

AS/NZS 4360

Risk Management

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Why write a standard

■ 1992

- Terminology getting more and more confused
- Organisations wanting to integrate risk
- Federal Government push for common approach
- Too many people selling everything and anything under the name of risk management

Purpose

- Managing risk in organisations
 - Risks to an organisations objectives
 - Strategic level
 - Uncertainty during strategic planning
 - Balancing opportunities and negative risk
 - Managing things that are a major threat to the organisation as a whole
 - Operational level
 - Risks to departments, activities and projects

Principles

- Integration

- Same process for all decisions involving uncertainty – different tools of assessment

- **Business**

- **Engineering**

- **Environment**

- **Emergency management**

Terminology 1

- Risk Analysis =
 - Risk Assessment = the scientific work understanding risk
 - Risk Evaluation = identifying risks, setting priorities commissioning and reviewing risk assessment
 - Risk Management = the decision making step and managing unacceptable risks

US EPA, WHO, UN Food and Agriculture Organisation

Terminology 1

Risk Analysis =

- Initiation
- Hazard Identification
- Risk Assessment
 - Probability, consequences, uncertainty
- Risk Management
 - Efficacy, feasibility, impacts
- Risk communication

US EPA, WHO, UN Food and Agriculture Organisation

Risk Evaluation

- identifying risks, setting priorities
commissioning and reviewing risk
assessment**

Terminology 2 Risk Management =

Context

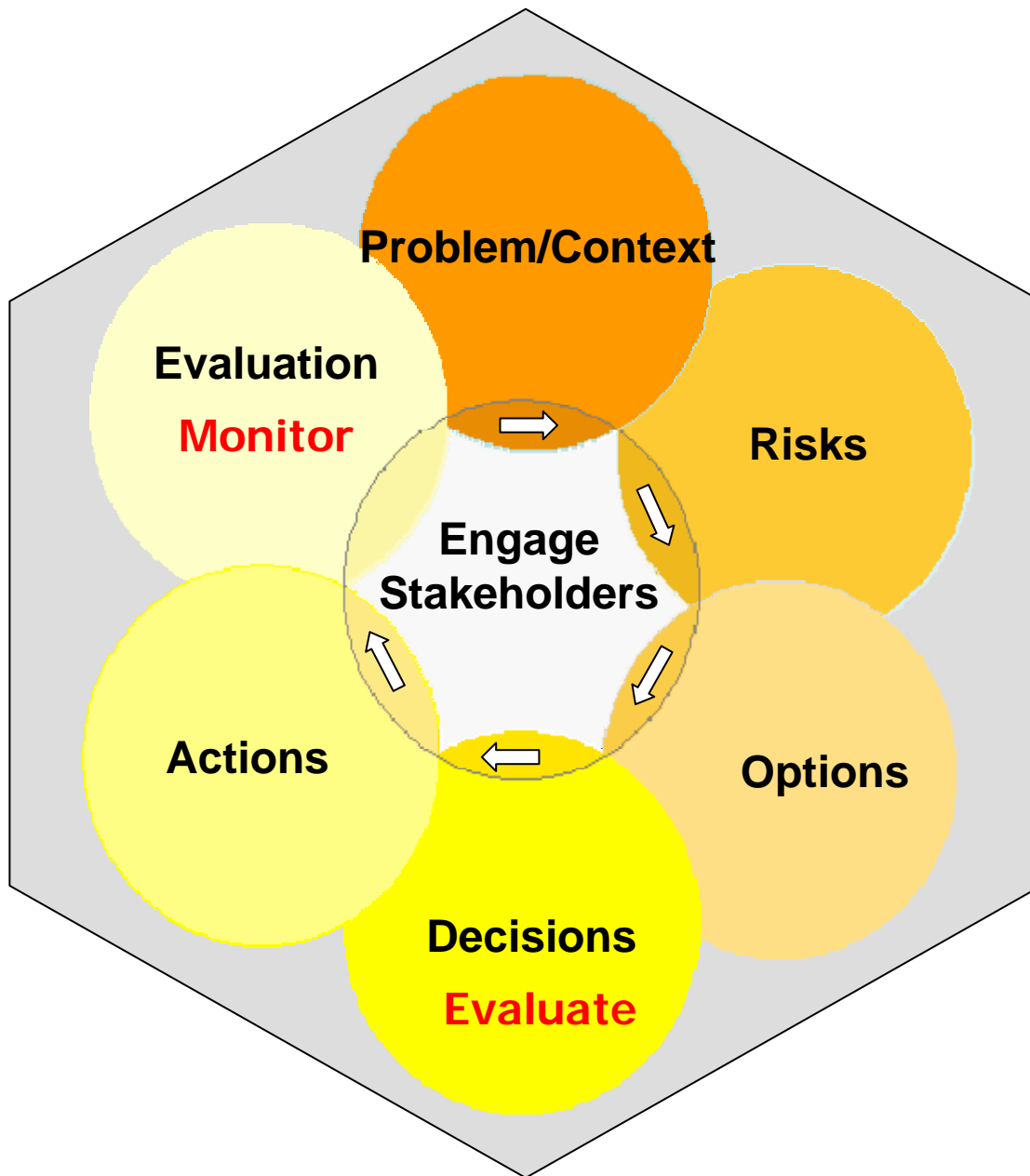
Risk Identification

Risk analysis = scientific work within risk management

Risk Evaluation = decision making step

Risk Assessment = combination of Risk identification, risk analysis and risk evaluation

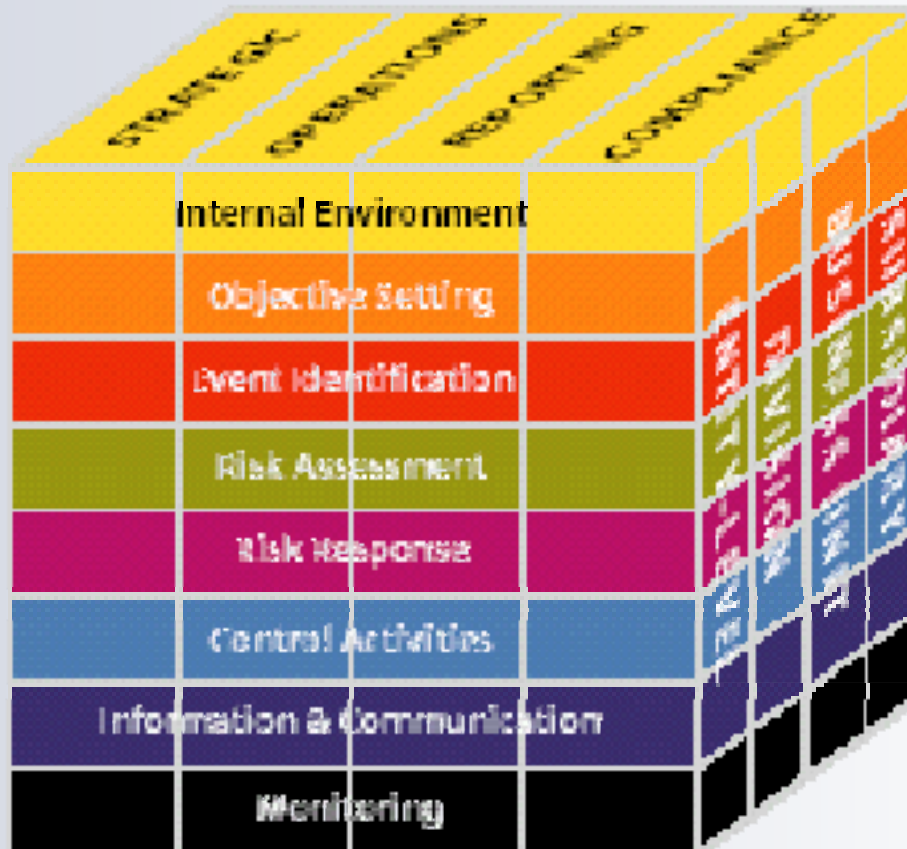
Risk treatment (or control) = managing unacceptable risks



Source: Presidential / Congressional Commission on Risk Assessment and Risk Management (1997), front page

COSO

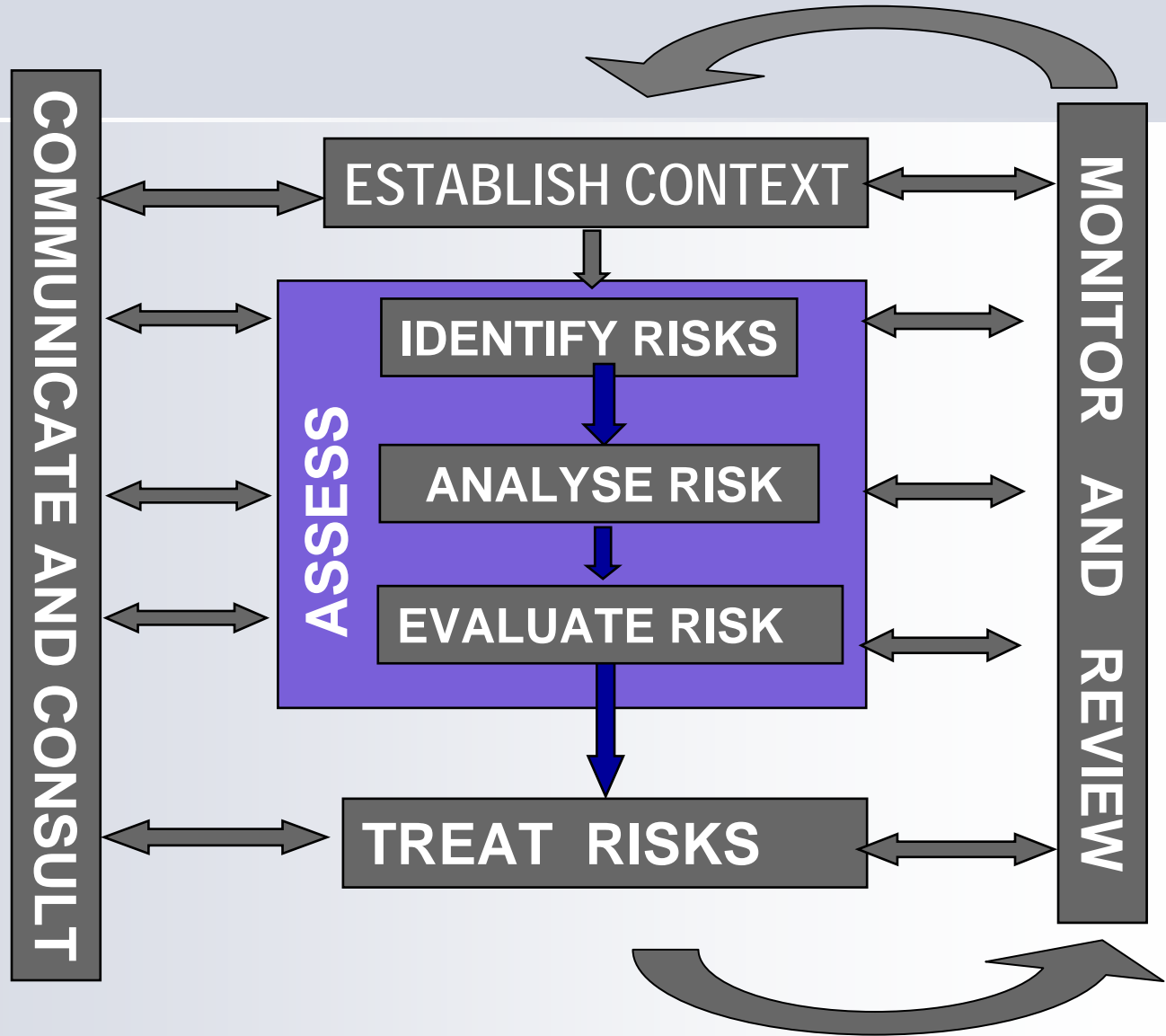
framework for implementing Sarbanes Oxley Act in US





HM treasury USA

PROCESS



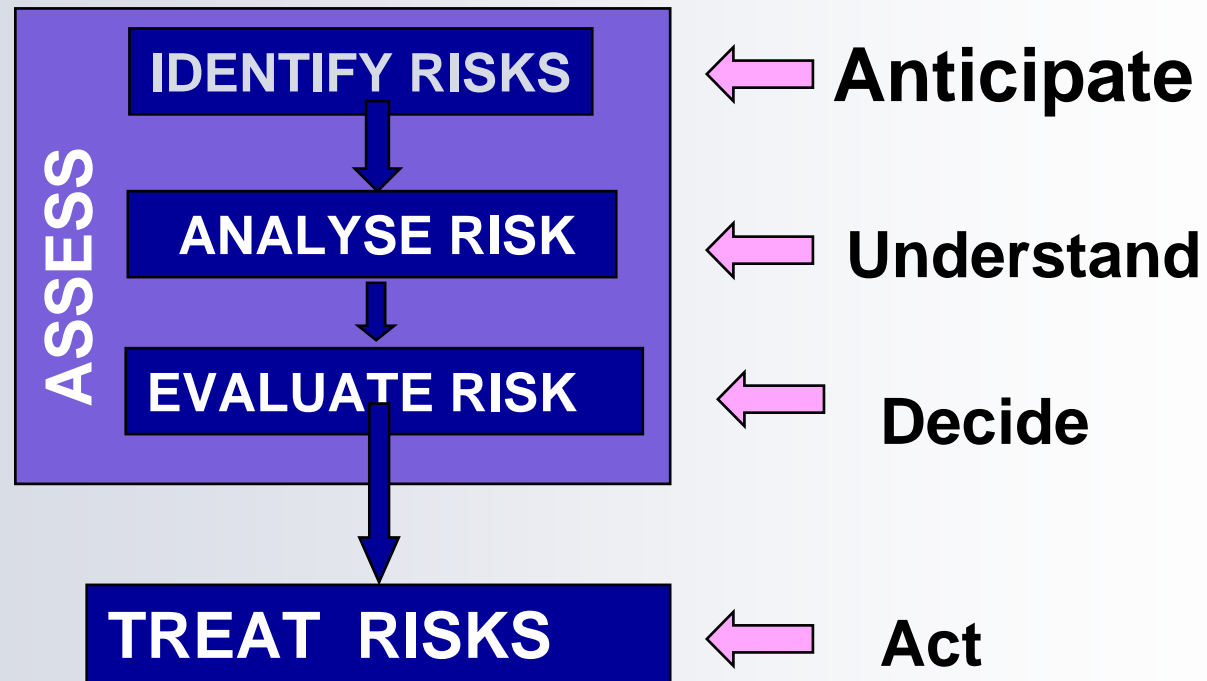
Other Conflicts in terminology

- The distinction between hazard and risk
- The opportunity side of risk
- Risks as a measure or as what might happen

Hazard = source of harm

Risk = The chance of something happening that will impact objectives. Measured in terms of consequences and the likelihood they will happen

BASIC PROCESS AS/NZS4360



Risk = what might happen to impact objectives

Does it matter ?

Problems with terminology 1

- Separates risk assessment from the decision
 - The person who makes the decision is often not the analyst
 - But analysis method **must** be tailored to the decision to be made and the context
- Does not work sensibly for business risks so integration difficult

Ties you to hazard based decision model

■ Control based

- One control for multiple hazards
- Limited number of available controls so assess cost benefit of controls not risk

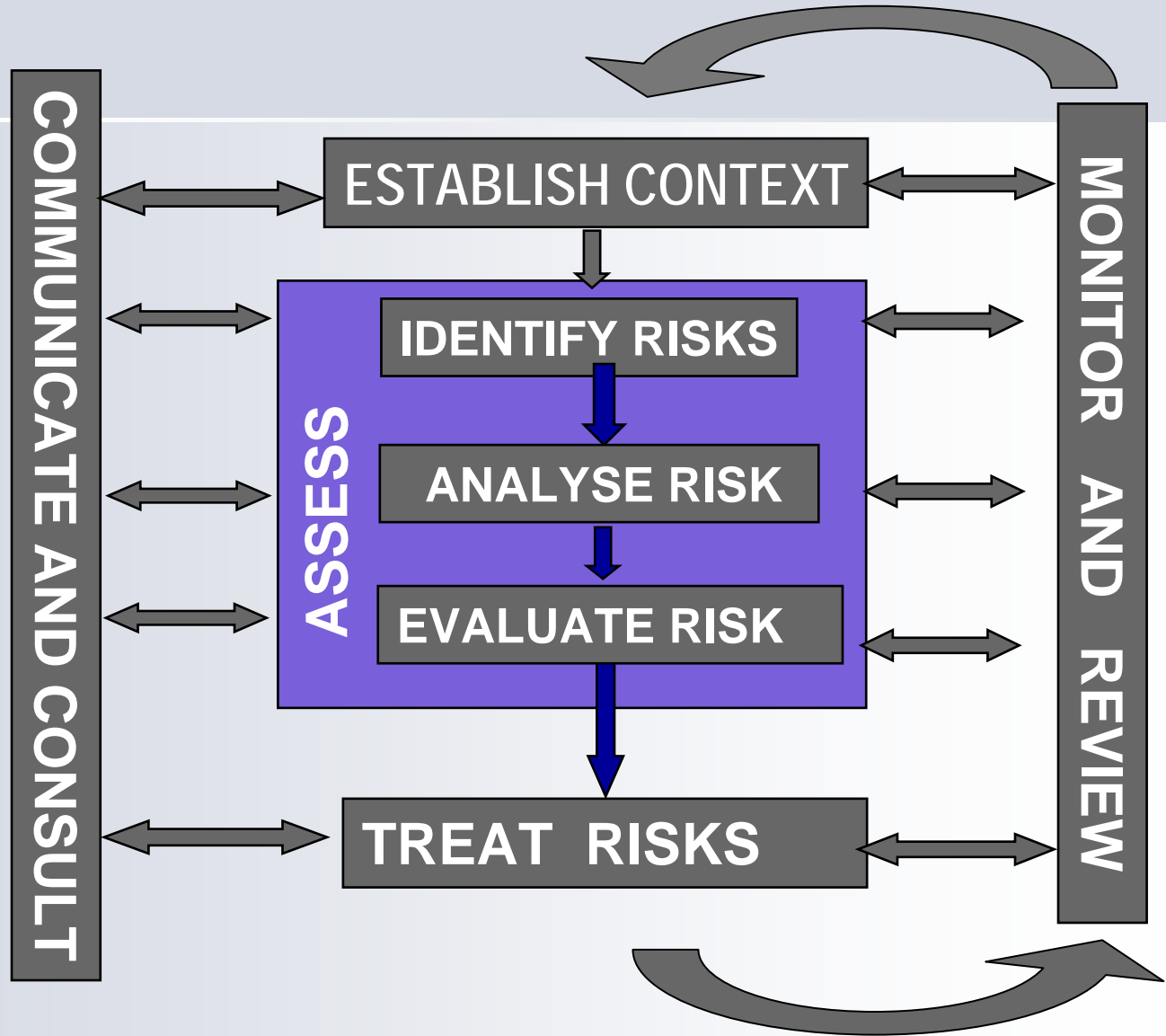
■ Vulnerability based

- Priorities could be based on vulnerability of an ecosystem or industrial sector rather than the threats to it

■ Consequence based

- Some consequence sufficiently serious probability is secondary

PROCESS



Risk and Decision Making

■ Decision making

- Define the problem
- Identify Issues
- Analyse Issues

- Define Options
- Set priorities
- Select and implement Actions
- Monitor

■ Risk Management

- Define Context
- Identify Risks
- Analyse Risks
- Decide whether to act and set priorities
- Define treatment options
- Select and implement treatments
- Monitor

Communication/consultation

- Identify stakeholders
- what and how to communicate
- How to involve
- Why
 - Understand the basis on which decisions are made
 - Perception of risk
 - Developing trust

Context = Back ground

- WTO and other international agreements
- The specific industry context
- The eco system in Australia
- Government objectives and philosophy
- Scope
 - Eg consequences locally or nationally

Context

■ Objectives

Risk is what might happen to affect objectives

- **Objective of government**
- **Objective of community**
- **Objective of industry**
- **Objective of project**
- **Objective of risk assessment exercise**

Criteria - Decide criteria against which risk will be evaluated

- The kinds of consequence to be included
- How likelihood will be defined
- How it is decided whether treatment is needed or not

Decisions may be based on

- Level of risk Defined qualitatively , quantitatively or semi-quantitatively
- Specified consequences
- Cumulative effect of multiple events
- the range of uncertainty for a risk level (expressed as a confidence level)
- A balance between negative and positive risk
- Cost effectiveness of controls

Identify Risk

- What might happen when where why and how
- Does not say must identify Hazards
 - May be relevant but not always

Analysis is about

- Understanding Risk-
- Providing information for deciding
 - Whether risk is acceptable
 - Whether treatment is required
 - Most cost effective treatment

Analysis involves considering

- Sources of risk and the magnitude of their positive and negative consequences
- The likelihood those consequences will occur
- factors that affect consequence and likelihood
- How to combine likelihood and consequences
- Uncertainty and Sensitivity analysis

Qualitative analysis

- Initial screening to see what needs further analysis
- Where there is inadequate data

■ A ranking tool - not a decision tool

- Highly subjective
- Needs to be tailored -cannot be universal
- Poor estimates of likelihood – experts can estimate costs and consequences they have experience cannot assess likelihood of rare serious events because have no experience
- Doesn't allow proper consideration of benefits
- Doesn't encourage trust

Consequence Likelihood	1	2	3	4	5
A	S	S	H	E	E
B	M	S	S	H	E
C	L	M	S	H	E
D	L	L	M	H	H
E	L	L	M	S	S

When I hear a physician speak of risk I think they mean the following probabilities

Descriptor	average	highest	lowest
High	1/3 – 1/14	1/1	1/ 10 – 1 / 100
Medium	1/16 –1 /20	1/2	1 /100 – 1/1000
Low	1/149 – 1/2256	1/5	1/1000- 1/10,000
V low	1/1902 – 1/25957	1/10 – 1/20	1/10,000- 1/100,000
Minimal	1/21773 – 1/223821	1/20 – 1/100	1/100,000- 1/1million
Negligible	1/279000 – 1/46,709,000	1/100 – 1/1000	1/1million – 1/1000million

Risk

$$R = C \times L$$

$$R = \sum C^m \times L^n$$

Usually an event has multiple consequences measured in different terms some positive some negative

Semiquantitative analysis

- Normal rules apply
 - Cannot carry out mathematical functions with ordinal scales
- ranking scale 1, 2, 3,4
- 1 + 1 does not equal 2

Treatment

- Need to understand cause and risk factors to implement best controls
- May need to revisit analysis
- Different opportunities to intervene

Monitor

- Do treatments work
- What data did we not have that we need to collect?

Issues

- How to analyse risk when no or limited data
- Human factors and risk

- Not a set of tools on a bookshelf pick one for a problem
- Have to define problem, decision and objectives and work through
- A structure for thinkin about problems
- No easy way of avoiding difficult decisions