Queensland Government

**Department of Health**

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File Ref:

19 JUL 2017

Mrs Jo-Ann Miller MP
Chair
Coal Workers' Pneumoconiosis Select Committee
Parliament House
George Street
BRISBANE QLD 4000

Email: cwpsc@parliament.qld.gov.au

Dear Mrs Miller

Thank you for your letter dated 27 June 2017, regarding the inquiry into occupational respirable dust exposure issues by the Coal Workers' Pneumoconiosis Select Committee (the Committee).

As requested by the Committee, please find attached a written briefing from the Department of Health addressing the terms of reference as they relate to Queensland Health.

The following Departmental officers will be available to brief the committee on Wednesday 9 August 2017 at Parliament House:

- Dr Jeannette Young, Chief Health Officer and Deputy Director General Prevention Division
- Ms Sophie Dwyer, Executive Director, Health Protection Branch.

Mr Clive Page, Advanced Environmental Health Scientist and Dr Suzanne Huxley, Senior Medical Officer from the Health Protection Branch will also be in attendance.

Should you or your staff require further information, the Department of Health contact is Ms Sophie Dwyer, Executive Director, Health Protection Branch on telephone 3328 9266.

Yours sincerely

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**Coal Workers' Pneumoconiosis (CWP) Select Committee**

**Written briefing concerning the Select Committee's extended terms of reference as they relate to Queensland Health**

**19 July 2017**

## 1. Public health information and legislative and other regulatory arrangements

The extended terms of reference specifically refer to occupational exposure to respirable dust. Queensland Health is responsible for administering the *Public Health Act 2005*. The aim of this Act is to protect and promote the health of the Queensland public through cooperation between the State Government, local governments, health care providers and the community. This aim includes preventing, controlling and reducing public health risks.

The definition of 'public health risk' in section 11 of the *Public Health Act 2005* specifically excludes health risks emanating from work places (see section 11(1)(vii) and (viii), which are most relevant to airborne contaminants). Therefore, this precludes Queensland Health or local governments (to whom the public health risks in the *Public Health Act 2005* are devolved) from having a regulatory role.

However, Queensland Health has a specialist advisory role. It provides advice on the health risk of air pollutants to those regulatory agencies with responsibility for air pollution and workplaces. These agencies include Workplace Health and Safety, the Department of Environment and Heritage Protection and the Department of Natural Resources and Mines.

## 2. Overview of current evidence on the public health impacts of respirable and inhalable dust exposure in communities surrounding and adjacent to areas of dust-generating industry

### Particulate matter

The World Health Organisation (WHO) describes particulate matter as a widespread air pollutant that consists of solid and liquid particles suspended in the air. The composition of the particles varies by location. Common constituents include sulphates, nitrates and ammonium, metals and polycyclic aromatic hydrocarbons.

Particulate matter can be both naturally occurring and have anthropogenic sources. Particles can be classified on the basis of their size, referred to as their 'aerodynamic diameter'. $PM_{10}$ describes inhalable particles with diameters that are 10 micrometres and smaller. $PM_{2.5}$ describes fine particles with diameters of 2.5 micrometres and below.

$PM_{10}$ and $PM_{2.5}$ include inhalable particles that are small enough to penetrate the thoracic region of the respiratory system. The health effects for both acute and chronic exposure are well documented and include aggravation of asthma and respiratory symptoms. It has been observed that a community's exposure to excessive particulate matter may increase the rates of death from cardiovascular disease, respiratory diseases and lung cancer in the population as a whole. The elderly, children and those with pre-existing lung or heart disease are particularly vulnerable to the effects of elevated levels of particulate matter.

WHO last revised its Air Quality Guideline values for particulate matter in 2005, as follows:

- for $PM_{2.5}$: 10 µg/$m^3$ for the annual average and 25 µg/$m^3$ for the 24-hour mean (not to be exceeded for more than 3 days/year);
- for $PM_{10}$: 20 µg/$m^3$ for the annual average and 50 µg/$m^3$ for the 24-hour mean;

The current National Environmental Protection Measure (NEPM) for particulate matter in Australia, which has been adopted into the Queensland Environmental (Air) Protection Policy 2008, is:

- $PM_{10}$ 50 µg/$m^3$ averaged over a 24 hour period (not to be exceeded for more than five days/year) (proposed 40-50 µg/$m^3$) and 20 µg/$m^3$ annual average with no exceedances
- $PM_{2.5}$ 8 µg/$m^3$ for annual averaging period and 25 µg/$m^3$ over a 24 hour period.

There are proposals to remove the five day exceedances with an exceptional rule event: *Exceptional event means a fire or dust occurrence that adversely affects air quality at a particular location, and causes an exceedance of one day average standards in excess of normal historical fluctuations and background levels, and is directly related to: bushfire; jurisdiction authorised hazard reduction burning; or continental scale windblown dust.*

In 2016 the International Agency on Cancer Research classified outdoor air pollution which may include particulate matter in, as a Group 1 carcinogen (carcinogenic to humans).

**Silica**

The Agency for Toxic Substances and Diseases Registry (ATSDR), in its toxicological profile of silica (April 2017), describe it as being naturally occurring and abundant in the environment and having many uses. Silica has two forms: crystalline (c-silica) and amorphous (a-silica). Silica particles can become suspended in air and form dusts. It is a common air contaminant and can be generated naturally following bush and crop fires and wind erosion. It is a recognised important occupational hazard.

Cumulative c-silica exposure, expressed as mg/$m^3$-year, is the most important factor in the development of silicosis. Time from first exposure to onset of disease varies inversely with cumulative exposure and may be as short as a few weeks for acute silicosis or as long as 20 or more years for simple silicosis and progressive massive fibrosis.

There is evidence regarding health effects following exposure to silica in people for workers exposed for long periods of time (typically greater than 10 years) or with extremely heavy exposure over a shorter period. Several occupational studies have demonstrated exposure-response relationships for silicosis and mortality due to silicosis. For the lowest cumulative exposure range reported in the available literature (0–0.2 mg/$m^3$-year), silicosis was observed in five of 3,330 gold miners. At the cumulative exposure range of 0.1– 1.23 mg/$m^3$-year, death due to silicosis was observed in 2,857 of 74,040 mining and pottery workers in China. For the highest cumulative exposure category of 1.48–3.08 mg/$m^3$-year, the incidence of silicosis was 32%.

Silicosis and lung cancer pose the greatest risk following occupational exposure. The International Agency for Research on Cancer has classified c-silica as a Group 1 carcinogen although the risks are low.

The general population is exposed to silica through air, indoor dust, food, water, soil and various other consumer products (e.g. bricks, plaster and skin care products). Inhalation of c-silica during the use of commercial products containing quartz is expected to be the predominant, non-occupational silica exposure route. Residents near quarries or sand and gravel operations or drilling involving fracking may be exposed to elevated levels of respirable c-silica.

There is no evidence that breathing small amounts of silica compounds found in the environment causes any health effects in humans. No known adverse effects occur from exposure to particles that exceed the respirable size range or from incidental exposure to low levels of c-silica in the environment (e.g. at beaches).

In Queensland there is no exposure standard for community exposure to c-silica. In Victoria the Environmental Protection Agency has adopted the Californian Office of Environmental Health Hazard Assessment Chronic Reference Exposure Level for community exposure to c-silica of 3 $\mu g/m^3$, which is equivalent to 0.003 $mg/m^3$. This is defined as an airborne level that would pose no significant health risk to individuals indefinitely exposed to that level.

**Coal dust**

The Department of Environment and Heritage Protection's Air Impacts Guideline recommends a dust deposition limit of 120 $mg/m^2$/day, averaged over one month, be used to assess dust nuisance. There are no current air quality standards and guidelines that contain specific criteria for levels of coal dust in ambient air. For occupational exposure legal limits for exposure to coal dust is currently set at 3 $mg/m^3$ for the equivalent of an eight hour shift.

## 2.1. Approach to public health studies in identified areas of risk in relation to air quality

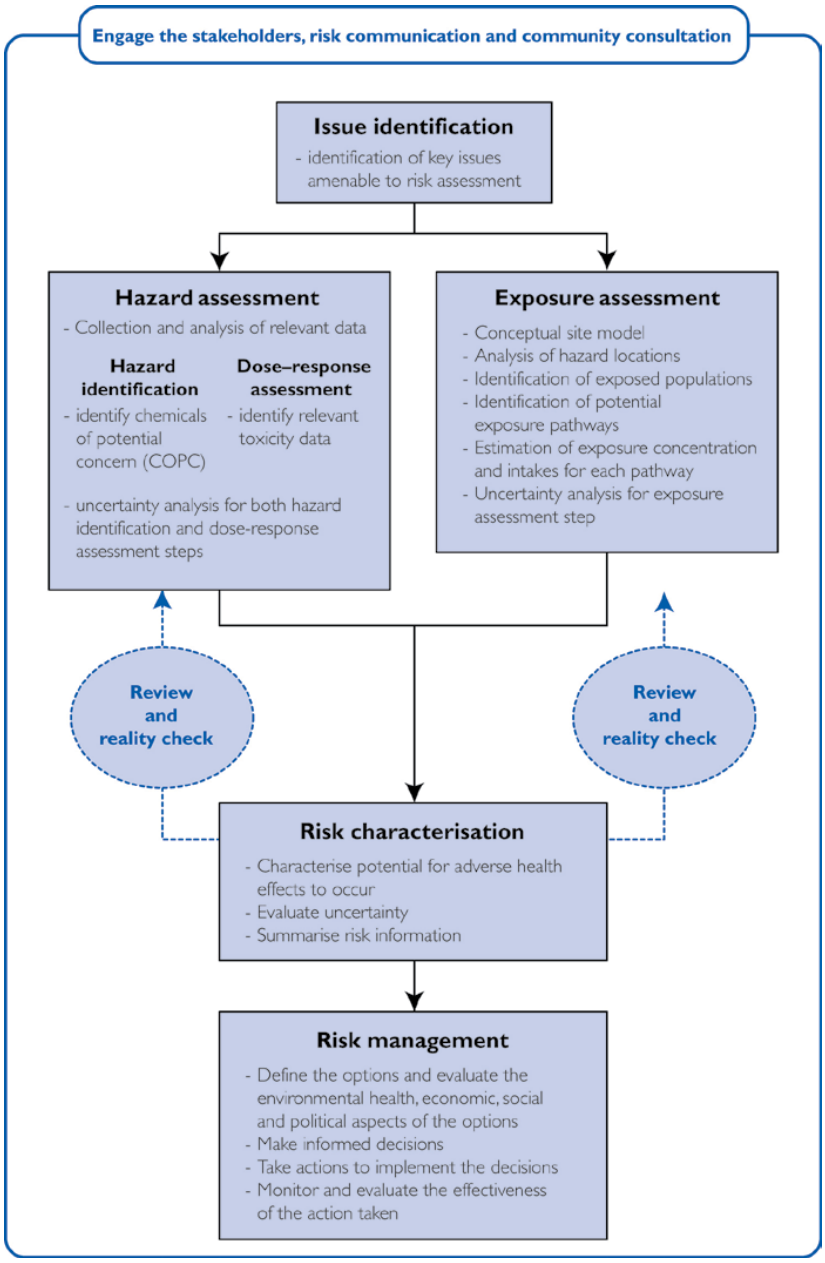
The approach used to assess the human health risks from exposure to specific environmental hazards, such as health risks in relation to air quality, is Environmental Health Risk Assessment (EHRA). The Australian approach to EHRA is set out in the national guidance document developed by the Environmental Health Standing Committee of the Australian Health Protection Principal Committee. This document can be found at: http://www.eh.org.au/documents/item/916

EHRA is the process of estimating the potential impact of an exposure on a specified human population under a specific set of conditions and for a certain time frame. The methods used in EHRA are inherently conservative, that is, they err on the side of a higher assessment of risk, which is designed to give more confidence that it is protective of public health, including vulnerable members of the community.

Data to inform risk assessment utilises the available research evidence and, depending on the level of study being undertaken, monitoring data relating to the exposure of interest from the site of interest. This data is compared to national standards where available, or international standards such as those set by the WHO, or other countries, such as the United States Environmental Protection Agency.

There are five stages of ERHA, with the five stages closely linked and dependent on the preceding stages. EHRA also requires stakeholder engagement, community involvement and risk communication. Figure 1 illustrates the stages.

**Figure 1: Environmental health risk assessment model**




When considering developments or new industries where multiple health impacts may occur, a Health Impact Assessment (HIA) methodology may be used. HIA seeks to predict the health impact of a policy, program or project usually before implementation and ideally in the early planning stages. HIA considers both positive and negative impacts on health of a development and is primarily concerned with determinants of health at the population level taking into consideration specific groups who may be more vulnerable to a particular health outcome than the general population. HIA focuses on the environmental, social and economic determinants of health rather than personal characteristics or behaviours.

When significant developments are proposed, there is usually a requirement for the proponent to undertake an Environmental Impact Assessment. Queensland Health considers HIA concepts, particularly in terms of impacts on air and water quality, in its reviews of Environmental Impact Assessments undertaken for major developments.

## 2.2. Public health studies undertaken by Queensland Health in identified areas of risk in relation to air quality

| **Study** | **Narangba Industrial Estate Health Impact Assessment** |
|---|---|
| **Date commenced** | June 2006 |
| **Report date** | May 2011 |
| **Location** | Narangba |
| **Coordinating agency** | Queensland Health |
| **Focus** | Community exposure to emissions from industries located in the Narangba Industrial Estate |
| **Compounds assessed** | • Pesticides<br>• Volatile Organic Carbons<br>• Polychlorinated Biphenyls<br>• Metals and Metalloids<br>• Reduced Sulfur Compounds<br>• Sulfur dioxide<br>• Polycyclic Aromatic Hydrocarbons<br>• Carbonyls |
| **Report availability** | Hardcopy |

**Outcomes:**

In relation to Air Quality - Air quality (air toxics) was the main issue of concern for the community. Over 150 compounds were identified for consideration and a screening level assessment was undertaken. From the assessment no compounds were identified of which would be of concern for acute health impacts and there was also no concerns identified regarding secondary air toxics and cumulative impacts. No evidence was found to indicate that the community had experienced adverse health effects as a result of close proximity to the Narangba Industrial Estate. For example predicted cumulative ground level concentrations (µg/m3) of Chromium (VI) at the nearest sensitive receptors varied from 1.2E-03 to 6.7E-03 – 1 hour average. Chromium (VI) has an air quality objective of 0.09 µg/m3 for a 1 hour averaging period which was established by the NSW – Department of Environment, Climate Change and Water. The rates of mortality and cancer for Narangba / Deception Bay were found to be similar to the rest of Queensland.

Although no definitive physical health concern was identified/confirmed, an outcome regarding the HIA was to strengthen future planning requirements regarding incompatible land-uses to ensure high impact industry estates are appropriately situated and conversely residential development does not inadvertently encroach on currently identified high impact industry areas.

| Study | Clean and Healthy Air for Gladstone Project |
|---|---|
| **Date commenced** | July 2007 |
| **Report date** | August 2010 |
| **Location** | Gladstone |
| **Coordinating agency** | Department of Environment and Heritage Protection<br>Queensland Health |
| **Focus** | Community exposure to emissions from Gladstone industries |
| **Compounds assessed** | • $PM_{10}$<br>• $PM_{2.5}$<br>• Volatile Organic Carbons<br>• Polychlorinated Biphenyls<br>• Metals and Metalloids<br>• Reduced Sulfur Compounds<br>• Sulfur dioxide<br>• Polycyclic Aromatic Hydrocarbons<br>• Carbonyls<br>• Acidic and caustic Aerosols |
| **Report availability** | https://www.qld.gov.au/environment/pollution/monitoring/air-programs/ |

**Outcomes:**

Measured concentrations for many of the key pollutants were low and many were less than the level of analytical reporting limit for the available analytical techniques. For the majority of results that exceeded the level of analytical reporting limits, ambient concentrations were much less than the relevant health-based standard.

The project identified that there was no ambient air quality standards or guidelines for black carbon. The main purpose of monitoring black carbon in $PM_{10}$ and $PM_{2.5}$ particles was to investigate whether this monitoring could provide information on the amount of coal dust present in these particle fractions. The monitoring instrumentation used was not capable of distinguishing coal dust from other sources of black carbon, such as motor vehicle emissions and bushfire smoke. The measurements obtained were the sum of black carbon from all sources.

The highest 24-hour average $PM_{10}$ black carbon concentration recorded between May 2009 and July 2010 was 2.1 µg/m$^3$ on 13 September 2009. The highest 24-hour average $PM_{2.5}$ black carbon concentration was 2.0 µg/m$^3$ on the same day. Smoke from a large grassfire at Broadacres, south of Tannum Sands, that was carried over Gladstone by south-easterly winds would have been the main contributor to black carbon levels on this day. The black carbon content of $PM_{10}$ particles ranged from zero to eight per cent, with the average being two per cent. The black carbon content of $PM_{2.5}$ particles ranged from zero to ten per cent, with the average being three per cent.

The only exceedances of health-based guidelines were for overall particulate matter. This was associated with specific bush fire or dust storm events, not from industries. The highest 24-hour average $PM_{10}$ concentration was 314.6 µg/m$^3$ [630 per cent of the NEPM (Air Quality) standard]. This was due to residual dust remaining in the atmosphere following the passage of a major dust storm through the Gladstone region coupled with smoke from a large bushfire near Mount Morgan. Department of Health does have various bushfire related information available.

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| **Study** | **Mount Cotton Quarries dust investigation: March to April 2008** |
| **Date commenced** | February 2008 |
| **Report date** | May 2008 |
| **Location** | Mount Cotton |
| **Coordinating agency** | Department of Environment and Heritage Protection<br>Queensland Health |
| **Focus** | Community exposure to dust and respirable silica |
| **Compounds assessed** | • $PM_{10}$<br>• Respirable silica |
| **Report availability** | https://www.qld.gov.au/environment/pollution/monitoring/air-programs/ |

**Outcomes**

The monitoring program results demonstrated that quarrying operations did not result in ambient dust and silica levels above relevant nuisance and health criteria in the surrounding Mount Cotton community. The silica concentrations in the Mount Cotton community were very low, less than ten per cent of the guideline value of 3 µg/m$^3$ set in the Victorian Government's Protocol for Environmental Management for Mining and Extractive Industries. Annual average $PM_{2.5}$ crystalline silica concentrations at one location were 0.14 µg/m$^3$ or 5 per cent of the Victorian guideline, and 0.26 µg/m$^3$, or 9 per cent of the Victorian guideline, at another location.

*Note Victorian standard is based on the Californian Office of Environmental Health Assessment (OEHHA) (an agency of the Californian EPA) who used the occupational studies to derive a chronic inhalation Reference Exposure Level (REL) for community exposure to respirable crystalline silica of 3 µg/m$^3$ (measured using occupational respirable dust samplers). The chronic inhalation REL has been defined by the OEHHA as "an airborne level that would pose no significant health risk to individuals indefinitely exposed to that level" (OEHHA, 2007). Victoria has adopted the OEHHA REL, but measures the crystalline silica concentration in the $PM_{2.5}$ fraction of the dust (Environmental Protection Authority Victoria, 2007). This exposure standard was developed to prevent silicosis in people exposed to this concentration over a lifetime.

Based on the data provided by the EPA, Queensland Health has formed the view that the Mt Cotton community is unlikely to have suffered any adverse health effects from $PM_{10}$ dust and respirable crystalline silica emanating from quarries in the Mt Cotton area. No evidence was found that quarry operations led to $PM_{10}$ levels above the Environmental Protection (Air) Policy 2008 (EPP Air) 24-hour air quality objective of 50 µg/m$^3$ in the surrounding community.

All exceedances of the EPP Air $PM_{10}$ objective measured during the investigation were caused by dust events affecting the whole South-East Queensland region. $PM_{2.5}$ levels were found to comply with the EPP Air annual average objective of 8 µg/m$^3$ over the investigation period. The annual average $PM_{2.5}$ concentrations at Mount Cotton were found to be similar to those measured at other South-East Queensland ambient air quality monitoring sites located in residential areas and lower than the $PM_{2.5}$ levels measured at roadside and commercial areas over the same period. The average $PM_{2.5}$ concentration over the 12-month monitoring period was 5.2 µg/m$^3$ at one location and 6.7 µg/m$^3$ at another location.

However, frequent rainfall events and the relatively low proportion of winds blowing from quarrying operations towards the monitoring sites means that it is unlikely that 'worst-case' dust levels in the wider community were present during the monitoring period.

Compliance with the annual average criteria for crystalline silica could not be confidently concluded on the basis of one month's monitoring. It was recommended that EPA continue to monitor the submitted dust monitoring results from the companies and complaints received from the community. Where evidence is found to show that dust fallout levels and $PM_{10}$ exceed the nuisance criteria, EPA would instigate further monitoring of the air quality in the area during dry conditions.

| **Study** | **Health Risk Assessment of Community Exposure to silica from Airport Link / Northern Busway Construction Activities** |
|---|---|
| **Date commenced** | April 2011 |
| **Report date** | February 2012 |
| **Location** | Lutwyche |
| **Coordinating agency** | Department of Environment and Heritage Protection<br>Queensland Health |
| **Focus** | Community exposure to dust and respirable silica |
| **Compounds assessed** | • $PM_{10}$<br>• $PM_{2.5}$<br>• Respirable silica |
| **Report availability** | Hardcopy |

**Outcomes**

Due to the non-availability of occupational respirable dust sampling equipment capable of measuring respirable crystalline silica concentrations of 3 µg/m$^3$ or less, $PM_{10}$ and $PM_{2.5}$ samplers were used to estimate the respirable (occupational) crystalline silica concentration and determine if the respirable crystalline silica concentration was likely to pose a significant health risk to the community.

The average respirable silica concentrations over the monitoring period at the two Lutwyche monitoring sites were less than the derived annual exposure standard of 3 µg/m$^3$.

If it is assumed that the worst case meteorological conditions for the Lutwyche Road monitoring site existed all year, the annual average respirable crystalline silica concentration would be about 1.43 µg/m$^3$ or less than fifty percent of the derived annual exposure standard of 3 µg/m$^3$.

Based on the above monitoring data provided by DERM, Queensland Health formed the view that the Lutwyche community is unlikely to suffer any adverse health effects from respirable crystalline silica emanating from the Airport Link / Northern Busway construction works at Lutwyche. Further confidence is provided by the fact that the period of exposure is limited to approximately four years rather than being a continuous lifetime exposure.

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| **Study** | **Queensland Health report on the investigation into asbestos-related health concerns due to the former asbestos manufacturing factories at Gaythorne and Newstead** |
| **Date commenced** | October 2014 |
| **Report date** | November 2015 |
| **Location** | Gaythorne and Newstead |
| **Coordinating agency** | Queensland Health |
| **Focus** | Asbestos exposure of people living in Gaythorne and Newstead |
| **Compounds assessed** | • Airborne asbestos fibres |
| **Report availability** | https://www.health.qld.gov.au/asbestos |

**Outcomes**

The investigation that incorporated air monitoring around a former asbestos manufacturing factory at Gaythorne, concluded that that there is no evidence of elevated asbestos-related health risk to residents who have commenced living near the former factories sites in Gaythorne since the mid-1980's when final site clean-up occurred . The air monitoring program within this investigation demonstrated that the airborne asbestos fibre concentrations, in proximity to the former asbestos factory site in Gaythorne, were consistent with low asbestos fibre concentrations found in other areas of Brisbane. No monitoring of "particulate matter" was undertaken.

The report did conclude that issues identified during the investigation related to the ongoing management of asbestos in Queensland and weren't necessarily specific to the locations in the vicinity of former factory sites. These issues are being considered as part of the overall management of state-wide asbestos issues and are being addressed through the government's Interagency Asbestos Group.

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| **Study** | **Western - Metropolitan Rail Systems Coal Dust Monitoring Program** |
| **Date commenced** | March 2013 |
| **Report date** | October 2013 |
| **Location** | Monitoring was conducted at six locations along the Western and Metropolitan rail system. From Oakey to Port of Brisbane. |
| **Coordinating agency** | Department of Science, Information Technology, Innovation and the Arts |
| **Focus** | To monitor ambient dust particle levels along the rail corridor during a post and pre-train carriage veneering trial |
| **Compounds assessed** | • $PM_{10}$<br>• $PM_{2.5}$<br>• Dust Deposition |
| **Report availability** | http://www.ehp.qld.gov.au/management/coal-dust/pdf/rail-coal-dust-final-report.pdf |

**Outcomes**

From the monitoring results provided by DSITIA the ambient $PM_{10}$ and $PM_{2.5}$ concentrations did not exceed the Queensland Environmental Protection (Air) Policy 2008 (EPP Air) 24-hour average air quality objectives of 50 µg/m$^3$ and 25 µg/m$^3$ respectively on any day during the investigation period (during both the pre- and post-veneering monitoring periods). The highest average $PM_{2.5}$ was less than the EPP Air annual objective value of 8 µg/m$^3$. The major influence on $PM_{10}$ and $PM_{2.5}$ concentrations at the rail corridor monitoring sites were regional urban particle emission sources rather than rail transport emissions as there was close correspondence between $PM_{10}$ and $PM_{2.5}$ levels measured at Metropolitan line rail corridor sites and DSITIA ambient air monitoring network sites elsewhere in Brisbane. There was also little difference between $PM_{10}$ and $PM_{2.5}$ measurements recorded on days when no coal and few freight train services were running.

Microscopic examination showed that mineral dust (soil or rock dust) was the major component (50 to 90 per cent) of larger particles that settled from the air at each monitoring site. Coal particles typically accounted for about 10 per cent of the total surface area in the deposited dust samples.

Considering the monitoring results provided by DSITIA and the monitoring equipment was sited within the rail corridor itself rather than in the surrounding community, where exposure levels from rail related activities would be expected to be lower, Queensland Health provided the following advice to DSITIA:

*Based on the currently available evidence, the air quality objectives in the Queensland EPP Air are considered to be protective of public health to the extent that any health impact of the pollutant is not likely to be discernible from the background rate of the health condition. Therefore, for people living along the rail corridor, the dust concentrations measured during the investigation are unlikely to result in any additional adverse health effects. However, even where the air quality objectives are met, potential adverse health effects may be experienced by highly susceptible individuals, such as the elderly or others with significant pre-existing cardio-pulmonary diseases.*

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| **Study** | **Coal seam gas in the Tara region: Summary risk assessment of health complaints and environmental monitoring data** |
| **Date commenced** | Based on available information prior to 2013: Analysed by ERM for QGC (Not commissioned by QH) |
| **Report date** | March 2013 |
| **Location** | Nine residential blocks in the Wieambilla Estates near Tara |
| **Coordinating agency** | Queensland Health |
| **Focus** | To identify if any particular environmental health determinants have been measured within the ambient air at levels that could explain the symptoms that have been reported by residents |
| **Compounds assessed** | • vacuum/pressure<br>• volatile organics<br>• total voc as n-hexane<br>• general gases (helium, hydrogen, methane, carbon dioxide, carbon monoxide and ethylene)<br>• sulphur gases. |
| **Report availability** | https://www.health.qld.gov.au/__data/assets/pdf_file/0027/428634/report.pdf |

**Outcomes**

The Department of Health had some concerns regarding the evaluation in the ERM report about the air monitoring results; however the air monitoring did not identify any analytes at detectable concentrations that would be expected to be associated with adverse health effects of the type reported by residents. The air monitoring results outlined in the ERM report were focussed on air toxics and did not provide an explanation of the symptoms reported by residents of the area.

However, the air monitoring program had important limitations. The total monitoring period was nine days, the methodology resulted in limits of reporting for some analytes that were substantially higher than reference air quality criteria and the monitoring was not designed to identify short-term peaks or troughs in air concentrations. It is considered that a more strategic air quality monitoring program could be implemented to provide more useful information on the impacts of the CSG industry, if any, on ambient air quality in the region.

A recommendation of this report was that a strategic ambient air monitoring program be established by DEHP to monitor overall CSG emissions and the exposure of local communities to those emissions. This could be based on consolidation of existing air monitoring undertaken by DEHP and industry, with supplementation where insufficient data exists. This would allow improved identification of any current and future impacts of CSG activities on ambient air quality. The Department of Health would provide health-based guidance on the design of the program and participate with other agencies in the review and reporting of results.

Project Stocktake, led by DNRM, is currently underway. This project is gathering all air quality reports / information from all state government departments to identify any gaps in information and knowledge. It is envisaged that a strategic ambient air monitoring program will be devised as an outcome of this project.

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| **Study** | **Review of the 'Air Dispersion Modelling of the Ace Waste Willawong Incinerator Emissions During Normal Operations and Bypass Event' Report in regards to health risks to the surrounding community** |
| **Date commenced** | September 2016 |
| **Report date** | August 2016 |
| **Location** | Air Modelling was performed around the 'Ace Waste' facility at Willawong |
| **Coordinating agency** | DEHP provided the Report to QH. Report was undertaken by 'Airlabs Environment Pty Ltd' on behalf of Ace Waste |
| **Focus** | Community exposure to pollutants during an Ace Waste incinerator by-pass event |
| **Compounds assessed** | • TSP<br>• PM10 and PM 2.5<br>• NO2<br>• SO2<br>• CO<br>• HCL<br>• HF<br>• Lead<br>• Dioxins and Furans<br>• Mercury (organic and inorganic)<br>• Cadmium |
| **Report availability** | Hardcopy |

**Outcomes**

The objective of the Report was to determine ground level concentrations (GLCs) of pollutants discharged from the incinerator stack in the nearby receiving environment during the bypass event. Predicted GLCs for the modelled pollutants were compared with relevant assessment criteria to determine compliance.

Emission rates for $PM_{10}$ and $PM_{2.5}$ were not determined for the bypass events and as such it was assumed conservatively that emission rates for $PM_{10}$ and $PM_{2.5}$ are the same as for TSP. The very short term releases of particulate matter during a bypass event were not considered significant and were within the license limits posed by EHP.

The assessment of the Report indicated that exposure to cadmium and dioxins and furans over the short-term as a result of the Bypass Event is unlikely to pose any risk to human health.

It was however, strongly recommended that any toxic air pollutant emissions and Bypass Events are minimised to the maximum extent achievable through the application of best-practice process such as the installation of a backup generator to reduce the duration of such events.

**Complaints management and other advice provided**

Queensland Health also:

- addresses public complaints and provides advice in relation to site specific individual concerns relating to air quality issues, generally through the local public health unit;
- provides advice to the regulators in relation to Transitional Environmental Programs, such as that in place in Mt Isa;
- may be asked by the regulator to review Environmental Impact Assessments for major developments; and
- provides advice to the regulator on site specific issues, such as with respect to Hopeland Underground Coal Seam Gas contamination and lead at Townsville port.

Provision of advice in these circumstances will generally not result in the production of a public report.

### 2.3. Determination of research priorities in relation to public health issues

Queensland Health has funded the Queensland Alliance for Environmental Health Sciences (QAEHS) at the University of Queensland. QAEHS is an alliance of academic and scientific experts to assist the Queensland Government (through Queensland Health) to better understand environmental sources of risk to human health.

The alliance provides access to a range of scientific and academic environmental health and other experts from the university research sector to ensure that government policy and advice reflects the latest research findings. It also provides for government to influence the research agenda in this specialist field.

## 3. Queensland Health's legislative and other regulatory arrangements governing the protection of public health in regions of potentially poor air quality

If Queensland Health is notified of an adverse air quality event which may include high levels of dust and or a hazardous event such as a tyre fire, either from the community or from a regulatory agency, it will partner with the primary regulator.

Queensland Health may assist by providing advice to the primary regulator and the affected public. This advice may address requirements for sampling programs and the risks to public health and the general risks to health from the pollutant.

If sampling results are found to pose a risk to public health the affected population will be notified and appropriate health risk advice provided. This may be through media avenues or community forums. Recent incidences of adverse air quality events include tyre fires, bush fire events and dust storms.

Queensland Health has event related health advice available to the public on its website and has the capacity to formulate health responses quickly on an as needs basis. Some examples relating to bush fires can be found at:

- https://www.health.qld.gov.au/__data/assets/pdf_file/0019/422380/30199.pdf
- https://www.health.qld.gov.au/__data/assets/pdf_file/0025/422278/30200.pdf