

Chemicals Accident Risk seminar



European Commission JRC

Ispra, June 15, 2017

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Process & Plant Safety

A Matter of Governance



2011:

OECD *Guidance Corporate Governance for Process Safety*

Cefic *Guidance on Process Safety Performance Indicators*

2016:

ICCA *Guidance for Reporting on the ICCA Globally Harmonized Process Safety Metric*

Next:

OECD: *Developing Guidance for Ownership Change in Hazardous Facilities*

Despite all efforts, incidents continue to occur



2005 Buncefield, UK:
Biggest explosion in
peacetime



2005 Texas, USA:
15 killed, 170 injured



2016 BASF, Germany:
4 Fatalities, 29 injured



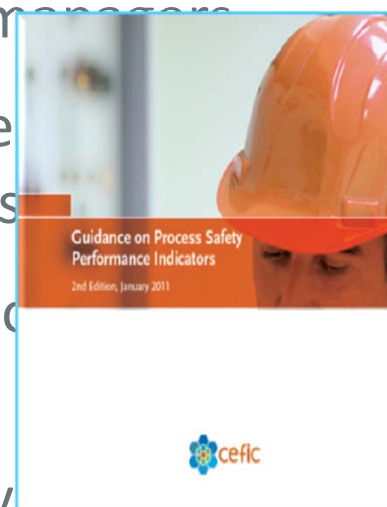
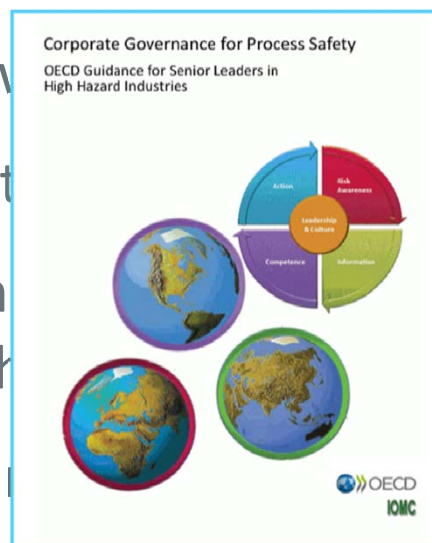
Leaders need to change from active to PRO-active

Corporate Leadership – what we mean



The way in which:

- Leaders actively engage within the organisation
- Process safety considerations are taken into account in key business decisions
- Major hazard risks are understood and managed through technical control measures
- Risks are communicated and clearly understood by senior managers
- Resources are allocated to manage risks
- Risks are monitored and manufacturing downtime and across the organisation
- Organizational changes get scrutinized during normal operations
- And QA processes
- Key performance indicators are defined and reported at the highest level



OECD has issued a draft guidance on ownership change transactions



NEXT

Suggestion of a self-assessment:

SELF-ASSESSMENT QUESTIONS FOR THE EXISTING/ CURRENT OWNER			
<p>The original owner needs to focus on their legal responsibilities to hand over a plant and site with the potential for a major accident which could harm the workforce, the surrounding factories, people living nearby and the environment. The checklist gives a series of pointers to fulfilling their responsibilities. These may be greater but more easily fulfilled if the plant has been openly offered for sale. This may be more difficult with a hostile takeover where there has been little time or incentive to prepare.</p>			
Planning Phase	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>1. Have you determined which information you should provide to the new owner to assure continuity in the safety of operation?</p> <p><i>Tips: You can look at the template for transparency on page 18 for a detailed list of documents that you would want to share with the new owner.</i></p>			
1.a Have you reviewed this information to make sure it is complete and up to date?			
1.b Have you made sure this information will be provided in a way that will be easy for the new owner to review?			
<p>and documentation?</p> <p>new owner for providing any relevant legislation and with the</p> <p>for assuring a safe change of potential liabilities you would long.</p> <p>form the regulator about your so may be the new owner?</p> <p>ability</p> <p>understanding of the hazards on e to prevent and contain them?</p> <p>ance on Corporate Governance res safety at your facility.</p> <p>r information about the hazards, ected safety problems) and the</p> <p>potential loss of safety critical</p> <p>procedures to ensure safety will act that personnel changes will</p> <p>Managerial Issues</p> <p>must be focused on during the</p> <p>from previous inspections or e new owner?</p> <p>technical or operational issues</p> <p>levant information about the site</p> <p>compliance with the law?</p> <p>Make sure to:</p> <p>Underlying Risk Drivers, Attitudes and Responsibility</p> <p>1. How familiar are you with your legal responsibilities in taking over a major</p> <p>your standards or internationally accepted safety levels, you should plan to bring up the situation to such safety levels within a reasonable period of time.</p>			

Taking the next step:
Introducing *Process Safety* into all aspects of corporate governance

Quotes from the Survey



Results of a brief survey



Current State of Play

Large companies have sufficiently detailed processes on:

- Management of Change
- Organizational Changes
- Process & Plant Safety Evaluations / Hazops
- Qualification, retention of employees
- Quality Management and Document Retention
- Due diligence Process for M&A, Divestment

→ This is not or only partially the case in smaller companies

However, there is usually **not** this ONE document or process which combines **all of the above** like the proposal compiled by OECD

Recommendation to inform the national working groups and to circulate the draft through the industry to get a more comprehensive feedback.

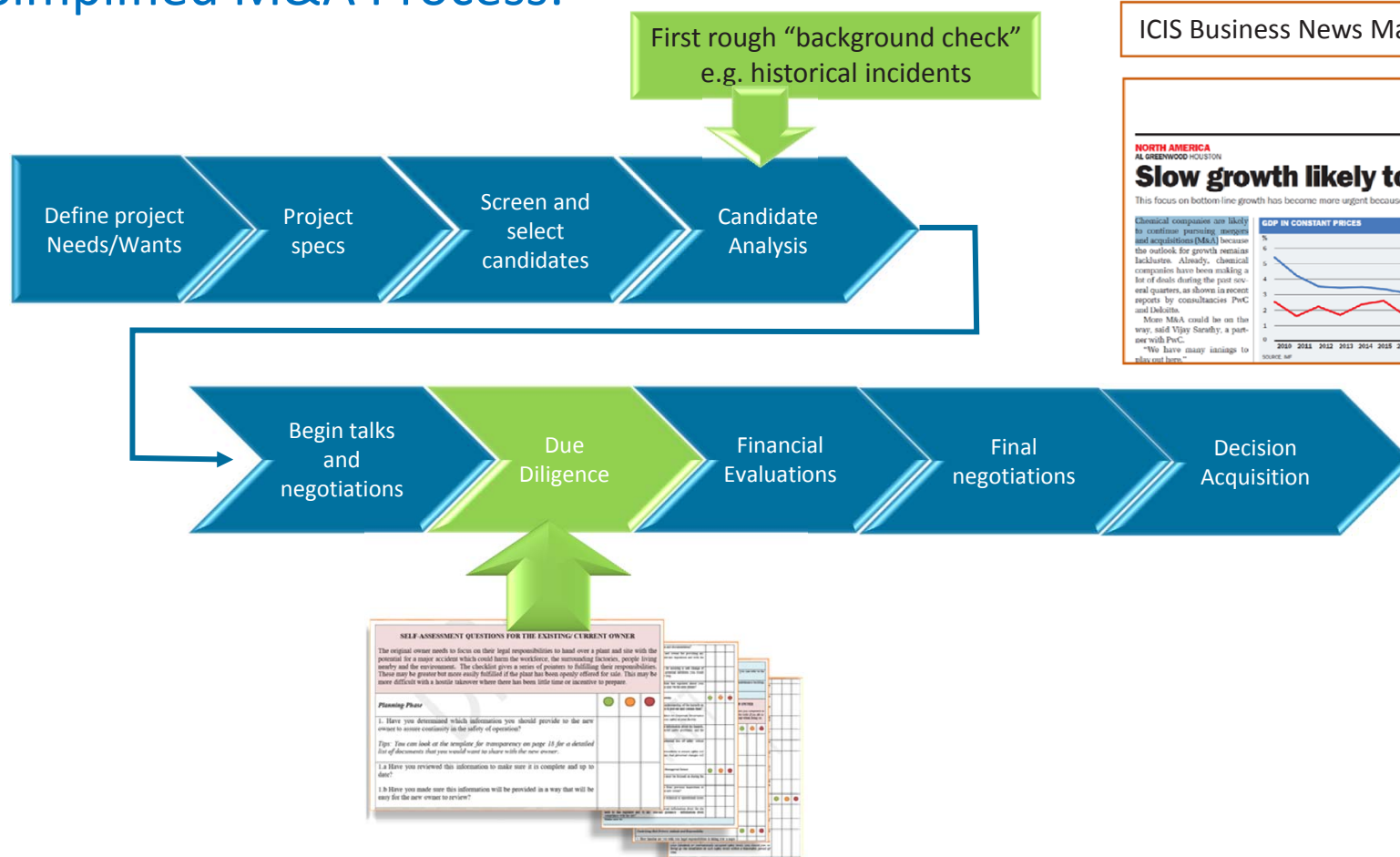
This guidance can be a valuable additional step
in the spirit of RC and continuous improvement.

Guidance to be used early in the process

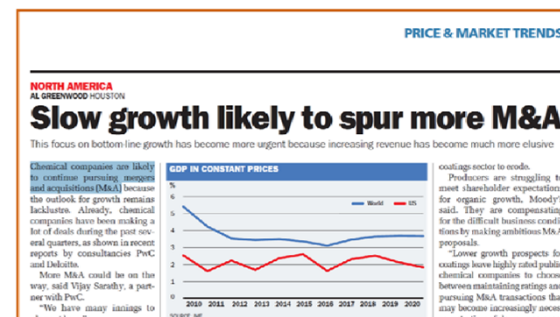
As M&A are expected to increase in the future



Simplified M&A Process:



ICIS Business News May 12-18 2017



OECD Guidance could take a distinct function in the Due Diligence process

Thank you





BACK – UP Slides

You cannot improve what you do not measure

Several Databases track incidents across the globe






INRS
The French national research institute for safety (INRS) holds the EPICEA database, which provides 17 000 detailed "workplace accidents".




ERA – European Railway Agency
The european railway agency publishes reports on railway accidents in europe (in english).



ILITY (Finlande)
The finish database ILITY gathers accidents worldwide ("database" in english, but without any search engine).



FACTS (Pays-bas)
FACTS is a database which contains information on more than 24000 (industrial) accidents (incidents) involving hazardous materials or dangerous goods worldwide. (restricted access)



ZEMA
The ZEMA database (Zentrale Melde- und Auswertestelle für Störfälle und Störungen in verfahrenstechnischen Anlagen) centralises informations on accidents in Germany. The database is in German.



ARIA : Lessons learnt from industrial accidents
Collect, analyze, inform
ARIA
dgpr art bar pl



NTSB
An Independent
United States Federal
Government Agency



Beacon
Process Safety



CSB
U.S. Chemical Safety Board



RISCAD
Relational Information System for
Chemical Accidents Database

Process Safety Management

The adopted answer



Based on the “management system” approach, PSM is not a “one-off” task.

Its success depend on continuous commitment and efforts, once a satisfactory performance level is achieved, to maintain it during time.

Organizations are living systems, in need to cope with challenges like personnel turnover, technology and organizational changes: a continuous adaptation process is needed.

A good PSM allows a diffuse involvement of all the components of the organization, at the proper, relevant level, and this helps the organization to deliver the most efficient answer to the multiple challenges it has to cope with.

Occupational Health and Safety

- Workplace rules
 - Worker training
 - Supervision
- Individual behaviors
- Safety equipment
- Focus on individual well being



Process Safety

- Collective commitment
- Addresses events over which the individual worker has little or no control
 - Focus on systems
 - Broader impact – events that could affect groups of workers or general public

Process Safety: a definition.



- Process safety: the prevention of leaks, spills, equipment malfunction, over-pressures, over-temperatures, corrosion, metal fatigue and other similar conditions.

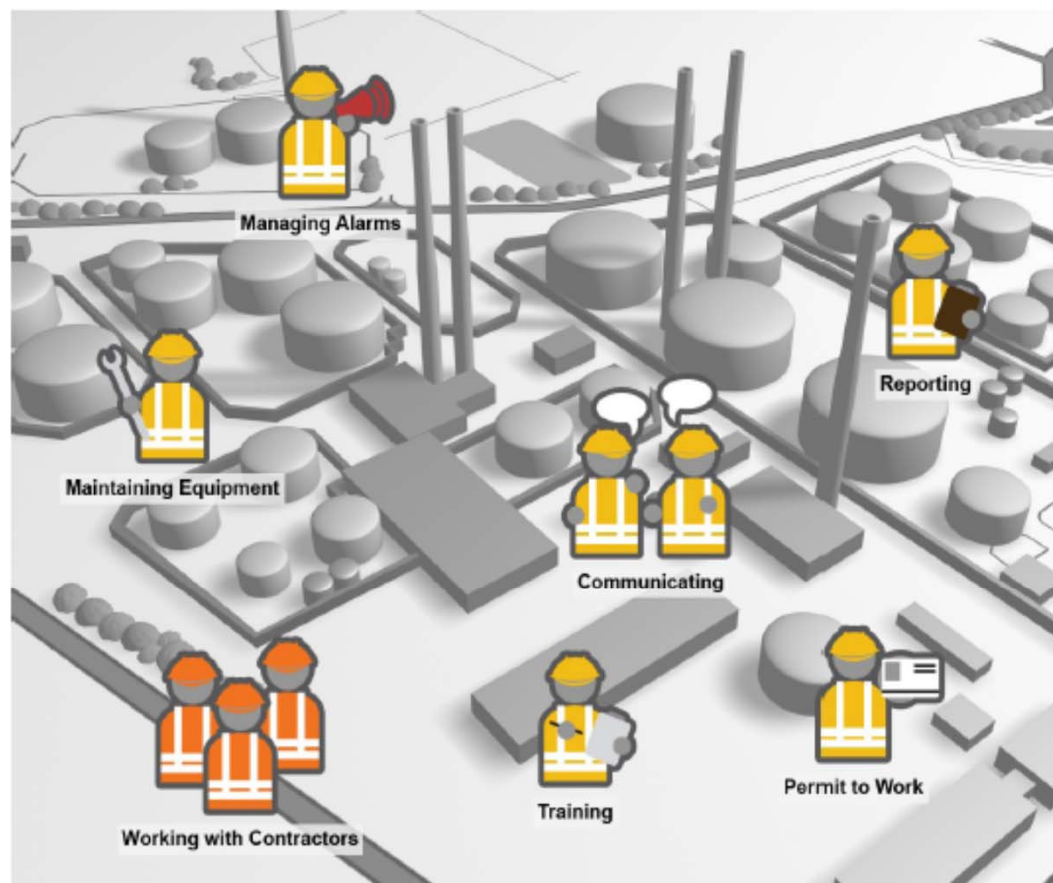
(Baker *et al.*, 2007)



Process Safety: another definition



- Process Safety is a blend of engineering and management skills focused on preventing catastrophic accidents, particularly explosions, fires and toxic releases associated with the use of chemicals and petroleum products (CCPS, 2010).

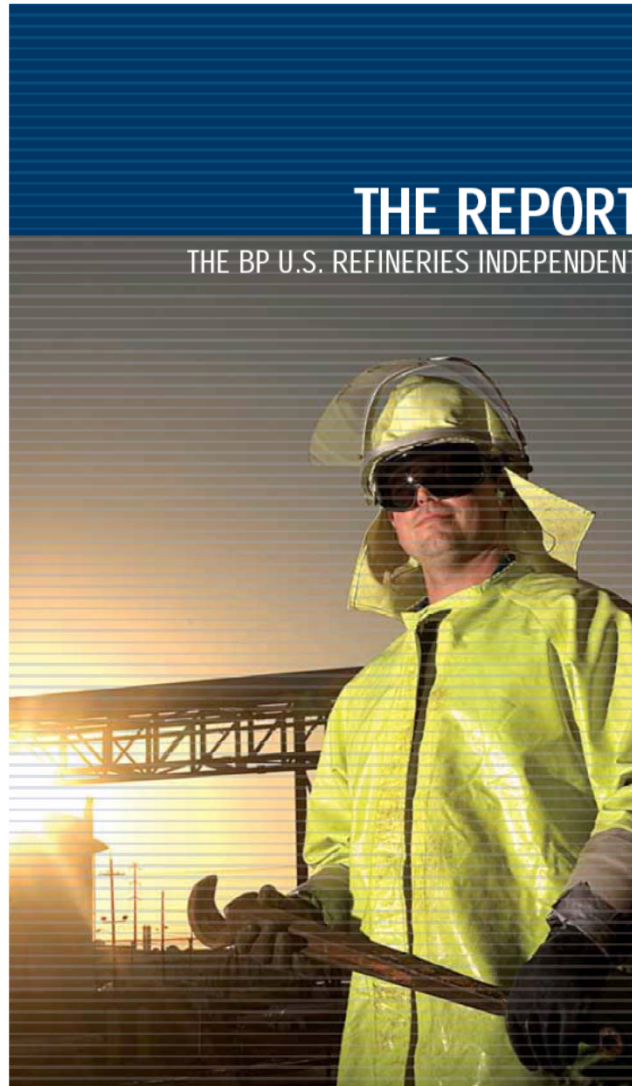


BP American Refinery Explosion – Texas City, Texas

March 23, 2005



At approximately 1:20 p.m. on March 23, 2005, a series of explosions occurred at the BP Texas City refinery during the restarting of a hydrocarbon isomerization unit. Fifteen workers were killed and 180 others were injured. Many of the victims were in or around work trailers located near an atmospheric vent stack. The explosions occurred when a distillation tower flooded with hydrocarbons and was overpressurized, causing a geyser-like release from the vent stack.



THE REPORT OF
THE BP U.S. REFINERIES INDEPENDENT SAFETY REVIEW PANEL

The recommendations of **BAKER REPORT** (BP Texas City Refinery incident, March 2005)



RECOMMENDATION #7 – LEADING AND LAGGING PERFORMANCE INDICATORS FOR PROCESS SAFETY

BP should develop, implement, maintain, and periodically update an integrated set of leading and lagging performance indicators for more effectively monitoring the process safety performance of the U.S. refineries by BP's refining line management, executive management (including the Group Chief Executive), and Board of Directors. In addition, BP should work with the U.S. Chemical Safety and Hazard Investigation Board and with industry, labor organizations, other governmental agencies, and other organizations to develop a consensus set of leading and lagging indicators for process safety performance for use in the refining and chemical processing industries.

RECOMMENDATION #8 – PROCESS SAFETY AUDITING

BP should establish and implement an effective system to audit process safety performance at its U.S. refineries.



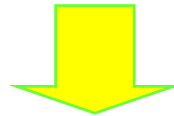
Process Safety Management: best practices

Process Safety Management



Objective and duty of the Operator: adequate performance and its improvement which requires:

- Performance measurement, trend analysis
- reporting (internal to the site)
- driving a continuous improvement process



Implementation of State-of-the art Process Safety performance monitoring and reporting, internal of each company.

General Requirements



Simple to understand and to communicate

Promoting trust

Ambitious

Challenging

Long lasting value

...

Allow visionary objectives like :

„No unintended substance or energy release“

„ZERO Accidents“

Primary Goal of Process Safety Management



Handle **inevitable** hazard potentials professionally, so that the **likelihood** of their **activation** and **adverse effects** to environment, people and assets is as **low** as **practicable**



Source: www.circus-krone.de

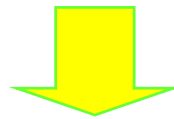
Simplified:
keep the hazard potentials contained.

Practices in Process Safety Management



→ Near misses (reporting and analysis)

→ Leading Indicators (typically site specific)



Limited value in comparison among sites and benchmarking.

Nevertheless, these practices are strongly recommended as crucial tools in Process Safety Management.