2014 AusIMM Events
Exploration & the 2013 Regulations

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Outline

- What is MinEx & what do we do
- What sectors of the mining industry are covered by the 2013 changes to the Health & Safety legislation?
- What does this mean for exploration companies?
- The Senior Site Executive role
- Principal hazard concept & application to exploration activities
- Introduction to risk management in the context of the new legislation

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What is MinEx?

- Mining industry safety council
- Formed in 2006 to represent H&S interests of all sectors of the Minerals Industry & over the next 7 years developed industry guidelines
- Effectiveness limited due to poor industry support in that funding was inadequate to do what was required
- Catalyst for change was the Pike River Royal Commission report
- New MinEx has a new board & sufficient funding for a contract CEO until May 2015

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MinEx's role

- Governance & expert input to the Extractives qualifications review
- Expert input to codes of practice & guidance with 6 codes & 3 guidelines being developed this year
- Development of resources to assist mining operators to improve H&S performance
- Promote H&S performance improvement in the industry
- Maintain relationships with WorkSafe & especially the Inspectorate
- Expert input to the Extractive Industry Advisory Group which advises the WorkSafe board
- Look after the industry's interest in the development of the H&S Reform Bill 2014 & it's associated regulations

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What sectors are covered by the 2013 regulations ?

- **A *Mining operation* is defined under section 19M of the Act**

- It includes:
  - Mining for coal & minerals;
  - Exploring for coal;
  - Tourist mines;
  - Tunnels; &,
  - Various activities associated with these operations.

- It excludes:
  - Exploring for minerals;
  - Alluvial mining;
  - Sea bed mining; &,
  - Quarrying operations.

Quarries, alluvials & exploration

- *Part 1 - Safety-critical roles & competency requirements* apply to all mining operations as well as quarry & alluvial operations
- Exploration for coal is defined as being a *mining operation* so companies with coal exploration as their only activity are *Mining Operators*
- Exploration for minerals is excluded – but
- If minerals exploration is via an old underground mine it is covered by the new regulations

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What does this mean for exploration companies?

As for all mining operations, such activities will require:

- A Senior Site Executive
- Various notifications to WorkSafe
- A compliant H&S management system
- To be properly supervised- might mean requires a CoC holder
- To comply with a number of other matters in the regulations

The Senior Site Executive

- Appointed by the Mine Operator (reg 7)
- May manage more than 1 mining operation (reg 7)
- Requires a CoC but not until 1 Jan 2016
- Must have been appointed by 1 July 2014
- Appoints other safety critical roles (reg 26 -32)
  - Electrical & Mechanical Superintendent, Mine Surveyor, Ventilation Officer, Underviewer, Deputy, Supervisor & other workers required to hold CoCs
- **Must develop, implement, & maintain the H&SMS (reg 53)**

What does develop, implement, & maintain mean?

- Ensure risk management is part of developing, implementing & maintaining the H&SMS
- Auditing & monitoring the H&SMS (reg 57)
- Carry out reviews of the H&SMS (reg 58 & 59)
  - Routinely at 12 months then 3 yearly
  - Before a significant change is made
  - After a Notifiable accident
  - If an audit shows a problem
  - If site H&S representative requests it & others -(reg 59)
- Consult workers on the H&SMS in preparing & reviewing (reg 60)

What does develop, implement, & maintain mean?

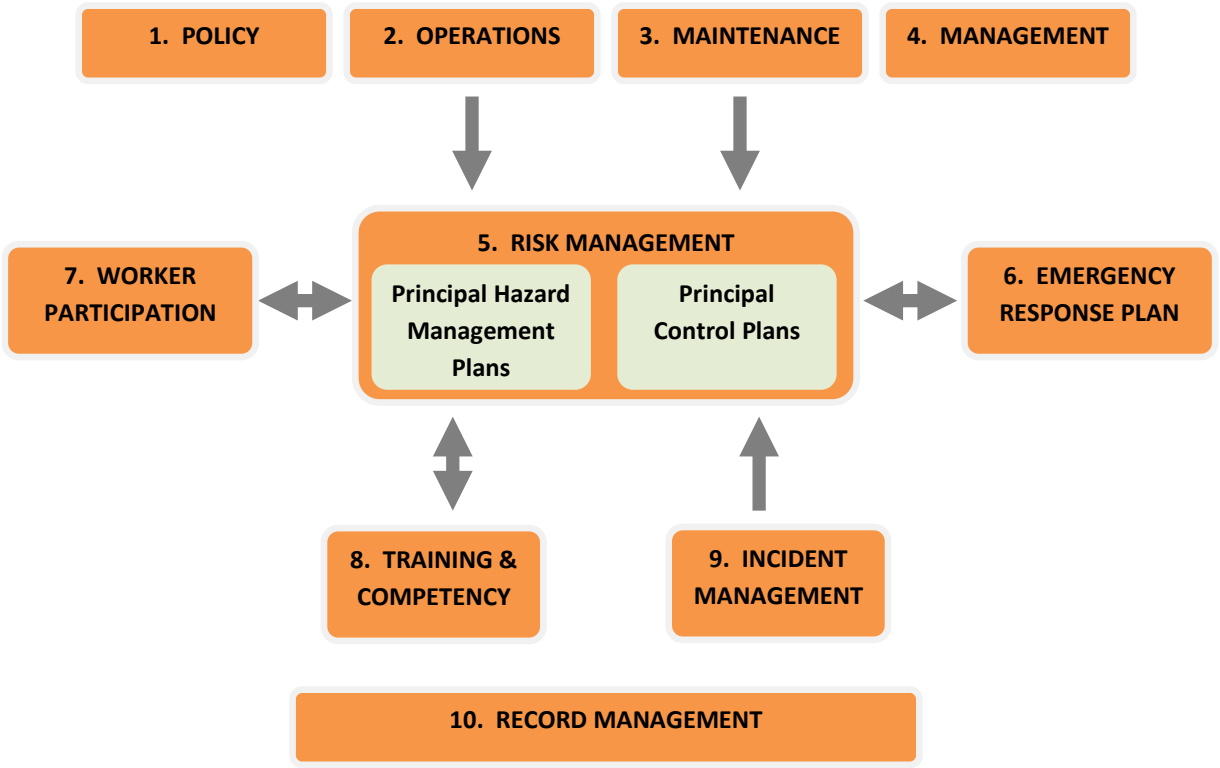
- Identifying principal hazards & developing principal hazard management plans - PHMPs(reg 66)
- Review & revise PHMPs - once every 2 years & following various other matters (reg 69)
- If ground instability is a principal hazard must ensure a geotechnical assessment is completed to design support (reg 71)
- Determine if inundation & inrush is a principal hazard & if so ensure a PHMP is prepared (reg 73)
- Complete a risk assessment in relation to tips, ponds & voids (reg 82)
- Ensure a review of any determination that there is no sponcom potential every 3 years (reg 88)

What does develop, implement, & maintain mean?

- If electricity or mechanical plant are principal hazards ensuring Principal Control Plans (PCPs) are in place (reg 92)
- Ensure that Principal Control Plans are reviewed & revised every 2 years & if triggered by certain conditions (reg 94)
- Ensure that the Emergency Management Control Plan is tested, workers trained, training is recorded & Mines Rescue & emergency services have the Plan (reg 106)

The health & safety management system

The primary tasks for the SSE are about the Health & Safety Management System & reg 56 sets out what this must contain:



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Content of the health & safety management system

- The primary tasks for the SSE are about the Health & Safety Management System &reg 56 sets out what this must contain:
- The mine operator's health and safety policy, including broad aims
- A description of the processes used
  - to identify the hazards present
  - to assess the risk of harm to workers from those hazards
  - to identify the controls required to manage that risk
- The means of reporting and recording relevant information, including the setting of KPIs &investigation of accidents
- A description of systems, procedures to identify & respond to the effect of change on risk

Content of the health & safety management system

- Monitoring and audit matters
- A description of the arrangements in place to monitor the health and safety of mine workers
- The principal hazard management plans and principal control plans required for the mining operation
- A description of arrangements in place to monitor, assess, and inspect working places

In addition:

- Detail commensurate with the nature, size, and complexity of the mining operation
- Easily understood by any mine worker

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Principal hazards – what are they?

A ***Principal Hazard*** is any hazard arising at any mining operation that could create a risk of multiple fatalities in a single accident or a series of recurring accidents at the mining operation in relation to any of the following (reg 65):

- ❑ Ground or strata instability
- ❑ Inundation & inrush of any substance
- ❑ Mine shafts & winding systems
- ❑ Roads & other vehicle operating areas
- ❑ Tips, ponds, & voids
- ❑ Air quality
- ❑ Fire or explosion
- ❑ Explosives
- ❑ & anything else that meets the definition

So what does this mean for coal explorers?

- Firstly determine what hazards are present via a risk appraisal- a hazard ID process
- Are any of these hazards listed in reg 65? If yes then prepare PHMPs for each hazard in accordance with the regulations
- What principal hazards are likely to be present on a drill rig exploring for coal?
  - fire or explosion from methane?
  - fire or explosion from drill rig fuel?
  - any others? Only a risk appraisal with experienced people will answer this question

Preparing a fire & explosion PHMP

- Regulation 85 tells you what must be considered:
  - potential sources of fire & explosion
  - potential sources of flammable, combustive, & explosive materials (gas, dust, fuels, solvents, & timber)
  - potential sources of ignition (equipment, static electricity, electricity, spontaneous combustion, lightning, hot work)
  - potential for propagation of fire or explosion
  - the use, presence, & storage of flammable & explosive substances (coal dust, or methane)
- & goes on to define the content of the PHMP

What else could give rise to a principal hazard?

- If the rig is located in an operating mine or within a public road verge then a vehicle collision would meet the trigger for development of a roads & other vehicle operating areas PHMP
- Regulation 80 sets out in detail what you need in such a PHMP

Other hazards?

- Hazards other than principal hazards also need to be identified
- Under the new regulations these hazards need to be dealt with in a slightly different way to the way they may have been dealt with in the past.

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Mineral Explorers

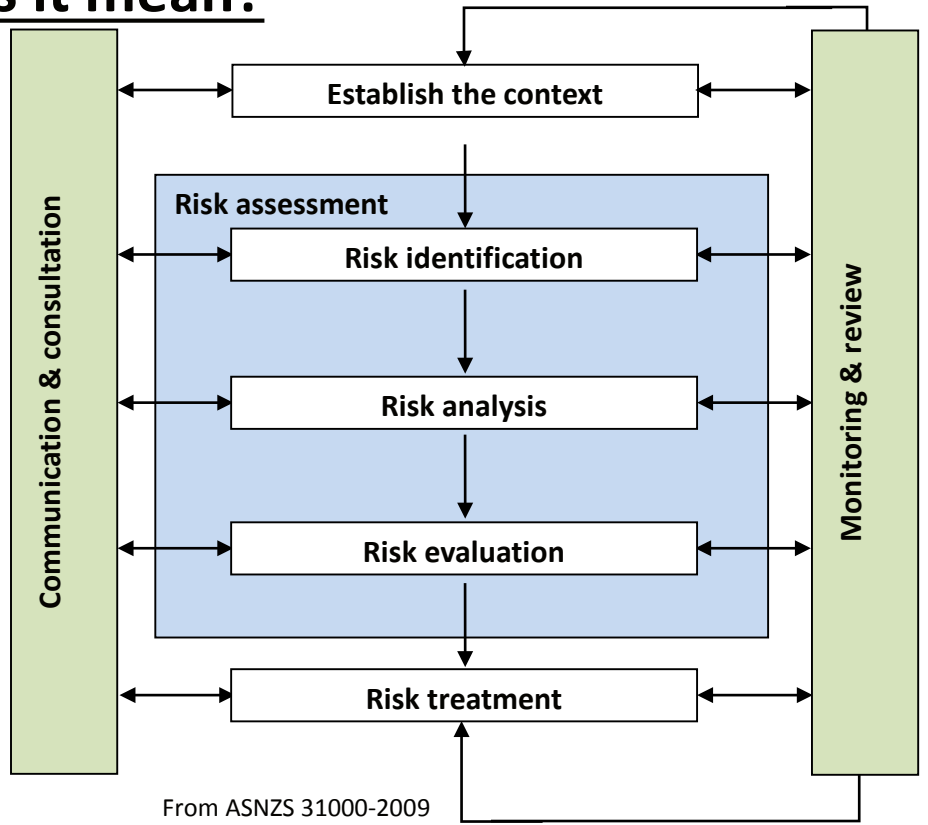
- Minerals explorers entering old workings will almost always result in the need to do work in the old workings which could expose them to:
  - poisonous or explosive gases (methane, carbon monoxide, hydrogen sulphide &sulphur dioxide)
  - lack of oxygen from sulphide oxidation
  - floods & slippery slopes
  - rock falls & roof collapse
  - hard-to-see vertical shafts
  - confusing mazes of tunnels
- Any could be considered Principal Hazards & require PHMPs

Mineral Explorers & PHMPs

- The following PHMPs might be required before you can start exploration from old workings
  - ground or strata instability
  - mine shafts & winding systems
  - tips, ponds, & voids
  - air quality
  - fire or explosion
  - explosives

Risk management – what does it mean?

- ASNZS 31000 – 2009 is the relevant standard



From ASNZS 31000-2009

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Risk management – what does it mean?

- ***Risk appraisal*** - defined by reg 54 as the process of identifying hazards
- ***Risk identification*** - determining the risks that are associated with the hazards
- ***Risk analysis*** - determining the likelihood & consequences for each risk
- ***Risk evaluation*** - determining the risk rankings to determine which need treating & with what priority
- ***Risk assessment*** - identification, analysis & evaluation
- ***Risk treatment*** - the assessment & selection of appropriate risk controls based on the hierarchy of controls

Hierarchy of control?

The current Act requires *Elimination*, *Isolation* then *Minimisation* but a more comprehensive approach is:

- *Elimination* - removing the hazard or hazardous work practice from the mine. This is the most effective control measure;
- *Substitution* - replacing a hazard or hazardous work practice with a less hazardous one;
- *Isolation* - stopping persons from interacting with the hazard eg machine guarding, remote handling;
- *Engineering Control* - if the hazard cannot be removed, replaced or isolated, an engineering control is the next preferred measure. This may include changes to tools or equipment, providing guarding to machinery or equipment.

Hierarchy of control?

- *Administrative Control* - includes introducing work practices that reduce the risk. This could include limiting the amount of time a person is exposed to a particular hazard; and

- *Personal Protective Equipment* - should be considered only when other control measures are not suitable or to increase protection.

Risk assessment rating

Risk = Likelihood (Probability) x Consequence

Likelihood	Consequences
A = Common or repeating occurrence	1 = Fatality
B = Known to have occurred – “has happened”	2 = Permanent disability
C = Could occur or “heard of it happening”	3 = Medical/hospital or lost time
D = Not likely to occur	4 = First aid or no lost time
E = Almost impossible	5 = No injury

Risk Rating

High Risk	1 – 6
Medium Risk	7 – 15
Low Risk	16 – 25

Risk Assessment Matrix

Likelihood / Consequences	A	B	C	D	E
1	1	2	4	7	11
2	3	5	8	12	16
3	6	9	13	17	20
4	10	14	18	21	23
5	15	19	22	24	25

Practically what does applying a risk management process to develop a H&SMS mean?

- You need a facilitator who has this skill & experience to managing a risk assessment workshop (unit standard in Managing the Risk Assessment Process)
- It is essential to involve those doing the work in the assessment process
- The outputs from the process are:
  - A list of hazards
  - A list of risks in order of rank
  - A documented process outlining how the task can be performed safely that includes the controls that need to be applied to manage risk which can be reviewed, audited & monitored

Questions?