



“So, What’s The Risk?”



California State Lands Commission – Prevention First 2008

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“So, What’s The Risk?”

“So, what’s the presentation’s objective?”

- Provoke and stimulate discussion.
- Recognize what is “ideal and applicable” for one organization. . . .
. . . . may not be so for another.
- Raise awareness the perfect recipe does not exist.

“So, what’s outside the objective?”

- Setting moral judgments as to what represents “*ideal and applicable*”.

“So, What’s The Risk?”



“So, What’s The Risk?”



MANAGING RISK



“So, What’s The Risk?”



MANAGING RISK



“So, What’s The Risk?”



“So, What’s The Risk?”



“So, What’s The Risk?”



MANAGING RISK



“So, What’s The Risk?”



Photo: Boris Paulien

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“So, What’s The Risk?”

“So, what do accident investigators hear too often?”

“They were just supposed to...
... And then it happened!”

“So, What’s The Risk?”



MANAGING RISK



So, What's The Risk?"



So, What's The Risk?"



So, What's The Risk?"



MANAGING RISK



“So, What’s The Risk?”



MANAGING RISK



“So, What’s The Risk?”

“So, what’s the main driver for determining risk?”

- Regulatory Compliance?
- Good Business Sense?

“So, What’s The Risk?”

“So you answered, “Compliance.”

■ *Leave Now.*

“. . . And be careful, compliance does not necessarily guarantee or even drive an organization towards good Risk Management.”

“So, What’s The Risk?”

“So you answered, “Good Business Sense.”

■ *Let’s Get to Work.*

“Good Risk Management will drive towards compliance and often exceed it by a measurable margin improving safety and operational performance.”

“So, What’s The Risk?”

“So, how is risk and risk management defined?”

Risk: the combination of the **probability** of an event and its **consequences**. . . The focus of good **risk management** is the **identification** and **treatment** of these risks. . . (ISO/IEC Guide 73)

Risk refers to the likelihood of harm, including both acute or chronic effects, to human health, the environment, or the quality of human life.(ICCA:95)

“So, What’s The Risk?”

“So, how is risk management defined?”

- . . . the process by which risk is controlled and/or reduced (ICCA/95).
- . . . the culture, processes and structures directed towards realizing opportunities while managing adverse effects (DNV/08).
- . . . a structured approach to managing uncertainty related to a threat, a sequence of human activities including: risk assessment, strategies development to manage it, and mitigation of risk using managerial resources (Wikipedia/08).

“So, What’s The Risk?”

“So, what’s risk management?”

- . . .activities dedicated specifically to the identification, assessment and management of risks.
- . . .builds on the risk assessment process (Haimes 1991/UVA 08/08).

“So, What’s The Risk?”

“So, what’s managing risk?”

- . . . a broad concept encompasses all activities dedicated to ensure an optimal risk level. (Some of these may be risk management activities, others may not.)

“. . . businesses need to do more to understand the risks they face and put risk management at the top of their agenda (Lloyds, 10.07)”

“So, What’s The Risk?”

“So, what’s a good risk management program?”

One which does not avoid all risks – that is unlikely to make “good business” sense!

One which does not simply translate corporate policy into the everyday activities and everyday decision-making of the company

Corporate policy may be *risk averse* or it may be *risk tolerant*

“So, What’s The Risk?”

“So, what’s a good risk management program?”

“A Good Risk Management Program demonstrates a clear understanding of the risks, their causes, effects and the barriers to them (DNV/2008).

“So, What’s The Risk?”

“So, what are the approaches to gaining a better understanding of risk?”

Applied scientifically valid risk assessment methods and the application of academic performance standards for evaluating and prioritizing health, safety and environmental risks.

Approaches with clearly defined; Rule Sets, Terms of References, and Methodologies.

“So, What’s The Risk?”

“So, what’s the risk – how is it assessed?”

In **risk assessment**, the analyst often attempts to answer the following set of triplet questions [Kaplan and Garrick 1981]:

- What can go wrong?
- What is the likelihood that it would go wrong?
- what are the consequences?

“So, What’s The Risk?”

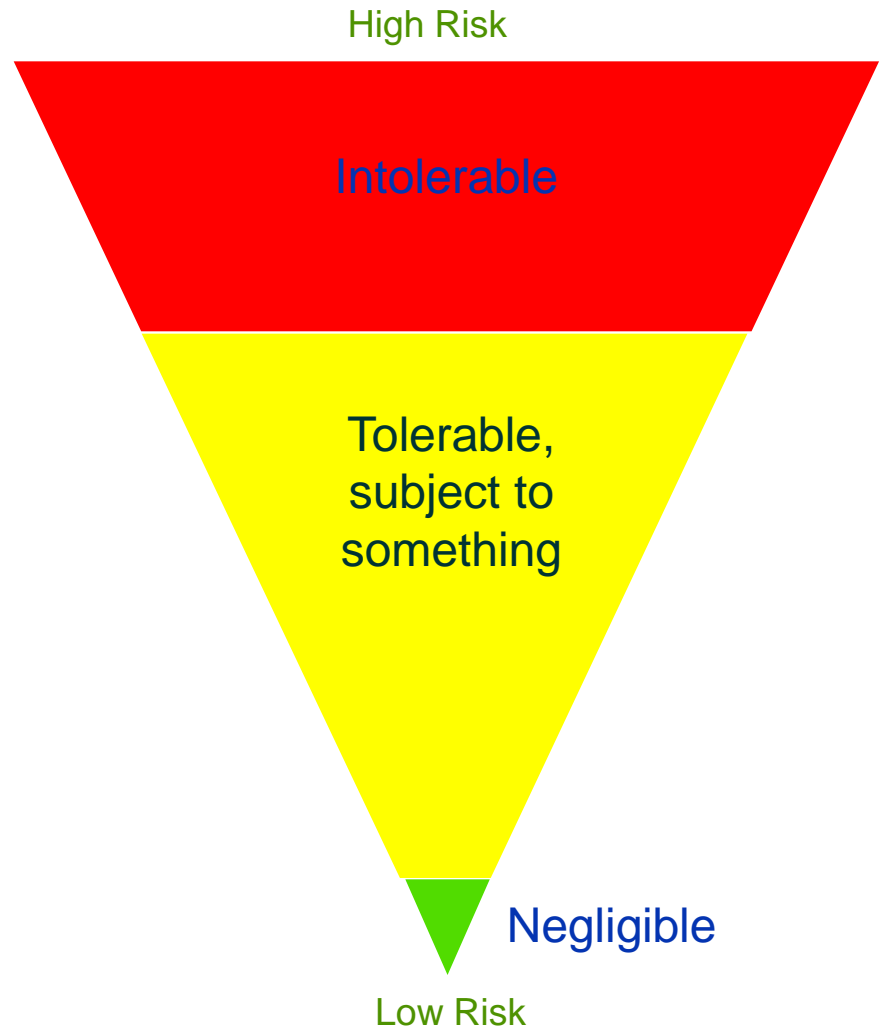
“So, what’s a Risk Assessment?”

Risk Assessment refers to the process by which the form, dimension, and characteristics of a risk are estimated.

“So, What’s The Risk?”

“So, what’s the
Acceptable Risk
(ALARP) ?”

Conventional Risk
Tolerance Framework



“So, What’s The Risk?”

“So, what’s practical challenges with the framework ?”

- Each enterprise should define its own thresholds
- Intolerable does not necessarily translate to “intolerable” in practice
- Only risk to people should have an intolerable threshold
- Addressing threats/risks in the negligible band are easy

“So, What’s The Risk?”

“So, what’s practical challenges with the framework ?”

- The basis for mitigation investment is rarely well defined.
- ALARP (as low as reasonably practical) does not inherently define what constitutes “reasonable practicality.”
- The conditions upon whether mitigation investment is required can, and should, be variable.

“So, What’s The Risk?”

“So, what’s the Cost/Benefit?”

- To demonstrate ALARP, a cost benefit analysis is required.
- Investment decisions involve strategic, design and operating decisions.
- Risk mitigation investment decisions implicitly involve cost-benefit consideration.
- The foundation of any risk management program must therefore be a clear definition of the basis upon which risk mitigation investment decisions will be made.

“So, What’s The Risk?”

“So, what are the basic elements of risk management?”

- Identification
- Analysis and Assessment
- Planning: Prevention and Mitigation measure Development
- Implementation
- Tracking
- Control and Refinement

“So, What’s The Risk?”

“So, what identification and analysis processes are available?”

Qualitative Risk Assessments

Probabilistic Scenario Analysis
(PSA)

Hazard and Identification Study
(HAZID)

Hazard and Operability Study
(HAZOP)

Bowtie Analysis

Safety Function Assessment

Quantitative Risk Assessments
(QRA)

Layer of Protection Analysis
(LOPA)

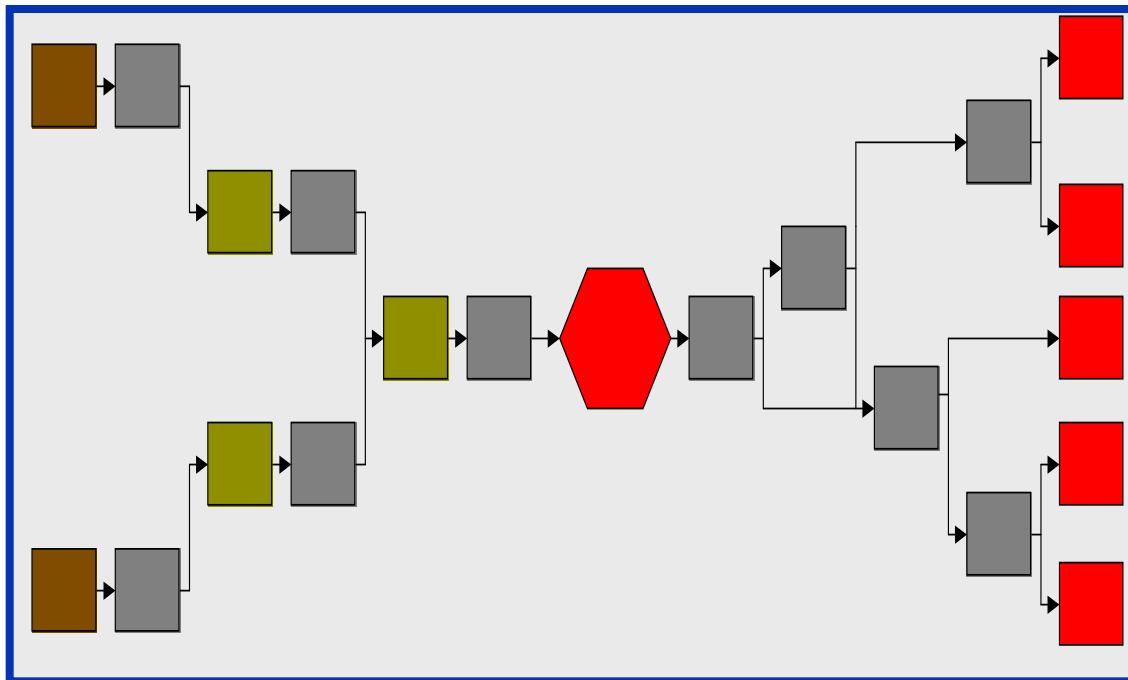
Safety Integrity Level (SIL)

Failure Mode and Effects Analysis
(FMEA)

Fault and Event Tree Analysis

Safety Case (UKHSE, IADC,
NOPSA)

“So, what’s the best way to capture the risk?”



- Bowtie Diagrams
- Major Accident Hazards
- Safety Critical Elements
- Safety Case (UKHSE, NOPSA, IADC)
- Case For Safety

“So, What’s The Risk?”

“... Not knowing the answer?”

“Knowing the “Answer” and having the documentation and the organization’s actions to support it is the “New Standard of Due Diligence.”

“So, What’s The Risk?”

“So, what’s the next step?”

“... Start Over”

- Good news – you probably have some of the ingredients in place (due to a range of different stimuli)
- Bad news – they are unlikely to be properly aligned, and you probably need to start over again with your overall risk management program

“So, What’s The Risk?”

Thanks to the many folks within the Det Norske Veritas Foundation who contributed directly or indirectly to the production and information contained within the presentation.

In addition:

1. International Council of Chemical Associations. POLICY PAPER: Principles for Risk Based Decision Making, (6/95).
2. “Risk Management (defined) en.Wikipedia.org/wiki/risk management (8/08).
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5. “Establishing a Risk Management Program,” Jack Vrins, (11/ 2007).
6. “Probabilistic Scenario Analysis,” Mr. David Oryang (03/2002).



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