

QMI Conference 2007



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Health Exposure Assessment: A 'step change' in occupational hygiene management.

Introduction



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- *Management of occupational hygiene issues in BMA has been reactive or driven by the need for regulatory compliance.*
- *Occupational hygiene data collected over the years has been difficult to analyse because sampling methods were not documented or data sets were insufficient to make valid statistical decisions.*
- *Staff turn-over has resulted in continuous re-work of occupational hygiene issues.*

Health Exposure Assessment



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- *Process involves:*
 - *Using a competent Occupational Hygienist*
 - *Grouping workers with similar potential exposures*
 - *Devising and conducting exposure sampling programs*
 - *Statistically analysing the exposure data*
 - *Investigating unacceptable exposures*
 - *Developing interim and longer term controls*

- *Because the process is standardised, statistically valid and non-reactive it provides the 'step change' required to focus on managing occupational hygiene issues rather than just measuring them.*

Qualitative Exposure Assessment

- *Walk-through and desk top risk assessment*
- *Simple workplace measurements*
- *Basic characterisation of workplace exposure risks*

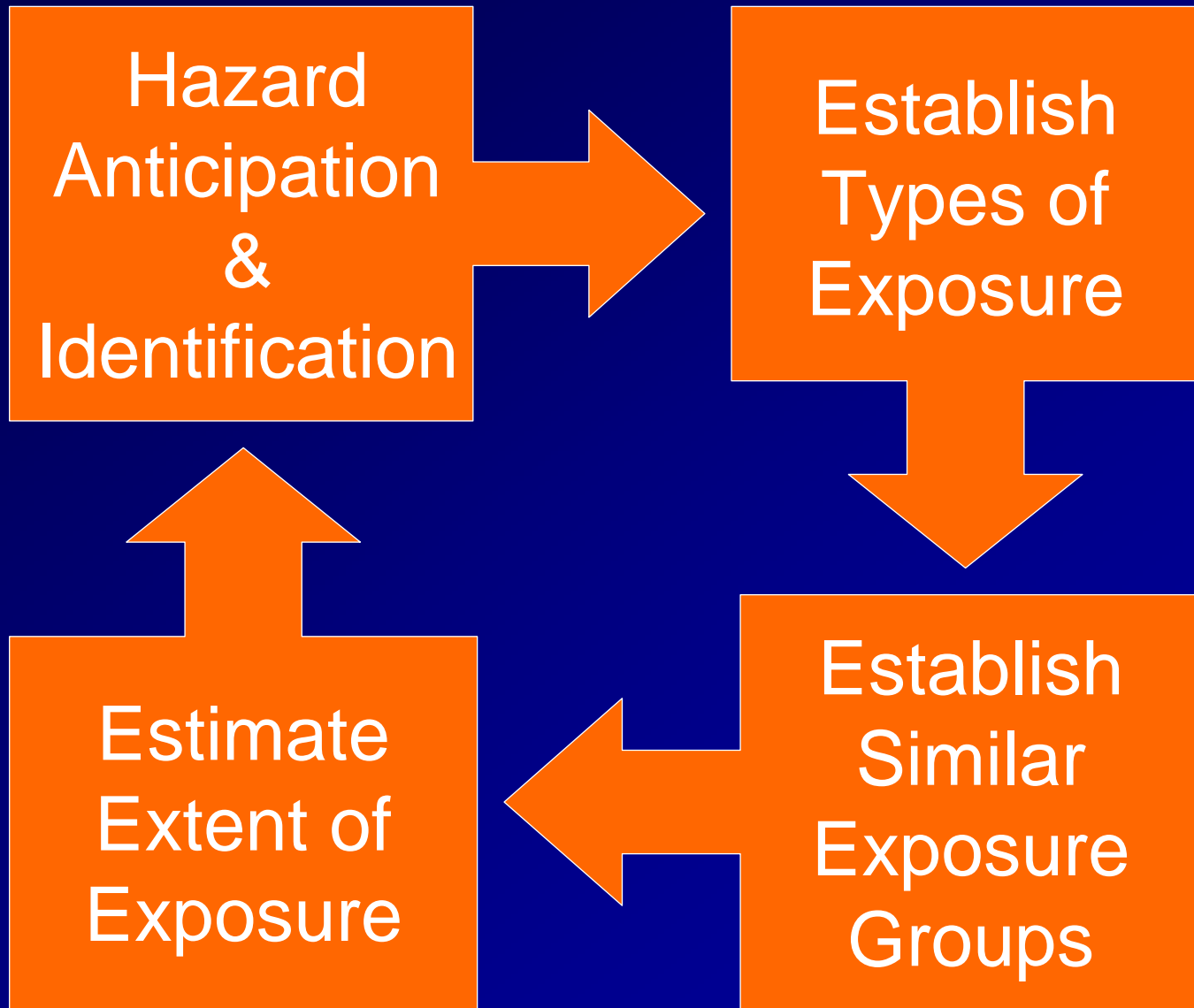


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Qualitative Exposure Assessment - Process



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Qualitative Exposure Assessment



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Qualitative Occupational Hygiene Assessment

Site: <i>XYZ Mine</i>	Conducted By: <i>Joe Bloggs (MAIOH)</i>	Date: <i>01/01/00</i>	Revision: <i>1.0</i>		
Area or Similar Exposure Group	Exposure Type				
	<i>Noise</i>	<i>Inhalable Dust</i>	<i>Welding Fume</i>	<i>Whole Body Vibration</i>	<i>Diesel Particulate Matter</i>
<i>Dozer Operator</i>	High	Low	Low	High	Low
<i>Chock Operator</i>	High	High	Low	Low	High
<i>Bucket Repair W/Shop</i>	High	Low	Medium	Low	Low

Quantitative Exposure Assessment



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- *Uses well recognised and validated monitoring strategies*
- *Permits comparison of mean exposure estimates and confidence limits with an Occupational Exposure Limit*
- *Provides statistical confidence about workplace exposure risks*

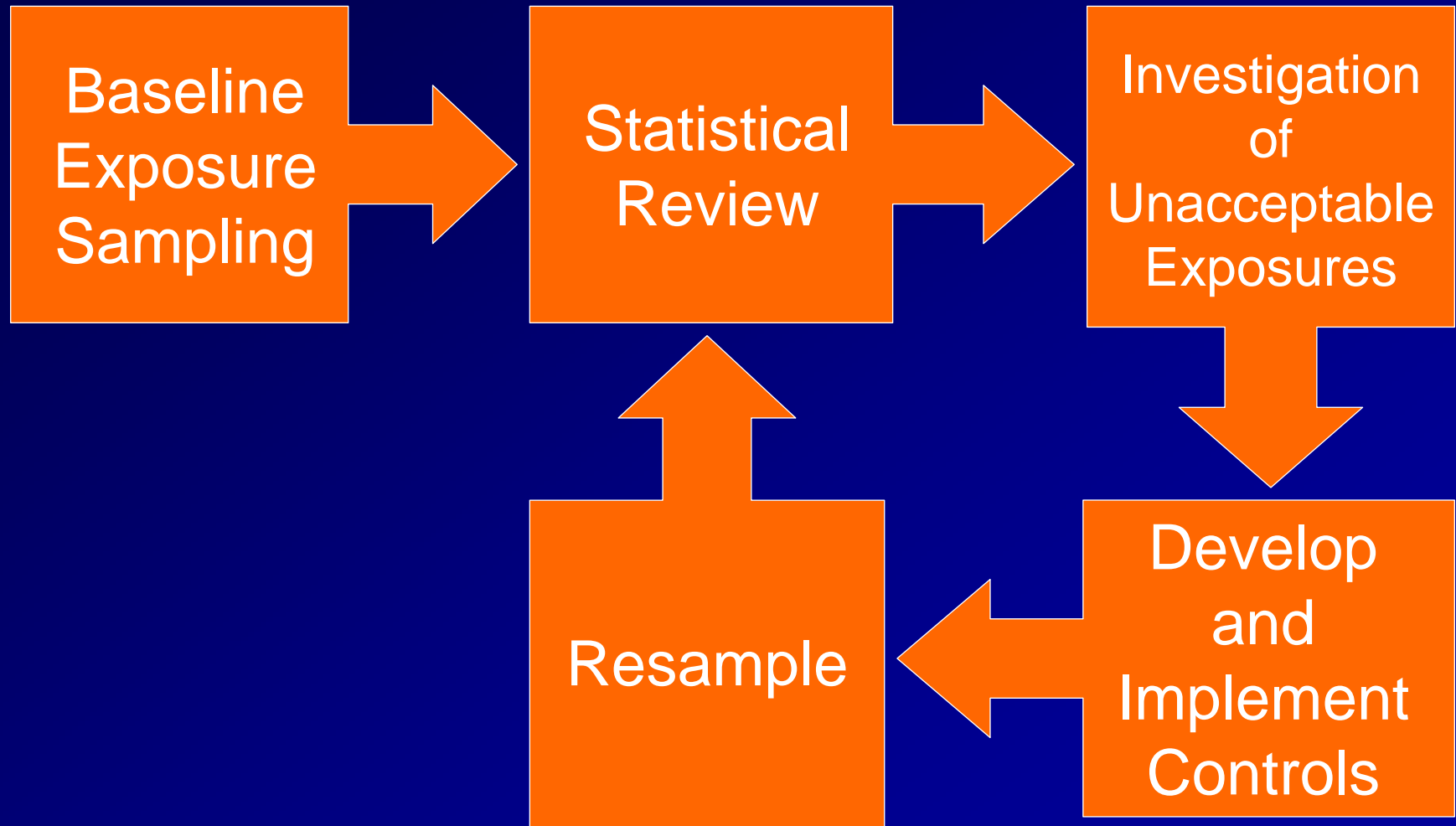


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Quantitative Exposure Assessment - Process



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Baseline Exposure Sampling



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- *Two year baseline sampling programme.*
- *Sampling conducted by an external provider.*
- *Sample numbers were based on the AIHA Sampling Strategy.*



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Statistical Review of Exposures



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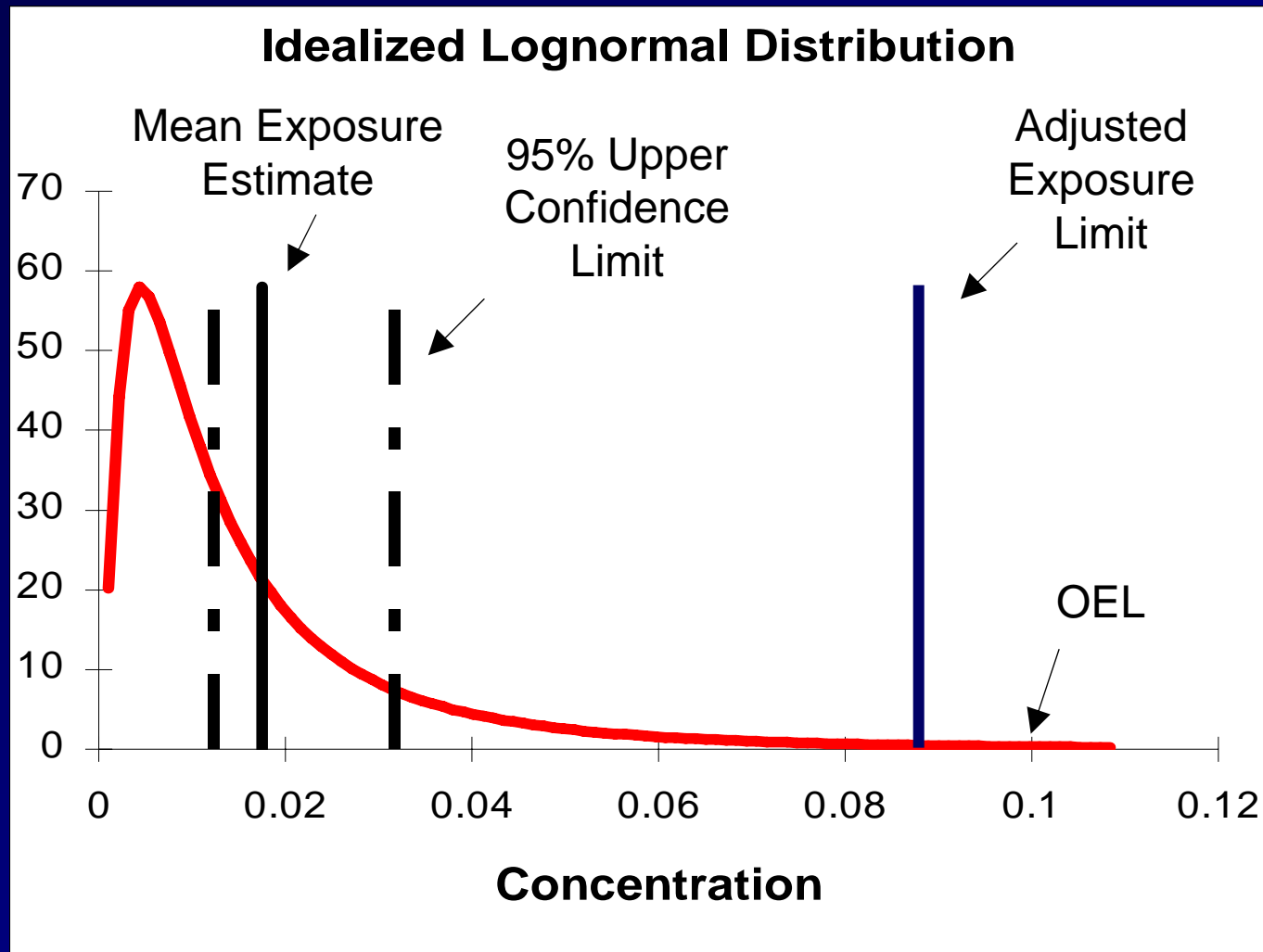
Similar Exposure Group	<i>Field Maintenance</i>
Exposure Type	<i>Respirable Silica</i>
Population	<i>32</i>
No. Samples Collected	<i>22*</i>
Data Distribution	<i>Lognormal</i>
Mean Exposure Estimate	<i>0.02 mg/m³</i>
Standard Deviation	<i>2.6</i>
Upper Confidence Limit	<i>0.03 mg/m³</i>
Exposure Limit	<i>0.1 mg/m³</i>
Adjusted Exposure Limit	<i>0.09 mg/m³</i>
Risk Assessment	<i>Acceptable Exposure</i>

* Minimum of 17 samples required by AIHA Sampling Strategy.

Statistical Review of Exposures



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Field Maintenance – Respirable Silica

Investigation of Unacceptable Exposures



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- *Investigations have commenced into unacceptable exposures identified by the statistical review.*
- *Unacceptable exposures found were:*
 - *Surface Operations*
 - *Noise*
 - *Underground Operations*
 - *Noise*
 - *Respirable Dust*
 - *Diesel Particulate Matter*
- *Site-based management/employee groups have been formed to address these issues.*

BMA Hygiene Management Plan



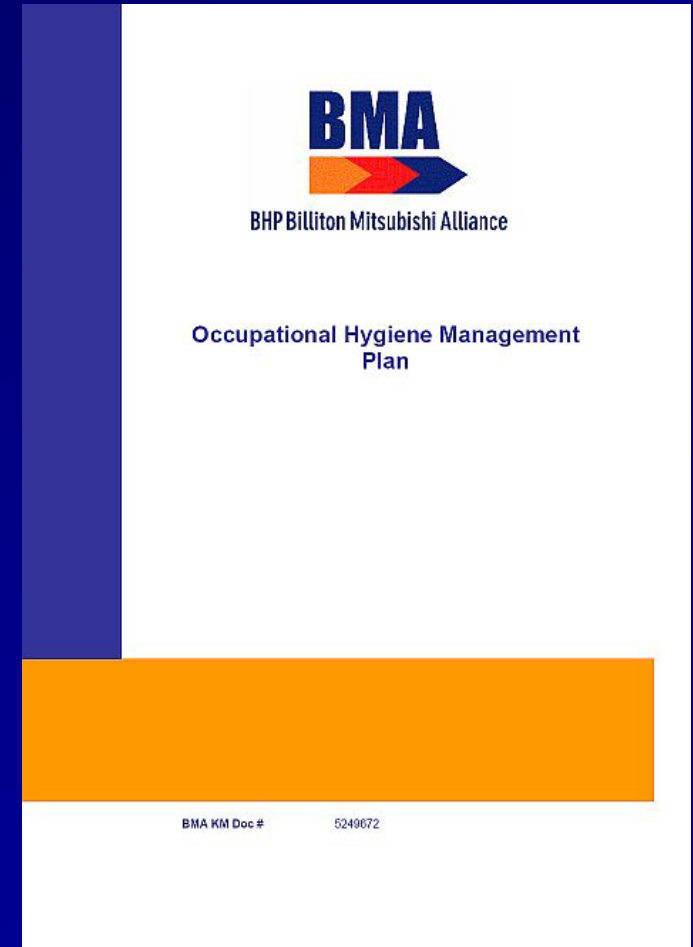
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- *Provides strategic and site-based approach to managing hygiene issues identified by the Qualitative Exposure Assessments.*
- *Hygiene issues addressed include:*

- *Airborne Dust*
- *Noise*
- *Asbestos*
- *Radiation – Ionising*
- *Biological*
- *Radiation – Non-Ionising*
- *Confined Spaces*
- *Temperature Extremes*
- *Diesel Emissions*
- *Vibration*
- *Ergonomics*
- *Welding & Allied*
- *Hazardous Substances*

BMA Hygiene Management Plan

- *Overview of the Issue*
- *Sources of Exposure*
- *Exposure Limit/s*
- *Qualitative Risk Assessment*
- *Management Priority*
- *Strategic Approach*
- *Site Approach*
- *Control Methods*
- *Resources*



Site Hygiene Risk Control Plans



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Heading	Example
Hazard	<i>Noise</i>
Source of Exposure	<i>Coal Preparation Plant (CPP)</i>
Affected Similar Exposure Group	<i>All CPP SEG's</i>
Control Description	<i>Ear Plugs/Muffs – Class 5</i>
Hierarchy of Control	<i>Administration & PPE</i>
Status of Control	<i>Fully Implemented</i>
Management System	<i>Work Instruction & Signage</i>
Control Effectiveness Monitoring	<i>Task Observation</i>
Monitoring Frequency	<i>Weekly</i>

Conclusion



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- *Health Exposure Assessment is an evidence-based approach to management of hygiene issues.*
- *Requires long-term commitment of time and resources.*
- *Allows businesses to start to manage occupational hygiene issues rather than just monitoring them.*
- *Puts occupational hygiene practice on a more sustainable footing and has provided BMA with a 'step change' in preventative and protective occupational hygiene management.*