



The Management of Health and Hygiene at Queensland Fertilizer Operations

Matthew Wicking
Occupational Hygienist QFO



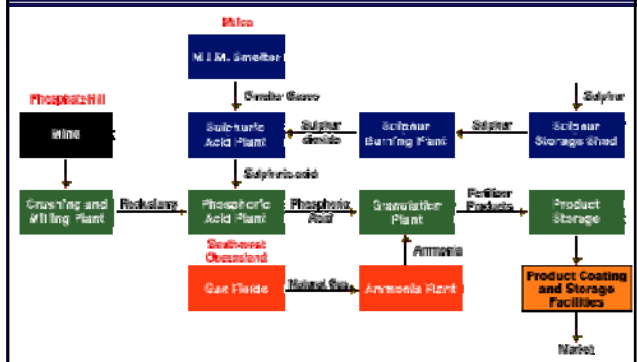
WMC

- WMC Limited is a major global minerals explorer and producer with business interests in 16 countries.
- Asset base of:
 - Copper-Uranium
 - Nickel
 - Fertilizer
 - Alumina



QFO

- QFO is the sole Australian producer of:
 - Di-ammonium phosphate (DAP) and
 - Mono-ammonium phosphate (MAP).
- QFO consists of:
 - Phosphate Hill high analysis fertilizer plant,
 - Mt Isa acid plant, and
 - Townsville materials handling facility



Health and Hygiene at WMC

- Company wide review of Health and Hygiene
- All sites underwent a baseline survey conducted by consultants and site specialists
- Systematically identified all health hazards



Health and Hygiene at QFO

- Recognised the need for a statistically valid monitoring program
- Previously monitored for:
 - Fluorides
 - Ammonia
 - Dust (*inhalable, respirable, quartz*)
 - Sulphur dioxide



James Cook University

- Three Phase program:
 - Phase I** – Baseline Risk Assessment
 - Phase II** – Biological Monitoring, Influencing Factors
 - Phase III** – How can we work healthier? (Parallel to Phase II)



Environmental Exposure Mapping

- Hydrogen fluoride
- Sulphuric acid mist
- Phosphoric acid mist
- Ammonia
- Carbon monoxide
- Sulphur dioxide (Mt Isa only)



Gypsum Stack



Gypsum Stack

	[HF] mg/m ³	[H ₂ SO ₄] mg/m ³	[H ₃ PO ₄] mg/m ³
Maximum value	2.60	0.12	0.06
Median	1.01	0.10	0.00
NOHSC Exposure Standard	2.6	1.0	1.0
Number of Samples	5	5	5
Detection Limit	0.03	0.10	0.03
Number < detection limit	0	3	4



Phosphoric Acid Plant



Phosphoric Acid Plant

	[HF] mg/m ³	[H ₂ SO ₄] mg/m ³	[H ₃ PO ₄] mg/m ³
Maximum value	2.36	0.73	0.03
Median	0.20	0.07	0.00
NOHSC Exposure Standard	2.6	1.0	1.0
Number of Samples	30	30	30
Detection Limit	0.03	0.10	0.03
Number < detection limit	6	26	29

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Medical Check-up

- Full blood count
- Liver function test
- Electrolytes
- Albumin-Creatinine Ratio
- Visual acuity
- Joint mobility
- Blood Pressure
- Height and weight

Biological Samples

Physical Examination

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Health Questionnaire

- Demographics
- Medical history
- Risk conditions/behaviours
- Current medications
- Smoking, alcohol and drug consumption
- Diet
- Other symptoms

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Results

- 60% response rate
- Main findings:
 - Body Mass Index
 - Waist-Hip ratio
 - Blood pressure
 - Dehydration

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Employee perceptions

- Common themes:
 - Chemical related issues
 - Fitness for work (FFW)
 - Drugs
 - Alcohol
 - Fatigue
 - Management and procedural issues

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Actions

- Employment of two health & lifestyle coordinators from Trenchsportz
- Increased awareness of dietary requirements by Eurest
- Take-Time Take-Charge behavioural safety program
- Information and feedback sessions by JCU

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Phase II

- Further environmental exposure mapping
- Personal activity questionnaires
- Comprehensive medical check-up
- Focus groups on the perception of occupational risks
- Biological monitoring
- Hydration strategy development
- Fatigue management review

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Routine sampling program

- Approx 860 samples over twelve months
- Sampling:
 - Dust (*inhalable, respirable, quartz*)
 - Fluorides
 - Ammonia
 - Sulphur dioxide
 - Acid mists



Routine sampling program

- Approximately six samples per day
- Work undertaken by site Occupational Hygienist and Technician
- Program statistically validated
- Reviewed annually



Outcomes

- The combined approach:
 - Ensures that all health hazards have been identified and assessed;
 - Helps identify areas for improvement;
 - Ensures that QFO will maintain the occupational health of all employees;
 - Will provide a valuable database of employee health over many years.