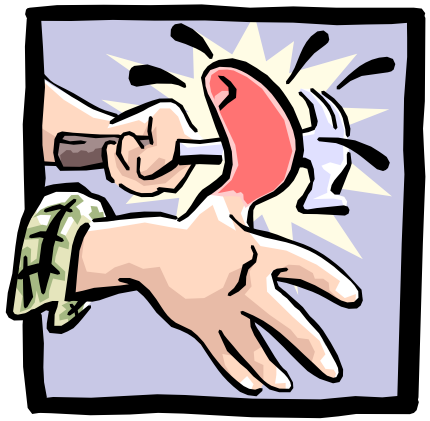
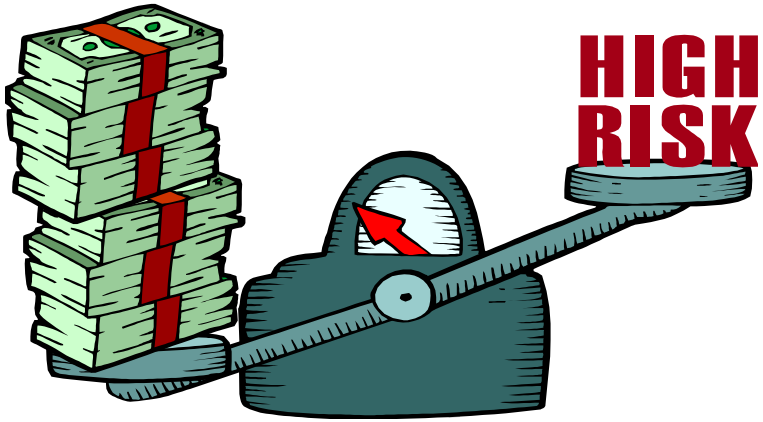
Risk Management





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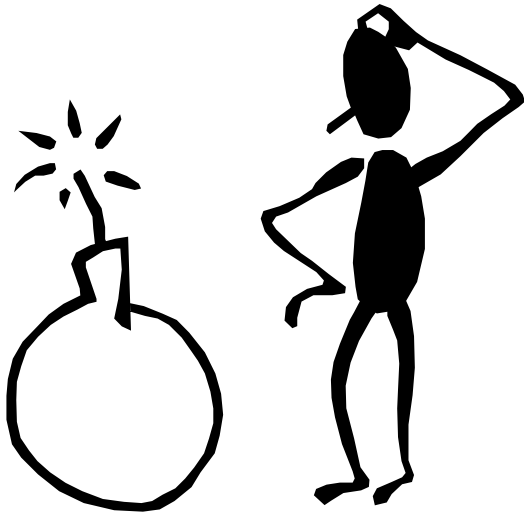


What Is Risk?

Does It Really Matter?

WHY DOES IT MATTER?

"When anyone asks me how I can describe my experience of nearly forty years at sea, I merely say uneventful. Of course there have been winter gales and storms and fog and the like, but in all my experience, I have never been in an accident in any sort worth speaking about. I have seen but one vessel in distress in all my years at sea... I never saw a wreck and have never been wrecked, nor was I ever in any predicament that threatened to end in disaster of any sort"

from a paper presented by EJ Smith, 1907

IT MATTERS!

On 14 April 1912, Titanic sank with the loss of 1500 lives.....
One of which was its captain

E J SMITH

Business Risk Definition

The chance of something happening that will have an impact on business objectives

Source :-Aus/NZ

Risk Mgt Standard

Types of Risk

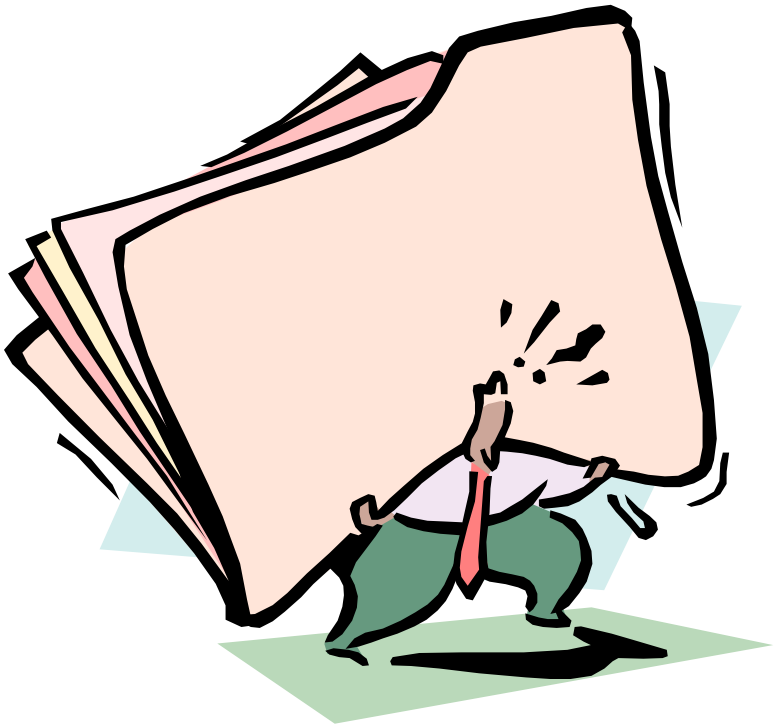
- Strategic
- Operational
- Reputation
- Information
- Financial
- People
- Regulatory

Strategic Risks

- Risks that relate to doing the wrong things

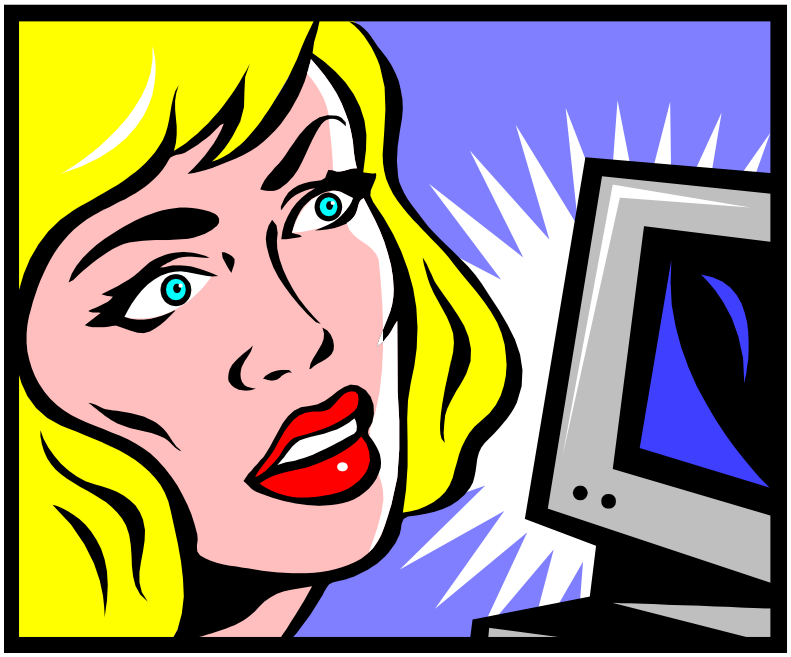
Operational Risks

- Risks that relate to doing the right things in the wrong way



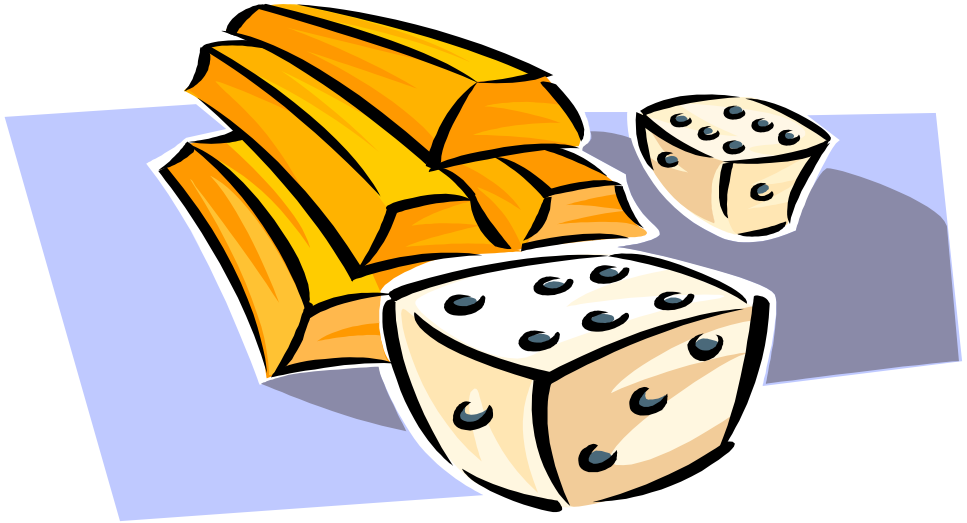
Information Risks

- Risks that relate to loss or inaccuracy of data ,systems or reported information



Financial Risks

- Risks that relate to losing monetary resources or incurring unacceptable liabilities



People Risks

- The risks associated with Employees and Management

Regulatory Risk

- The Risks related to the regulatory environment

Reputation Risk

- Risks that relate to the organizations brand or image

Today’s organizations are concerned about:

- Risk Management
- Governance
- Control
- Assurance (and Consulting)

ERM Defined:

"… a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risks to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives."

Source: COSO Enterprise Risk Management – Integrated Framework. 2004. COSO.

Why ERM Is Important

Underlying principles:

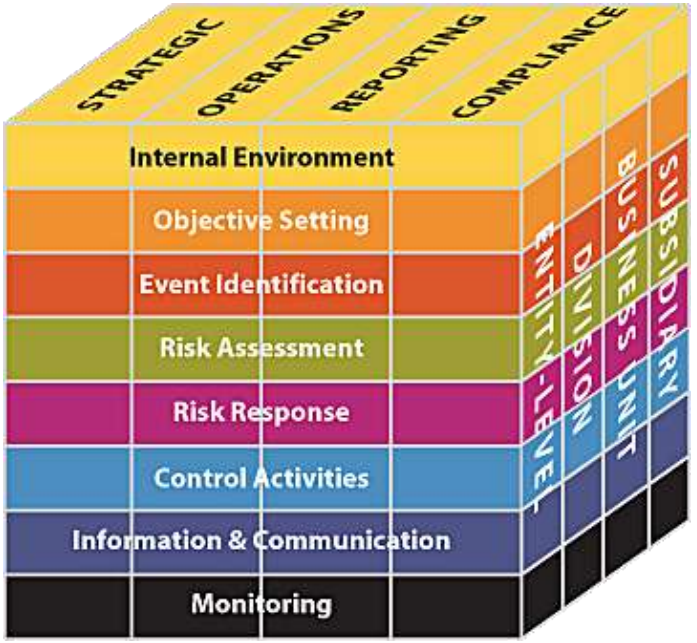
- Every entity, whether for-profit or not, exists to realize value for its stakeholders.

- Value is created, preserved, or eroded by management decisions in all activities, from setting strategy to operating the enterprise day-to-day.

The ERM Framework

Entity objectives can be viewed in the context of four categories:

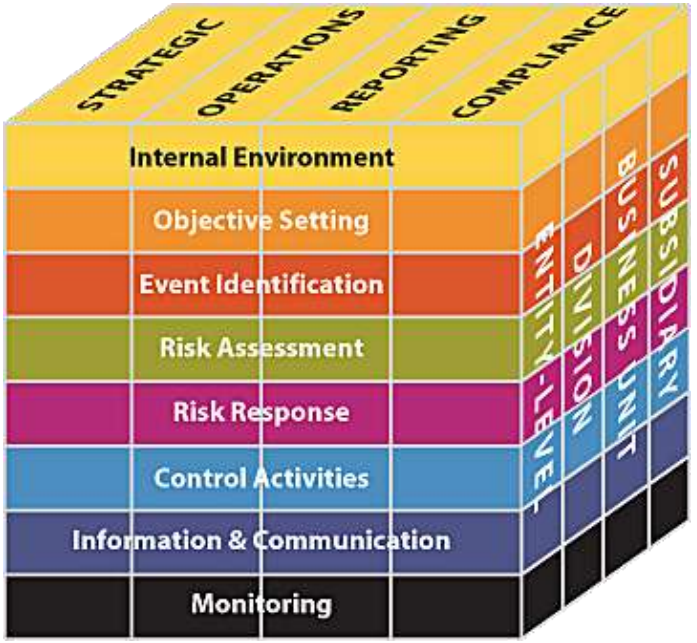
- Strategic
- Operations
- Reporting
- Compliance



The ERM Framework

ERM considers activities at all levels of the organization:

- Enterprise-level
- Division or subsidiary
- Business unit processes



THE LAW

Work Health & Safety Act 2011

. . . a duty . . . to eliminate/minimise risks to health and safety as far as is reasonably practicable.

. . . taking into account and weighing up all relevant matters including:
(a) the likelihood of the hazard or the risk concerned occurring; and
(b) the degree of harm that might result from the hazard or the risk
. . . .

Part 2, Sections 17 and 18

all relevant matters includes

- facilities available
- behaviour of the class
- students with special needs
- students with allergies, etc

(NOT book “risk assessment”, tick sheet, etc)

likelihood

degree of harm consideration requires

proper risk assessment using a risk matrix

e.g. Aust/ISO Standard on Risk Management

You should:

- identify
- assess
- control

risks

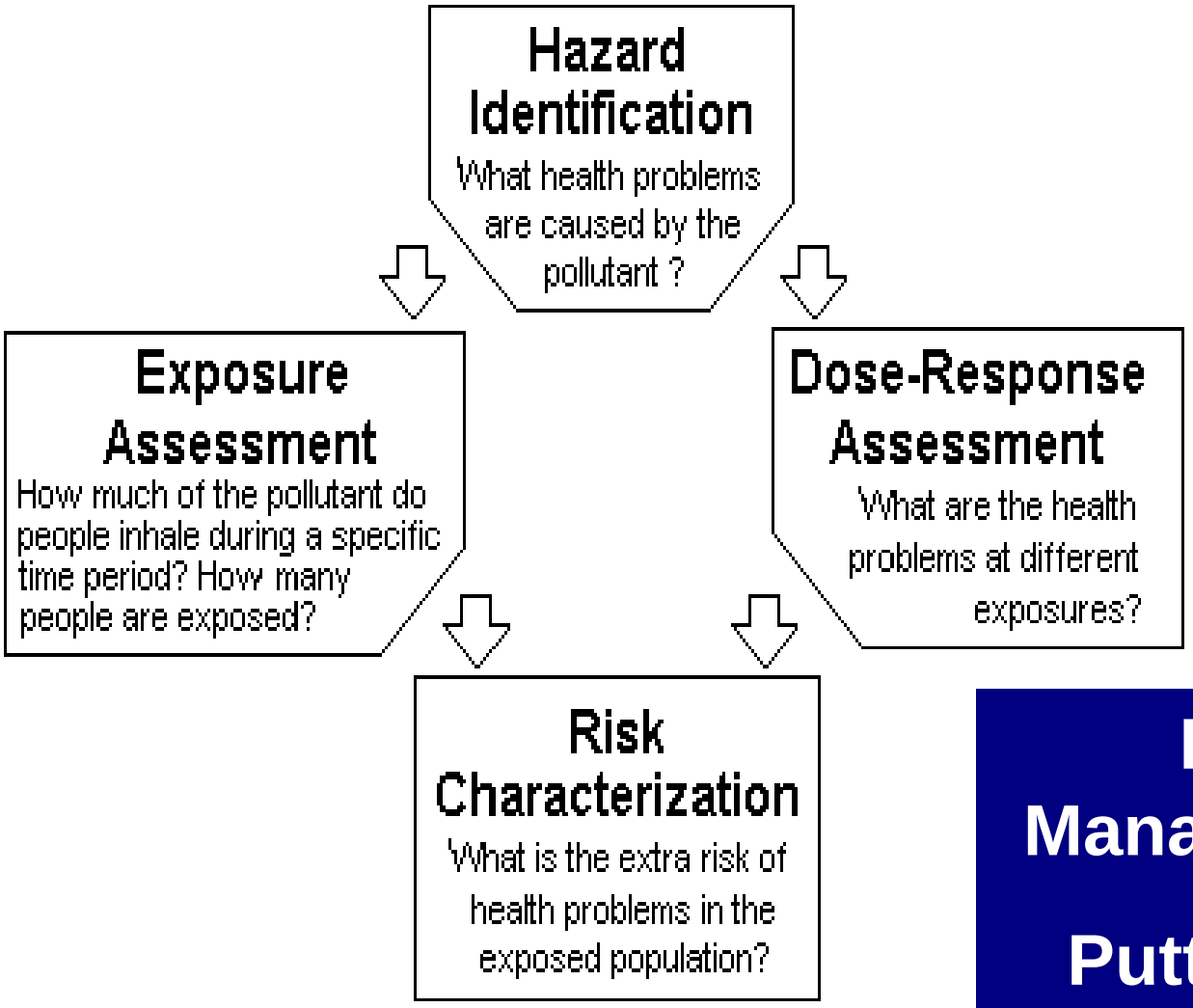
Before: Establish the context

After: Monitor and review

Always: Consult and communicate

- Phillip Crisp, EcoSolve Australia

The 4-Step Risk Assessment Process



Risk Management:

Putting the elements together

Risk identification

- history of “accidents” and “near-accidents”
  at school
  at similar schools
- brainstorming, preferably with colleagues
- checklists of possible risks

Risk assessment

To assess the severity of a risk,

you need to consider:

- the consequences of the event, and
- the chance that it will occur (likelihood)

AU ISO 31000:2009 “Risk management”

HB 436:2013 “Risk management guidelines”

Risk matrix

Likelihood	Consequences: Minor	Consequences: Severe
Likely	**?**	**X**
Unlikely	**OK**	**??**

Code

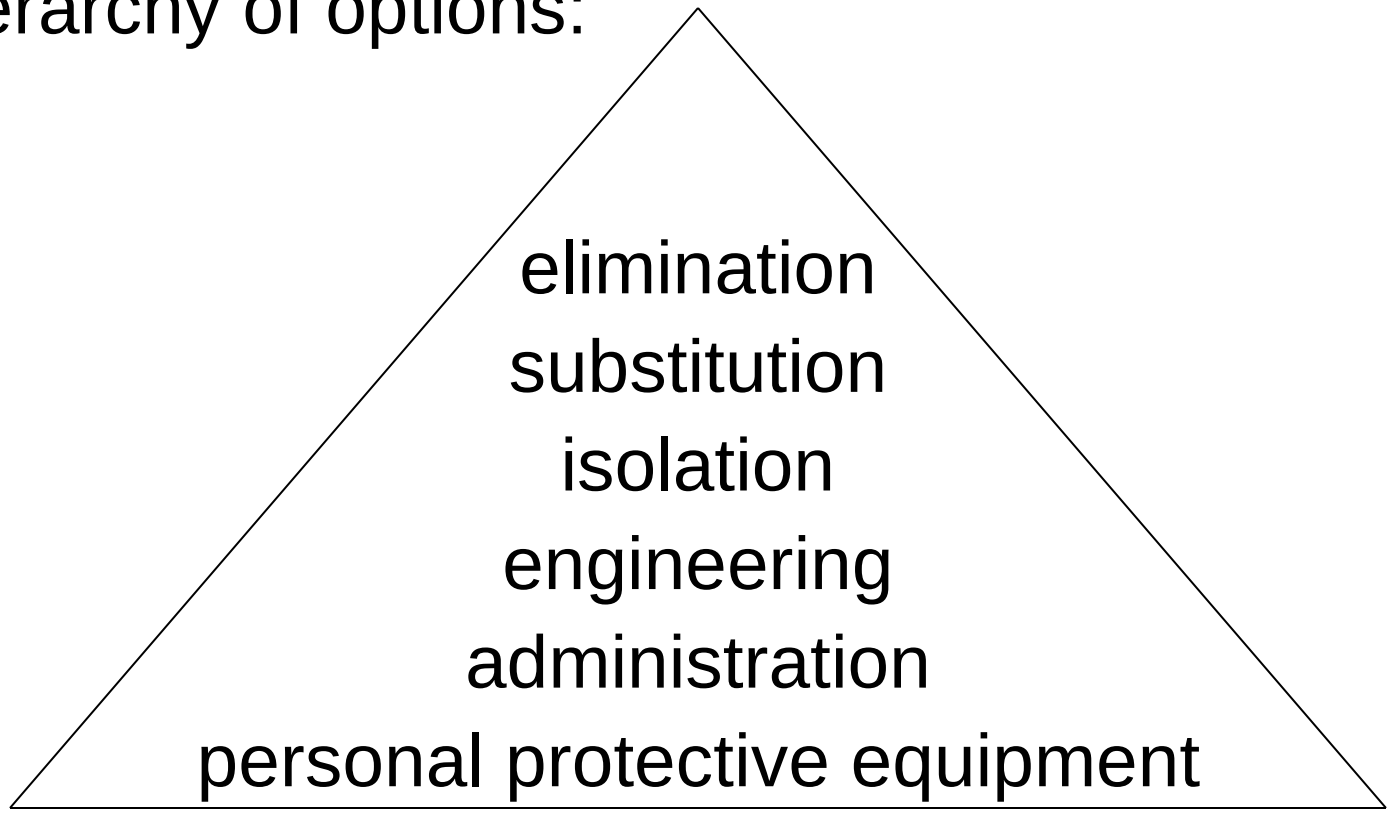
OK = acceptable risk

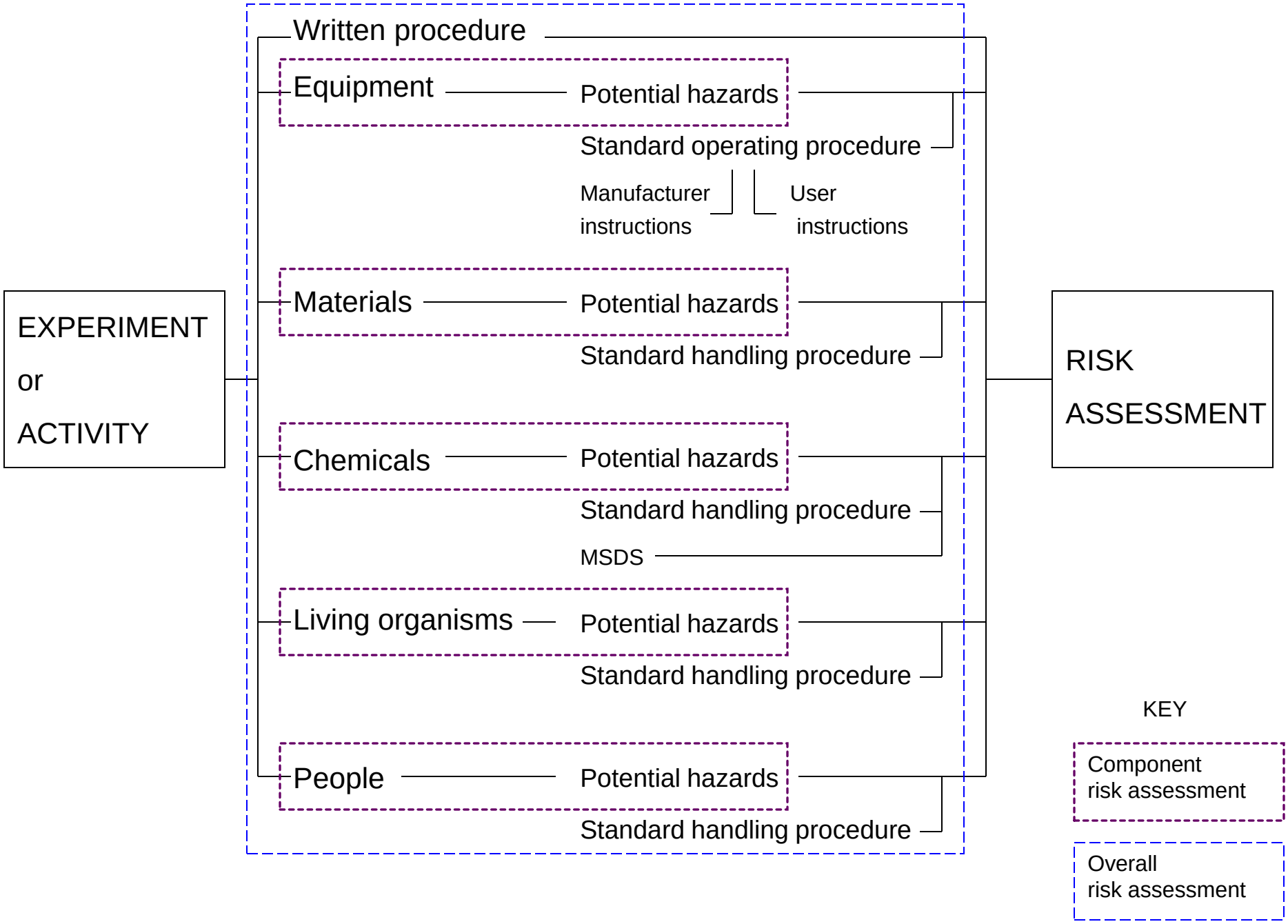
? = doubtful
CONSIDER THE OPTIONS

X = unacceptable risk
DON'T DO IT!

Risk control

Hierarchy of options:




Written procedure
Equipment
Potential hazards
Standard operating procedure
Manufacturer instructions
User instructions
Materials
Potential hazards
Standard handling procedure
Chemicals
Potential hazards
Standard handling procedure
MSDS
Living organisms
Potential hazards
Standard handling procedure
People
Potential hazards
Standard handling procedure
EXPERIMENT or ACTIVITY
RISK ASSESSMENT
KEY
Component risk assessment
Overall risk assessment

Multi-level scale of consequences

- Level 1 : first aid treatment at the school (Minor)
- Level 2: treatment by a doctor (Moderate)
- Level 3: immediate hospitalization or death (Severe)

Multi-level scale of likelihood

- Level 1: known to commonly occur; not unexpected in the class
  (Likely)

- Level 2: uncommon, rare, but sufficiently frequent to have been witnessed by self or a known person
  (Unlikely)

- Level 3: very rare; have heard of it happening; may possibly have been witnessed by self or a known person
  (Very unlikely)

Risk matrix

Consequences

Likelihood	Minor	Moderate	Severe
Likely	**OK**	**X**	**X**
Unlikely	**OK**	**?**	**X**
Very unlikely	**OK**	**OK**	**??**

Code

OK = acceptable risk (low risk)

? = doubtful
CONSIDER OTHER OPTIONS

?? = very doubtful
Either DON'T DO IT or
PROCEED WITH GREAT CARE

X = unacceptable risk
DON'T DO IT!

CARA
Multi-level scale of consequences

- Level 1 : no treatment required
  (Insignificant)
- Level 2: minor injury requiring first aid
  (Minor)
- Level 3: injury requiring medical treatment
  (Moderate)
- Level 4: serious injury requiring hospital admission (>4 days)
  (Major)
- Level 5: loss of life, permanent disability
  (Critical)

CARA
Multi-level scale of likelihood

- Level 1: Rare
- Level 2: Unlikely
- Level 3: Possible
- Level 4: Likely
- Level 5: Almost certain

CARA Risk matrix

Likelihood	Consequences: Insignificant	Minor	Moderate	Major	Critical
Almost certain	**Medium**	**Medium**	**High**	**Extreme**	**Extreme**
Likely	**Low**	**Medium**	**High**	**High**	**Extreme**
Possible	**Low**	**Medium**	**High**	**High**	**High**
Unlikely	**Low**	**Low**	**Medium**	**Medium**	**High**
Rare	**Low**	**Low**	**Low**	**Low**	**Medium**

Advantages of risk assessments

- reduced frequency of injuries
  - to students
  - to school staff
- reduced costs for paperwork, litigation and payouts
- compliance with the law (c.f. industry)
- helps maintain variety of chemicals and equipment

Advantages of a formalised system

- proper consideration of risks and control measures
- standardisation
- storage of records for legal purposes
- communication between teachers and laboratory technicians
- useful for new/inexperienced staff
- limits spur-of-the-moment experiments

Is it practical?

Paper-based system

NO (almost)

Electronic system

YES

Paper-based system

- time consuming
- unwieldy forms
  - many prompts - mostly empty space
  - few prompts - requires knowledge & skill
- non-searchable
- difficult to update
- storage problems

Electronic system

- relatively rapid
- prompts sensitive to context
- reduces paper consumption
- easy to review and update
- easy monitoring
- easy storage
- demonstrated to work in schools (e.g. >900 schools in AU+NZ+CA)

RiskAssess

- web-based risk assessment tool
- customised to the school situation
- provides
  - electronic templates (AU/ISO)
  - database information on risks
    - (chemical, equipment, biological)
  - equipment ordering
  - lab scheduling
- easy sharing of experiment templates for customisation

Logic

- separate sections for teacher and laboratory technician
- initial assessment of inherent risk
  if low, go to end of form
  if medium or more, record control measures
  if high or extreme, third reviewer required
- assessment of risk, with control measures
- cross-checking by teacher/labtech/reviewer
- scheduling and ordering system to save time
- inexpensive ($160+GST per campus per year)

Details

- access from school/home
- nothing to install on computer, tablet or phone (instant update)
- unlimited number of simultaneous users and risk assessments (virtually)
- minimal data entry
- complements MSDS/SDS
- continuing input from science staff
- multiple backups of data & backup server
- support and advice

Summary of benefits

- safer laboratories
- better communication
- meets legal requirements
- reduced costs
- happy lab techs and teachers!

Student RiskAssess

- meets safety training requirements of
  - new Australian Curriculum for Science
  - International Baccalaureate
  - extended investigations (student-initiated)
- optimised for student use (>120 schools)
  - students must agree to follow rules and instructions
  - on-line help screens and documents
- continues to have all facilities of RiskAssess
- class of 30 simultaneous users no problem
- can be used on
  - laptops
  - iPads and other tablets
  - smart phones (iPhones, Android, etc)
- costs an additional $160+GST per campus per year

Risk Characterization/ Management 1

- What Is the **Extra** Risk to Health?
- Maximum Individual Lifetime Cancer Risks:

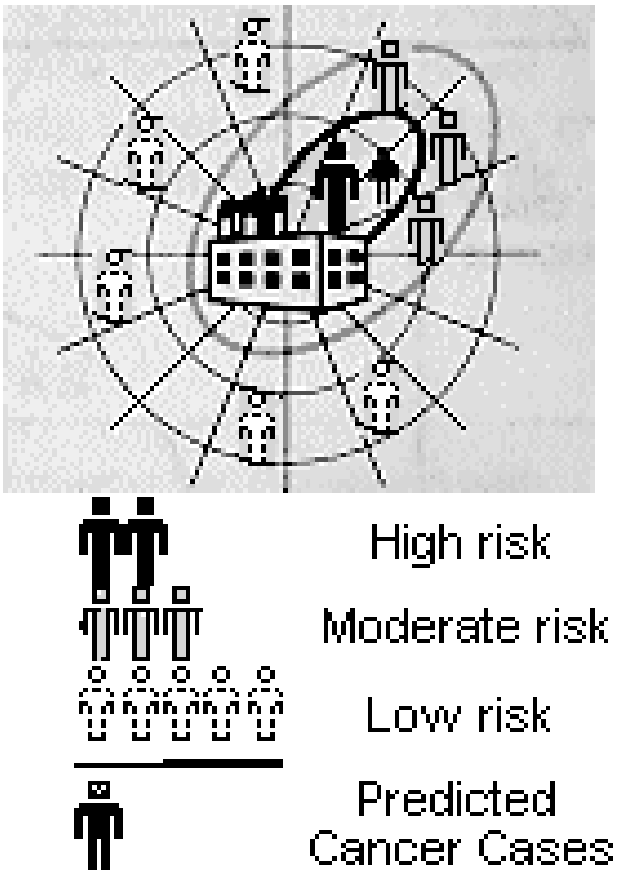
Maximum Lifetime Exposure	X	Dose-Response Relationship	=	Maximum Individual Lifetime Risk

Risk Characterization/ Management 2

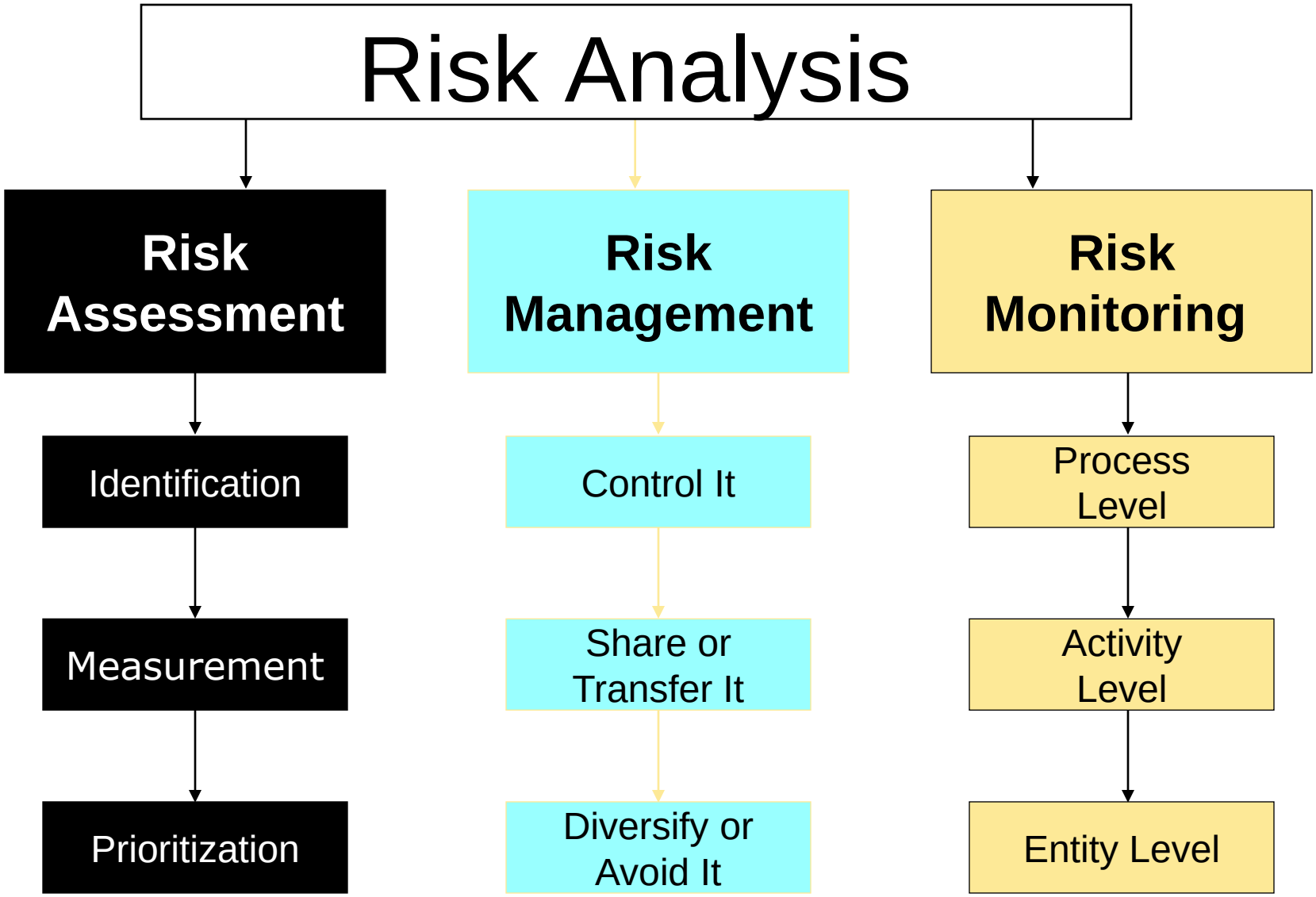
- What Is the **Distribution** of **Individual** Risks?

Distribution of Individual Risk

Population Cancer Risks can be calculated from the Distributed Individual Risks



This is where we "do the math"



Source: Business Risk Assessment. 1998 – The Institute of Internal Auditors