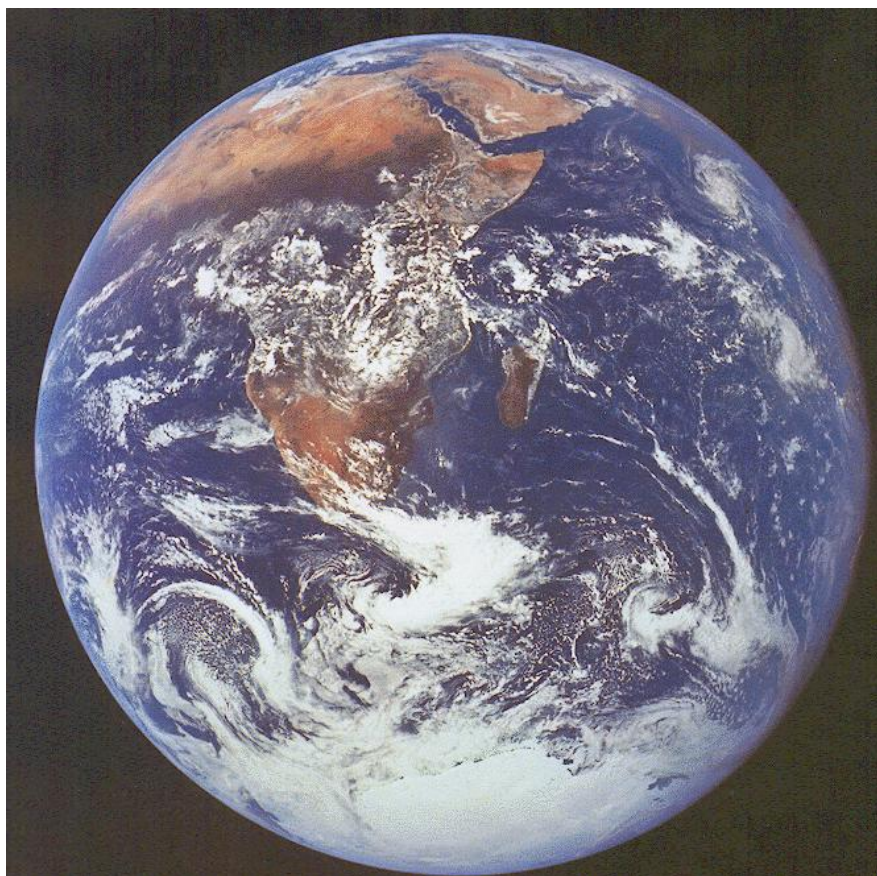


Global Minerals Industry Risk Management (G-MIRM)



Capability Building Programme Overview

Introduction to the Programme.

The MISHC G-MIRM Programme has been developed in conjunction with Anglo American and is available to individuals, sites and companies through a set of universities in major mining regions of the world.

During 2007 a working group representing Anglo American Business Units from across the globe was formed to develop a “One Anglo” Risk Management process.

The simple vision arising from this scope is that:

"All our people make the right decisions affecting safety."

The programme has a global delivery approach, based on a breakdown of the globe into 5 segments; Africa, Europe/NA, South America (Spanish), South America (Portuguese), Australia/Asia. Each global segment has a local university representative responsible for quality delivery of the course content and integrating core base material with local material.

Professor Jim Joy, appointed as the Anglo American Chair in Minerals Industry Safety Risk Management at the University of Queensland in mid 2007 and a member of the working group explains: "there are many World class features of the "One Anglo" Risk Management process. It draws on leading risk management Concepts, Tools and Applications".

Over 2008 and 2009 approximately 25 lecturers delivered the course to managers (the 'A3') and executives (the 'A4') in 3 languages on 6 continents, involving over 3000 course attendees. In addition persons attended from other mining companies, government and labour organisations.

The following document is intended to summarise the new G-MIRM capacity development that was derived from the Anglo A3 programme. The document also covers the A4 or Executive workshop. Course aims and contents are included, along with perceived "World class" practice features.

Core Content for all courses

All courses include specific risk management terminology, concepts and models. Some of the core information is shown below.

The terminology for Safety Risk Management is clearly defined and consistently presented. The terms listed below are not necessarily a

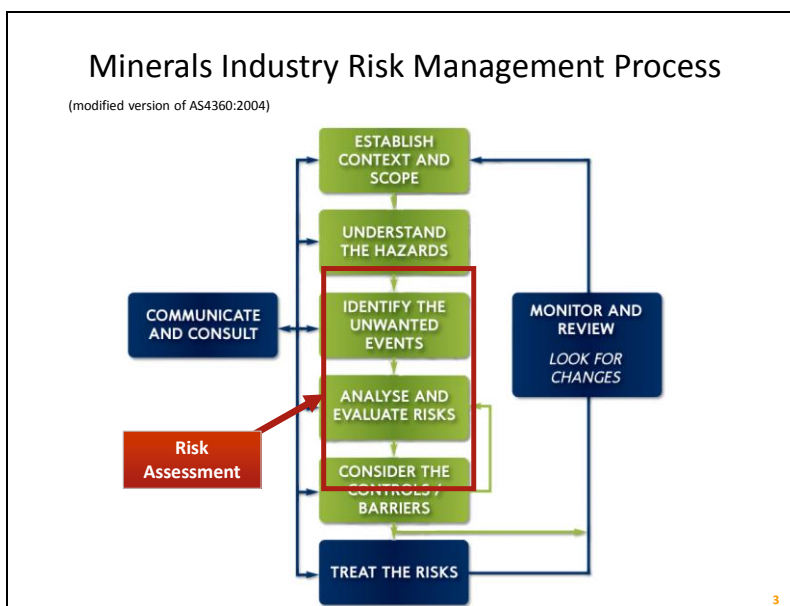
complete list but represent the terms that have been highlighted to date. They are defined simply to permit use in a quality discussion at any level about hazards, unwanted events, risks and controls.

Concepts and Terminology

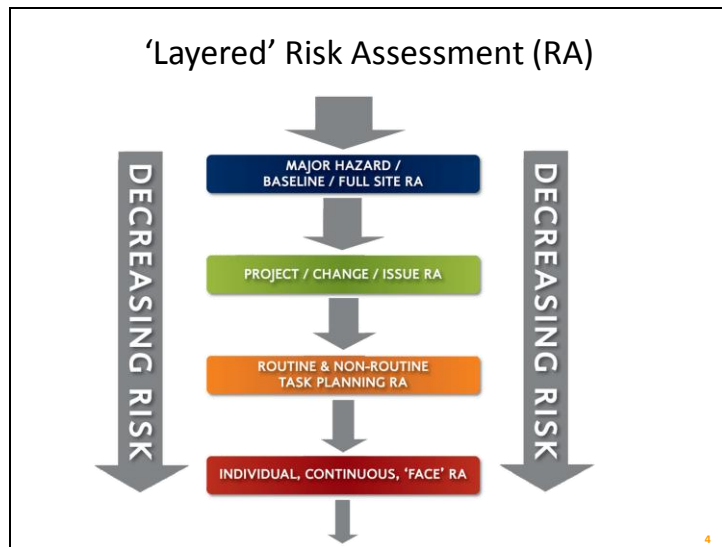
- Risks and Decisions : Strategic, Tactical & Operational
- Proactive vs Reactive Decisions
- Energies : Way to look for hazards
- Hazard : Potential for harm
- Unwanted Event/Incident : Specific description
- Risk : Measure of Likelihood and Consequence
- Controls/Barriers/Defences : Attempts to reduce risk
- Risk Management : The total process
- Risk Assessment tools : HAZOP, SWIFT, WRAC, JSA etc.
- Risk Analysis techniques : 5 by 5 matrices and others

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A model of the risk management process is also required as core content. The illustration below has been used to date. It involves a deviation from risk management models in Standards due to the need to emphasise certain areas



The layered approach to applying risk assessment at a site level is also consistently communicated, discussed and analysed using the image below and support information. This model is based on an industry benchmark study.



Finally, the risk management process is explained and discussed as a journey that involves both people and systems. The illustration below shows an image of a spiral staircase, defined during the Anglo programme, that is used in all courses, with discussions and exercises to identify current status and plans to improve.



Information on G-MIRM Course for Managers

Aim:

- To initiate a change in risk management within operations and disciplines through improving managers’ understanding and practice of Minerals Industry Risk Management (MIRM).
- To challenge and affect the way managers as individuals decide, behave, lead and live with regard to risks.

G-MIRM ManagersCourse

DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Introductions & Activity 1 – Concepts	Presentation and discussion on Human Factors Exercise	Presentation / discussion on Activity 2	MODULE 12 The MIRM Journey Tool	Presentations / discussion on the Improvement Project
MODULE 1 Risk Mgmt Introduction	MODULE 5 Risk Assessment & Analysis Background	MODULE 9 Intro to Maturity Techniques	Journey Analysis Exercise	
Break	Break	Break	Break	Break
MODULE 2 Risk Management Concepts & Models	MODULE 6 Risk Assessment Methods & Application Examples	MODULE 10 Leading Practice 4 Layer Operational Risk Management Risk Acceptability & the 4 Layers Major Hazard RM	MODULE 13 Risk Improvement Project	MODULE 14 Future RM Issues
Discussion Feedback			Assignment 3 1 of 3 options: RA Layer Plan, IRM BP Plan or Journey Step Change Plan	(Note that programme may flow over into this time slot – ex. Workforce culture module)
Lunch	Lunch	Lunch	Lunch	Lunch
MODULE 3 Human Factors and Behaviour	MODULE 7 Risk Analysis Methods & Application Examples	MODULE 11 Integrated Risk Management (IRM)	Assignment 3 – continued	MODULE 15 Close & discussion of demonstration of change
Break	Break	Break	Break	Break
MODULE 4 Human Factors and Engineering	MODULE 8 Scoping a Risk Assessment	IRM Business Process mapping exercise	Assignment 3 – continued	
Human Factors Exercise	Activity 2– Scope a Risk Assessment			

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Outcomes: At the end of the course the Learner will:

- have a clear understanding of how MIRM relates to overall industry, regulatory corporate risk management strategies

- Have a deeper, more aligned understanding into MIRM concepts, Risk Assessment (RA) methods and the systematic application to sites and disciplines;
- Be able to scope a RA and apply tools for comparison with good practice approaches;
- Be able to determine the quality of risk management activities and systems;
- Have challenged any traditional thinking about risk and safety using the MIRM concepts which include both systems and people elements;
- Will understand the importance of making a personal commitment to and setting accountability for managing risk,
- And, as a result, be able to make better decisions about risks.

And have produced one of the following:

- A site based plan to improve risk assessment methods; or
- A plan to improve risk management in a business process; or
- A plan to make a step forward in the MIRM journey

This course aimed at personnel with a potential or actual responsibility for defining and managing site, operation or discipline approaches to risk management; such as:

- At a Mine or Project: General Managers, Mine Managers, Section Managers, Superintendent, Mine Captains, Plant Supervisors, Senior Technical Staff, Safety Managers and safety practitioners
- Within a Division or Corporate Structure: Technical and Functional Staff (e.g. Rock Engineering, Ventilation, Safety, Human Resources, Finance & Procurement), and
- Long term / high hazard contractors at the appropriate level

Information on the G-MIRM Workshop for Executives

Aim:

- To initiate a change in risk management within companies and BUs through improved understanding of Minerals Industry Risk Management (MIRM) so executives make and lead appropriate decisions about risks.
- To effect executives thinking and decisions about risk;

G-MIRM Executive Workshop

Day 1	Day 2
Module 1: Mining Risk Management – the challenge	Module 6: Leading Practice Operational Risk Management (ORM) Risk Assessment & Analysis In ORM
Break	Break
Module 2: Risk Management Words & Concepts	Module 7: Integrated Risk Management
Module 3: Human Factors & Error	Module 8: The Risk Management Journey Model
Lunch	Lunch
Module 4: Line Management & Risk Management	MIRM Journey Self Assessment & Reflection
Break	Break
Module 5: Intro to Management Journeys	MIRM Journey Plan Creation Exercise & Discussion

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Outcomes: At the end of the course the Learner will:

- Have a clear understanding of MIRM and their related role;
- Have a deeper insight into risk concepts, risk assessment methods and their application to corporate or BU goals;
- Have challenged any traditional thinking about risk;

And have produced a corporate or BU improvement plan based on the journey to make a step forward in the journey.

Who is the course aimed at?

- Personnel with a potential or actual responsibility for defining and managing corporate and BU approaches for risk management;
- Senior Executives and strategic leaders within the Centre and BU / Division

Global Delivery Method

Many minerals industry companies are organised into business units, which operate in many parts of the globe. A global delivery approach has been defined to address this context.

Delivery of the A4 in any location is done by a leading MIRM expert.

Delivery of the A3 will be based on a regional breakdown of the globe initially into 5 segments; Africa, Europe, North America, South America (Spanish and Portuguese), and Australia/Asia

Each segment has a university partner responsible for delivery of a consistent G-MIRM course content with additional regional content.

G-MIRM Potential Global Partners List

Australasia	Europe
Professor Jim Joy Minerals Industry Safety & Health Ctre University of Queensland (UQ), Brisbane, Australia j.joy@mishc.uq.edu.au	Dr. Patrick Foster Camborne School of Mines (CSM), University of Exeter, UK P.J.Foster@csm.ex.ac.uk

Africa	Africa
Prof. May Hermanus Centre for Sustainability in Mining & Industry University of Witwatersrand (UW) , South Africa May.Hermanus@wits.ac.za	Prof. Jean-Paul Franzidis Chair in Minerals Beneficiation University of Cape Town (UCT) , South Africa jean-paul.franzidis@uct.ac.za
Africa	
Prof. Ronny Webber-Youngman Head of Dept of Mining Engineering University of Pretoria (UP) , South Africa ronny.webber@eng.up.ac.za	
South America (Portuguese)	South America (Spanish)
Prof. Sergio Medici de Eston Head of Mining Engineering Department University of Sao Paulo (USP) , Brazil smeston@usp.br	Dr. Javier Quispe Universidad Católica del Norte (UCN) , Antofagasta, Chile jquispe@ucn.cl
North America	North America
Dr. Michael G. Nelson, Associate Professor and Chair Department of Mining Engineering, University of Utah (UU) Salt Lake City, Utah, USA nelsonnelson@aol.com	Prof. Stephen Hall MIRARCO Mining Innovation Laurentian University (LU) , Sudbury, Canada shall@mirarco.org
Prof. Dirk van Zyl University of British Columbia (UBC) , Vancouver, Canada dvanzyl@mining.ubc.ca	

Any of the above G-MIRM university partners can be contacted about the G-MIRM education and workshop programmes.