PROCESS SAFETY
What, Why and How – a "lean" view

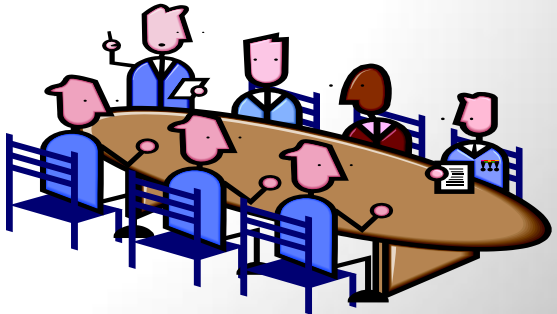
Peter Wilkinson

Agenda

- What is “process safety?”
- What is our mental model on accident causation?
- What do I mean by “lean”
- What are the options for improving process safety?
- But first a safety moment…

Successful Safety Moments

- Many companies start off meetings with a safety moment.
- The goal is to keep safety at the forefront of people's minds and demonstrate the company's commitment to workplace health and safety.
- How successful are they?
- What makes a good or bad "safety moment"?
- Here are some ideas; but first:



Characteristics of Good/ Poor Safety Moments

Good:

- *Is directly relevant to your or your client's business (or both);*
- *Is something that you really believe in – demonstrates passion/authenticity;*
- *Has real learnings that can be passed on;*
- *Where relevant includes "personal" and "process" safety;*
- *Is short and snappy - possibly with a handout.*

Poor:

- *Uses a familiar domestic situation (e.g. trimming the hedge);*
- *Has no particular relevance to your or the client's business;*
- *Has few learnings beyond the obvious;*
- *Does not discriminate between "personal" and "process" safety;*
- *Takes too long to tell!*

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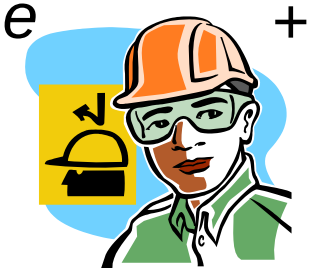
Personal vs Process Safety

Personal Safety

+ *Eliminating personal safety and health hazards to prevent or mitigate injuries, illness and fatalities;*

+ *Personal safety incidents typically lead to individual or rarely two or three casualties from one incident.*



Process Safety

+ *Appropriately designing, constructing, operating and maintaining facilities that handle potentially hazardous materials or energy to prevent releases of flammable or toxic fluids or energy;*

+ *Process safety incidents lead to fires/ explosions/ spills with potential for disastrous consequences.*

Personal vs Process Safety 2

Personal Safety

+ *Behaviours of front line workers often in focus, BBS*
+ *Measurement using lagging indicators such as LTIFR, DAFWC etc*

Process Safety

+ *Designers, leaders through to front line workers – focus on the Human and Organisational factors*
+ *Lead and lagging indicators of asset integrity*
+ *Learning from dissimilar incidents – look for learning points not just similarities*

How do accidents happen?

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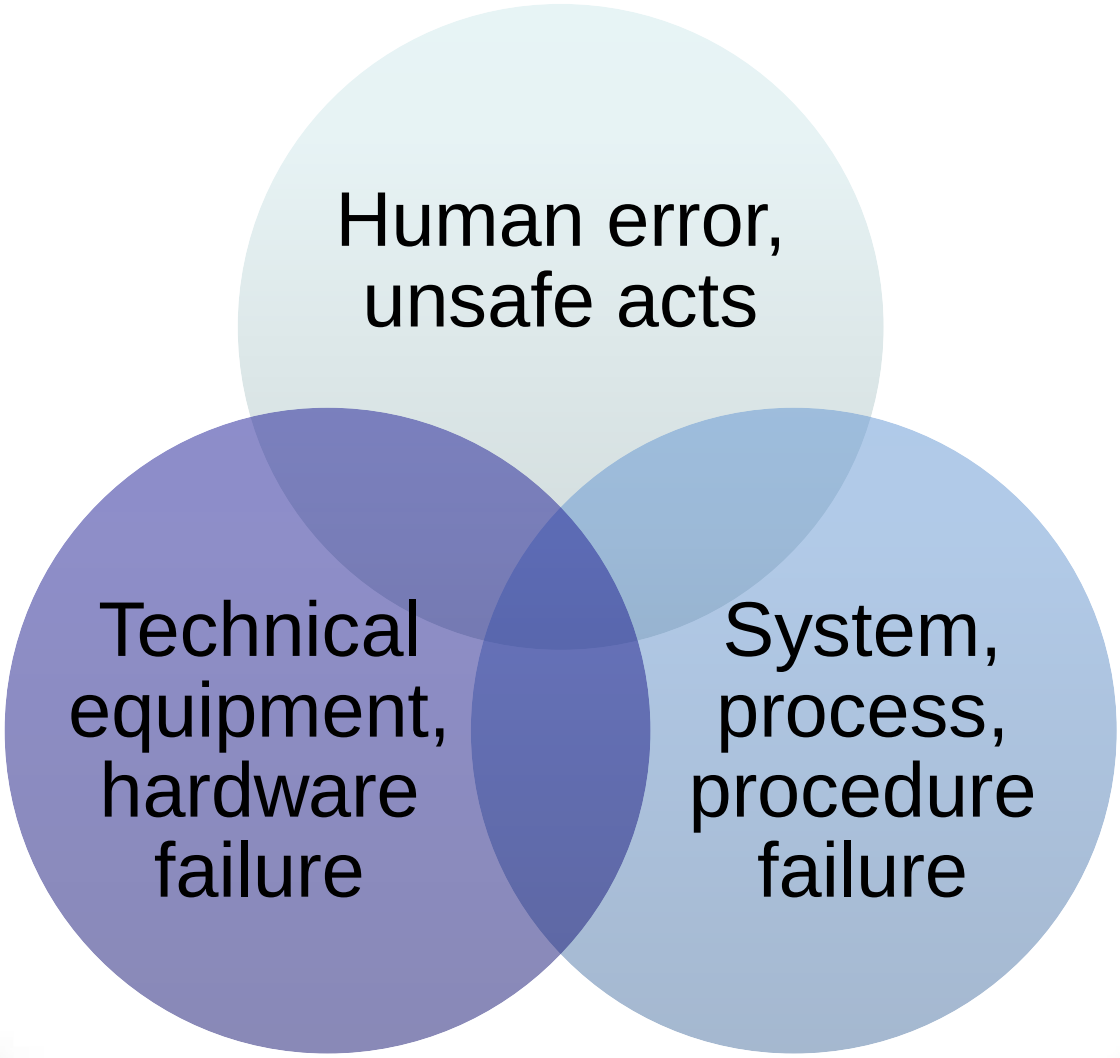
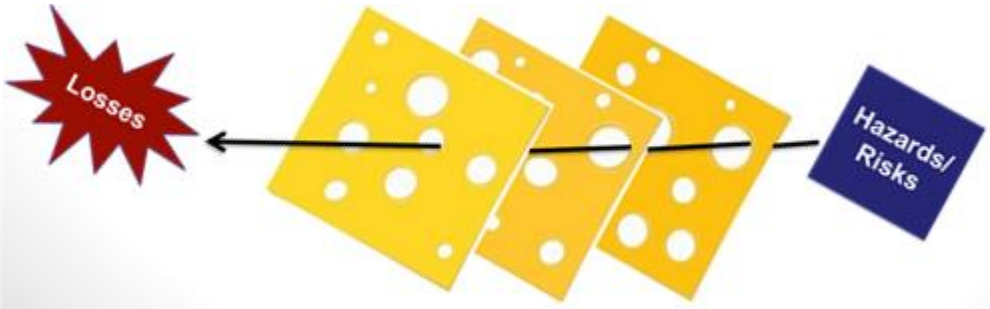
Human error is just one factor!

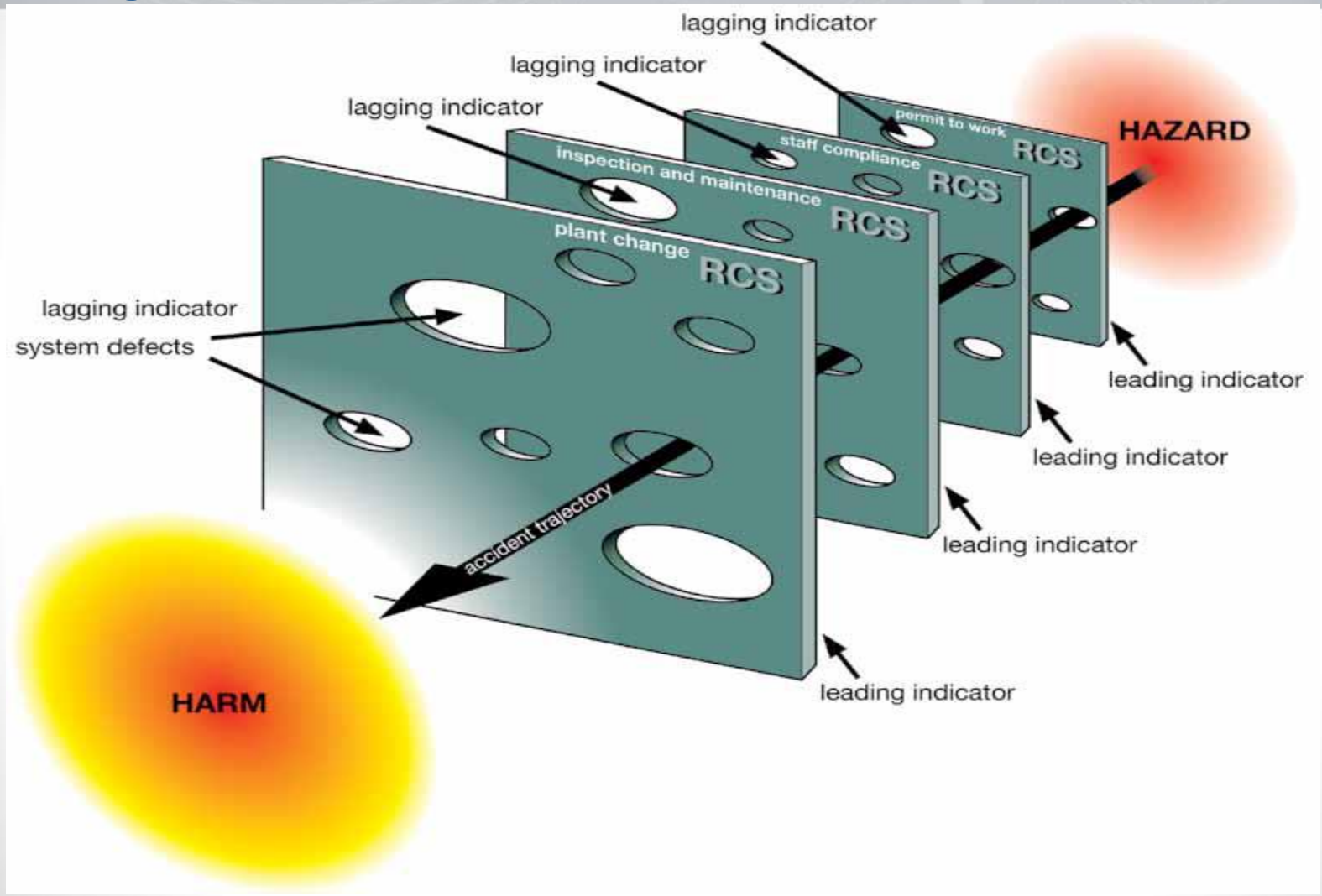


The Swiss Cheese Model

+ Each slice represents a control or barrier between the hazard and potential losses.
+ In reality all controls have gaps or weaknesses. These gaps are continually varying in size and position in all the slices.
+ Effective risk management requires active monitoring of the “health” of the controls.
+ This model explains why risks do not eventuate most of the time – even with imperfect controls the trajectory of the event may be stopped by redundant defences.
+ Therefore the absence of incidents is **not the same as having effective controls**!

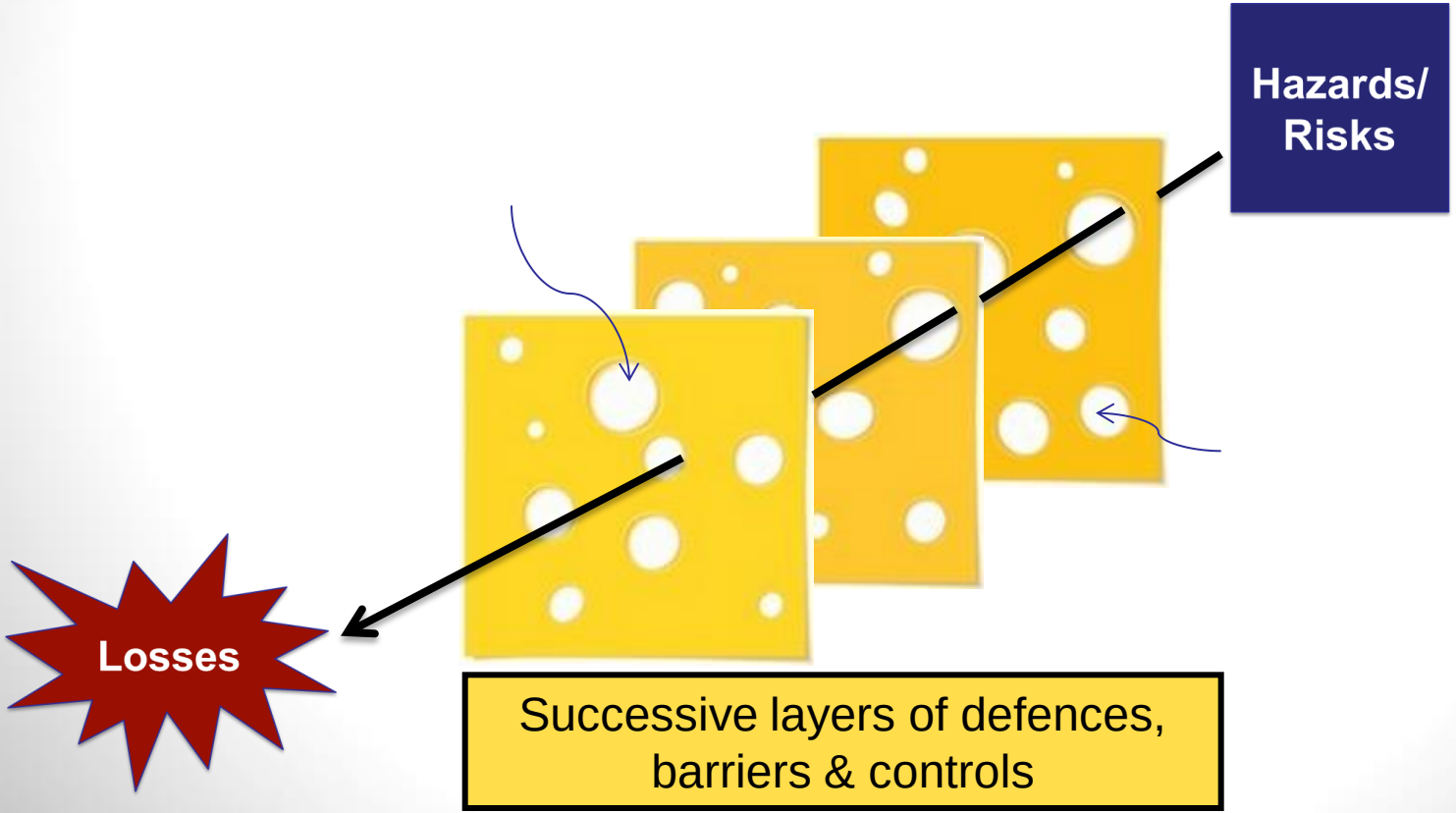


From HSE Guidance on setting process safety indicators



How do risks eventuate?

+ The vast majority of high profile risks eventuate because of a failure to effectively manage established controls for well known (but rare) risks



“Lean” Process Safety?

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What is Process Safety?
Other names meaning the same thing:

+ Lean aims to make the work simple enough to understand, do and manage.

Process Safety:

Known risks and Known Controls – so what is the problem?

Possible obstacles to getting better understanding of Process Safety

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+ LTIFR is so embedded as a metric?
+ Simplistic “individual blame” mental model of incident causation is so widespread?
+ Over – emphasis on “behavioural safety?”
+ We lack the skills
+ Lack of understanding of how MAEs occur?
  - (systems, hardware + individual error)
+ Rarity of MAEs therefore not seen as credible?
+ Terminology
+ Over complication?

Terminology

+ Synonyms
  - Major Accident Events, Major Accident Hazards, Asset Integrity (OGP), Asset Reliability and Integrity Management (PTTEP), Safety Cases….

+ Problems with title “Process Safety”
  - obscures link to reliable and efficient (and hence profitable) operations
  - Does it include environmental outcomes – yes
  - But I’m in drilling or construction – I don’t do processing operations

Complicated Systems

+ Process Safety Structures
  - Energy Institute 20 Elements + 20 PSM guidelines (2014)
  - CCPS 20 Elements and 4 Pillars
+ Volume of Documentation
  - 30/40 or more procedures and standards

+ Terminology
  - Safety critical elements
  - Performance standards
  - SIL levels, LOPA

Process Safety:

Known risks and Known Controls – Key Assumption

So what can we do about this – conceptually and practically**?**

- Have a “barrier” or “control” focus
- Preventive and Mitigating barriers/controls
- Focus on key points of barriers/controls –as *reference* procedures as required
- Clarity of ownership (accountability) for both *implementation* of barriers/controls AND *monitoring* of barriers/controls
- Present information on barriers in a simpler way
- Involve key layers of the workforce in generating the information on barriers

So what can we do about this – conceptually and **practically?**

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+ Apply lean principles:
  - Present information on barriers in a simpler , shorter and clearer way
  - Give examples of incidents related to specific barriers
  - Ask ourselves – Who is the audience for our material? Write in an appropriate style
  - Involve our audience to generate the information on barriers

Summary

+ Accident Causation always involves multiple causes – a focus on front line behaviour unlikely to be successful.
+ Consider a focus on barriers/controls + accountability for implementation and monitoring
+ Communicate in a way suitable for the audience
+ There is a business driver as well as a moral imperative for process safety

THANK YOU!

Q and A to both Peter and Andrew

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