reduced remediation costs:** Environmental clean-up costs – even for small incidents – can be significant and go on for years.

Many of these costs can put a smaller company out of business. Often this occurs through a significant stress on cash flow. If the company does not have sufficient cash to address the capital and sales losses, it may be forced to sell valuable assets at distressed prices, resulting in significant loss of shareholder value.

1.4 Sustainable Growth

Companies around the world have learned that when they implement a robust PSMS, their productivity and quality increase while costs decrease. The reasons should be obvious. Process safety requires you to:

- Understand your process better,
- Envision what can go wrong and how, and then prevent it,
- Improve process development and front-end engineering design,
- Follow procedures rigorously,
- Keep equipment, piping, and controls maintained and in good operational integrity,
- Stop safely when the process goes out of control, or when something just doesn't look right,
- Learn from investigating incidents and near-misses; and
- Manage change religiously.

Doing this can lead to:

- Greater uptime with more stable operation,
- Longer periods between unplanned and planned shut-downs,
- Improved yields and productivity; and
- Improved quality and reduced rework.

Moreover, participating in cooperative efforts to promote process safety more broadly across the industry also brings real value:

- Helping **suppliers and customers** improve process safety helps ensure materials supply and uninterrupted sales for your company.
- Helping develop **standards, guidelines, and regulations** exposes you to external knowledge and experience and allows your input to be clearly heard.
- Maintaining open communication with **contractors** can help bring in best practices learned elsewhere.

Embracing process safety as an essential part of the way you do business allows your company to measurably increase revenues and reduce costs. The value created can be substantial. The companies that participated in the study (Refs. 1.3, 1.4) report the following types of financial benefits from their investment in process safety:

- **Increased Productivity and Decreased Downtime:** Due to increased reliability of equipment and risk-based maintenance.
- **Decreased Production Costs:** Due to increased work efficiencies.
- **Decreased Maintenance Costs:** Due to improved design and maintenance management.
- **Increased Capital Efficiency:** Due to improving front-end engineering and designing to risk criteria.
- **Decreased Downtime:** Due to reduced corrosion and risk-based maintenance.

1.5 Leadership Excellence

Companies increasingly organize their operations management and leadership activities in an integrated management system called, among other names, Operational Excellence. A closer look at these management systems shows that Operational Excellence depends on executing the core principles of process safety with dedication and professionalism.

Process safety drives leadership just as much as leadership drives process safety.

In an ever more competitive global business environment, companies need visionary leaders who rigorously manage the details. Process safety requires everyone to show leadership, which helps prepare employees for future leadership roles. And since process safety touches so many operational and technical roles, it helps produce an ever-growing cadre of leaders and managers to drive the future of the company.

Just as process safety protects the company against losses from major incidents that can threaten the sustainability of the company, it can also offer protection against other losses – of efficiency, trust, environmental quality, product integrity, and many more. Process safety is the cornerstone of operational excellence.

1.6 Summary

In short, the business case for process safety is like the business case for any other dimension of the business. A robust PSMS operating in a robust culture will enhance your business in five ways, all driving improved profitability and shareholder value:

- **Corporate Social Responsibility**: builds the image of your company, adding to shareholder value through increased Goodwill, while helping make your company a preferred place to work.

- **Business Flexibility**: removes barriers to growth and enables your company to focus on innovation and market development.
- **Loss Prevention**: prevents damage to assets and the broader destruction of shareholder value that accompanies incidents.
- **Sustainable Growth**: boosts productivity and quality, while helping to keep your company at the forefront of management systems and technology.
- **Leadership Excellence**: drives leaders to hone their skills and helps develop future leaders.

Fig. 1.3 shows how these five benefits help drive the corporate balance sheet and the profit/loss and cash flow statements.

The rest of this book is dedicated to helping you show and grow the leadership needed to help your company realize these benefits.

1.7 References

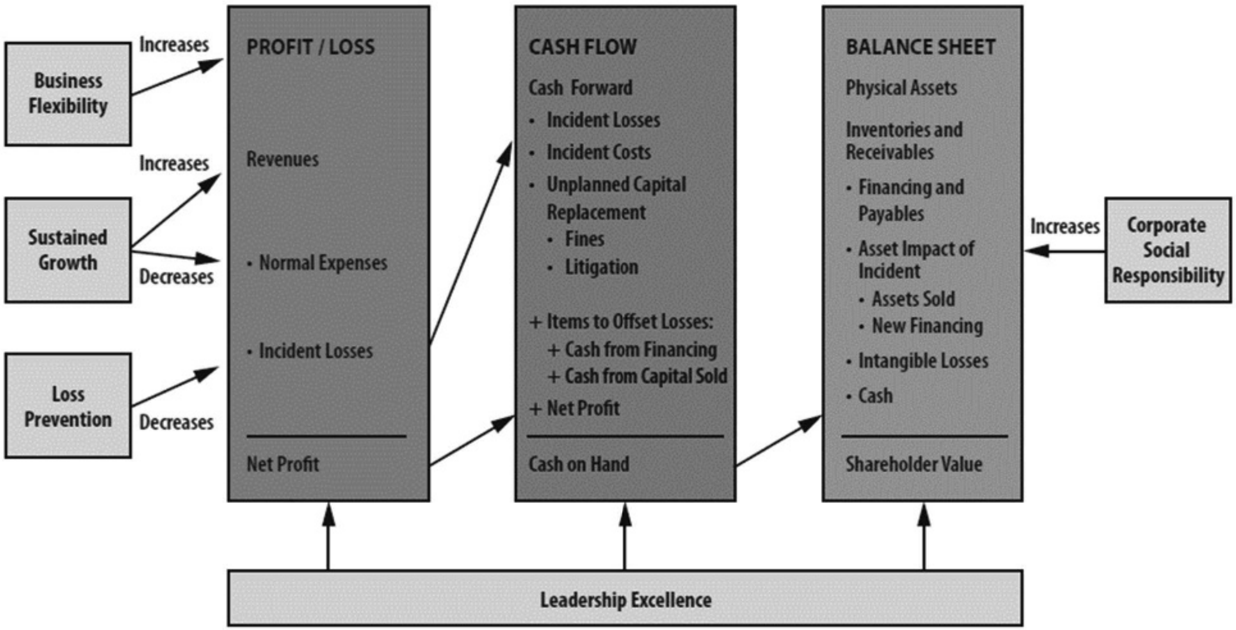
1.1 CCPS, *The Business Case for Process Safety*, American Institute of Chemical Engineers, New York, 2018 (and previous editions 2002, 2004, and 2007).

1.2 Marsh Ltd., *The 100 Largest Losses 1974-2015*, London, 2016.

1.3 CCPS Unpublished research report, "The Business Case for Process Safety," 2001.

1.4 Personal communications from representatives of CCPS member companies.

Figure 1.3 Process Safety Impact on All-Around Company Financial Performance



1.8 Incidents Represented in Figure 1.2

- Aarti Drugs, Ltd., Tarapur, Gujarat, India, 22 March 2013.
- American Electric Power, Beverly, OH, USA, 7 January 2007.
- BASF, Ludwigshafen, Rheinland Pfalz, Germany, 18 October 2016.
- BP, offshore of Louisiana, USA, 20 April 2010.
- BP, Texas City, TX, USA, 23 March 2005.
- Chevron, Richmond, CA, USA, 6 August 2012.
- Huntsman, Port Arthur, TX, USA, 29 April 2006.
- Mitsubishi Chemical, Kamisu-shi, Ibaraki, Japan, 21 December 2007.
- Pacific Gas & Electric, San Bruno, CA, USA, 9 September 2010.
- Praxair, St. Louis, Missouri, USA, 24 June 2005.
- Confidential incident #1 by personal communication.
- Confidential incident #2 by personal communication.