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13 October 2005

The Secretary
Senate Community Affairs References Committee
Parliament House
Canberra ACT 2600

Mr. Elton Humphery
I would like senate committee established to investigate toxic dust impacts to investigate the plight of residents and communities who are living in close proximities to dust producing industries.

The industry of direct concern to my local community and myself is open cut coal mining. The Upper Hunter Valley in NSW currently has 17 operational open cut coalmines covering an area of 520 square kilometers. Further to this is there is a further 7 open cut coal mine developments in the various stages and processes of exploration and planning approvals.

There is a lack of studies and data sharing on the health impacts of these dust-producing activities from individual operations and the overall accumulative factors.

COPD, Chronic Obstructive Pulmonary Disease is the 4th major killer of Australians. Its major causes are from dust inhalation and cigarette smoking.

I attended the inaugural **"Environmental Health in the Hunter"** conference May 19 2005 at Newcastle Town Hall.

I took notes of some of the salient points from presentations over the day
The notes taken are as below:

Opening Address
Speaker: Craig Dalton, Public Health Physician, Hunter Population Health, Hunter New England Health.

- Hunter is a highly industrialised region of NSW.
- Increasing developments and proposals for new developments lead to increase in concerns about cumulative impacts in the region.
- Air pollution the major concern amongst survey communities followed by water pollution.
- Environmental health concerns varied significantly by local government areas. Appeared to be influenced by traffic density and large industrial emitters such as coalmines and power stations.
- Hunter has
    1. 5 power stations
    2. 17 open cut mines
    3. 3 smelters: 2 aluminum, 1 lead
- When open ended questions in survey was coded to identify reference to specific types of industry in relationship to most important environmental health concerns in

the Hunter, 67% made reference to coal mining, 49% to power stations, 39% to metal based industries.

- Little objective evidence for health impacts from industrial emissions, though there is significant data gaps in our knowledge of the impacts of industrial source emissions.
- Hunter Public Health does not have access to all monitoring information in the Hunter.
- Potential for health impacts, particularly asthma, from a mix of emissions, oxides of nitrogen, sulphur dioxide and particulates cannot be discounted.
- Local study showed a relationship with nocturnal cough and particulate levels in the Hunter.
- Further community consultation required before useful region wide cumulative health impact study can be explored.
- It may be that a comprehensive monitoring program designed to ensure compliance with, or monitoring against, a set of health-based standards would be a better public investment.

Topic: Air Monitoring in the Hunter
Speaker: Chris Eyser, Department of Environment and Conservation, Air Science.

- If a regulator has the power to regulate and fails to regulate and someone is injured, this exposes the government to Liability.
- Light scattering reading = a visual distance- anything below 10 kilometers is considered high pollution.
- Air Quality Program-"Stations in the Lower Hunter monitoring since 1992."
- No monitoring stations in the Upper Hunter, the major source of open cut coal mining and power station particulates.
- Ambient Air Quality- No monitors in the Upper Hunter.
- Photochemical smog (ozone)
  Particles
  Acid deposition
  Fluoride
  Air Toxis
  Odour
- Total Emissions
  Power Generation 81% of NOX emissions
  Particulates 97% from Coal Mining
- We do not reach 2.5 PM standards; do we ease the standards so they can be met?
- Benzo(a) pyrene _air contamination from burning coal (issues at Lithgow)
- Air quality network only recent (10 years) and limited in coverage, so further work needed.

Topic - Particulates and Health "a Hunter Valley Perspective"

Speaker:
A/Prof Howard A. Bridgman
Conjoint Professor
Editor, Clean Air and Environmental Quality
School of Environmental and Life Sciences
University of Newcastle

- Perceptions based on what people see. Science and perceptions can be different.
- Winds in the Hunter Valley predominately NW-SE.
- Draglines from open cut coal mining operations create the most dust particulates.
- Dust particulates consist of:
  - PM 10 -major factor is soil
  - PM 2.5 - these cause health issues.
  - Finer Particulates - PM 2.5 - Highest component is Si (silica) 0.9667
- Source of these PM 2.5 particulates in order of contribution
  - Mining
  - Power Stations
- Finer particulate levels PM 2.5 are increasing.
- Recent review of Air Quality and Health in urban environment suggests possible relationship between fine particulates and respiratory, COPD and asthma problems.
- Current study underway- new project comparing particulate sources and concentrations in town environments.
- Information on health links is lacking.
- Ascetic and nuisance dust is a known problem.
- Ultra fine particles disperse light and are more noticeable.
- Can measure plume using recent technology.
- NO study on dust contamination in water tanks.
- Criteria are health based.

"Silica is an important component of the particulates in the atmosphere in the Upper Hunter. The techniques used to identify current dust signatures were focused on element identification rather than chemical compounds; thus the study did not look at amounts of SiO2 etc. In the Factor Analysis Tables in both ACARP reports, the numbers indicate the correlation or relationship between these elements, NOT the concentration of the elements. Si correlates strongly with Aluminium (Al) and iron (Fe) for example, which shows a fingerprint or identification that soil is an important source.

To do further chemistry, we would have to collect considerably larger amounts of the atmospheric material and then to use different procedures than Neutron Activation Analysis." (pers. com. Howard Bridgman October 2005)

In summary: There is no human health related studies on this issue in the Upper Hunter Valley. There have been some studies conducted in the lower Hunter Valley, which demonstrate a link between the increase in 2.5 particulate matters and respiratory illness. The major component of the 2.5 particulate matter is silica. There are currently no health studies being conducted in the Upper Hunter to establish if there is a link between health issues and the increase in particulate matter.

"The promulgation of a new ambient air quality standard for PM 2.5 in the United States during 1997 was a controversial issue that has subsequently been subject of much debate both in the United States and worldwide. In Australia, development of the National Environmental

Protection Measure (NEPM) for Ambient Air by the National Environmental Protection Council (NEPC) involved a broad view of the issues of particulates. The case for adoption of a PM 2.5 fine particulate standard was considered and, indeed, two of the original NEPM sub-committees recommended that a PM 2.5 standard should be incorporated in the final NEPM.
Currently there is a paucity of data relating to PM 2.5 concentrations Australia wide and relevant data for the open cut coal industry has not been published to date. Some data is available in relation to PM 10 and even a preliminary review of this information suggests that the proposed limit value for ambient environments could be exceeded at the nearest receptors to some open cut coalmines. Thus, any attempt by the authorities to enforce the new *ambient* NEPM standard as a site boundary condition could have significant cost implications for the coal industry. Final Report "Fine Dust and the Implications for the Coal Industry" ACARP C7009 July 1999.

"A smaller size component of particulate matter, PM 2.5, can create serious respiratory health problems in sensitive people (Dockery and Pope 1994). PM 2.5 can enter deep in the lungs, affecting alveoli and causing constrictions and blocking that can lead to asthma attacks. There can also be undesirable chemical reactions within the lung. There is no current NEPM standard for PM 2.5 in Australia, though one is under consideration.
The Upper Hunter regions, NSW, there are a number of active open cut mining operations and several in the development stage. Of particular concern is the area around Muswellbrook, where several open-cut mines are in close proximity to the town. To the immediate south and west of the town are Bengalla, Bayswater (recently named MtArthurcoal Pty Ltd) and the newly approved Mt Arthur North Mines." (Final Report, "Modeling Fine- Particulate Dispersion over Short Time Spans from Open Cut Mining Activity", ACARP C10035 July 2002)

There has still been no adoption of a PM 2.5 standard in the National Environmental Protection Measure at the date of this submission.

"Silica dust is released during operations in which rocks, sand, concrete and some ores are crushed or broken. Work in mines, quarries, foundries and construction sites, in the manufacture of glass, ceramics and abrasive powders, and in masonry workshops are particularly risky. **Free crystalline silica, Si02 is one of the most common minerals in the earths crust.** It is found in sand, many rocks such as granite, sandstone, flint and slate, and in some coal and metallic ores. The three most common forms are quartz, tridymite and cristobalite. Inhaled silica (in the form of quartz or cristobalite) from occupational sources is classified by the International Agency for research on Cancer (IARC) as a Group 1 human lung carcinogen.
Respirable silica dust may be invisible to the naked eye and is so light that it can remain airborne for a long time. It can thus travel long distances in the air and so affect populations not otherwise considered to be at risk." (WHO Fact sheet No.238 May 2000)."

It has been established that Hunter Valley open cut coal mining is producing significant amounts of silica laden 2.5 particulate matter into the general atmosphere. This dust is impacting on the broad community over a large area.

These open cut coalmines are on land with known silica based soil profiles including sandstones, shale's and conglomerates. These soils cover the coal deposits at varying depths across the Hunter Valley.

This becomes the overburden spoils that are created by blasting, dozing, trucking and dumping. These overburden spoils are consistently being reshaped, moved and added to over

the life of the mine. The overburden spoils are constantly producing dust from vehicle traffic driving across them, the actions of dumping fresh spoil onto them and by the actions of air currents and winds.

The overburden spoils are subject to constant disturbance over the life of the mines operations, examples below:

Example 1. The Bengalla Open Cut Mine less than 200 meters from occupied residents and 1.5 kilometer west/north west of the CBD of Muswellbrook has had mining approval for 10 years. Its overburden dump has continually undergone reshaping and has not been permanently secured nor permanently rehabilitated in that time period. Bengalla Mine is now in the process of seeking to increase the height of this overburden wall another 30 meters above their original consent approval. This is due to miscalculating the bulking factor of the overburden in the original development consent.
This will mean a continuation of the constant disturbance of the overburden bund. This mine has a 3 x 21 years operational mining consent.

Example 2 The Anvil Hill Open Cut Coal Mine Proposal in an area of known high crystalline quartz silica sand soil profiles being amongst sandstone and conglomerate outcrops. The Project Manager has commented that Silica capping on the sandstone will cause issues with blasting. The current mine plan does not have any permanent rehabilitation plans for 8 years after start of mining with the overburden dump being constantly modified and disturbed. This mine has a 1 x 21 year life of mining prediction. This operation is still at the proposal stage.

I would suggest that current open cut mining operations do not have adequate management plans or controls to reduce the production of PM 2.5. Whether the reason for this is technology based or cost based is unknown to the writer but it would appear from the Fine Dust and the Implications for the Coal Industry" ACARP C7009 July 1999 report that cost is the factor for the current dust problems in the Upper Hunter.

Looking to you to use due diligence in referring this to the senate committee and in researching this matter.

I would like to seek the opportunity to submit further information to the committee as it becomes available.

Yours Sincerely

Christine Phelps

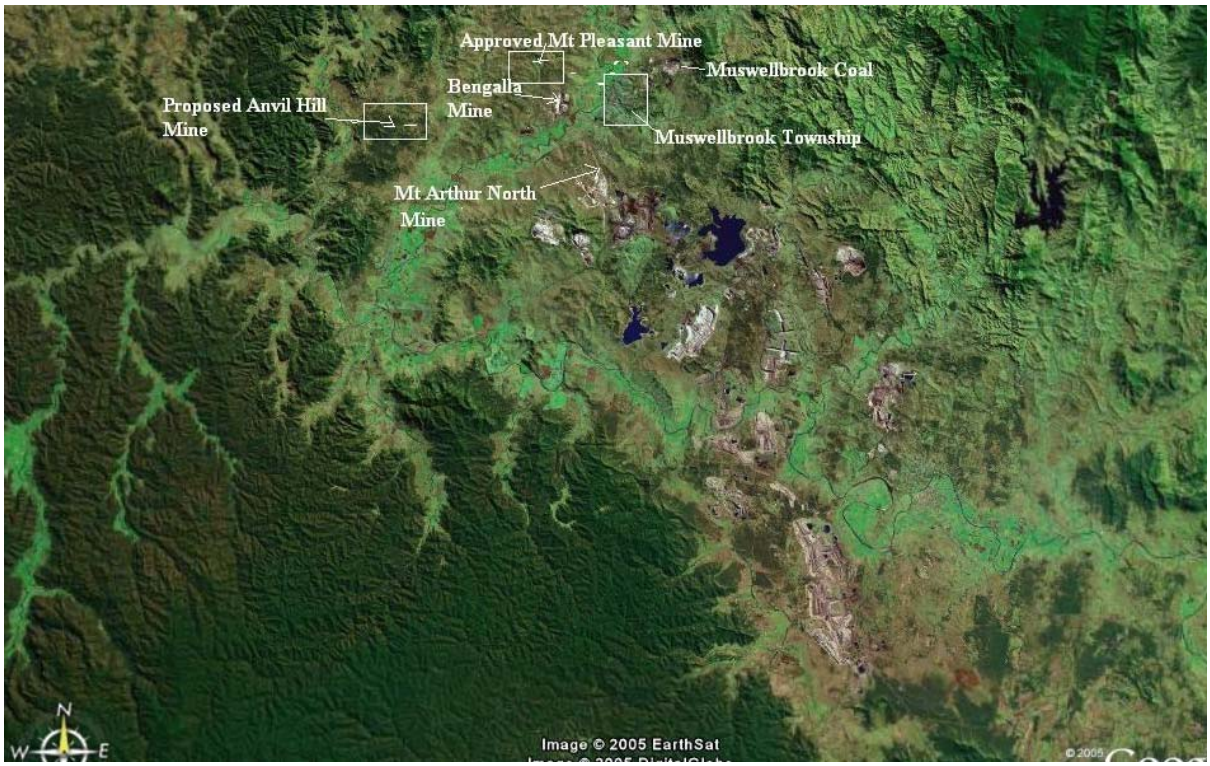

Figure 1: Satellite image of Hunter Valley Open Cut Mining Operations. Mines in proximity to township of Muswellbrook labeled.

Figure 2: Bengalla Mine Operations. < 200 meters from occupied residences. < 500metres from the Racecourse Road residential area.

Figure 3: Dust cloud from blasting overburden at Bengalla Mine. Cloud drifting N/W over public road "Wybong Road" and towards occupied residences less than 200 meters away to the right of photo.

Figure 4: Taken from Withers property at Denman, looking east to Muswellbrook over Bengalla and Mt Arthur operations. Taken about 2.30pm on 10 April 2005.

Figure 5: Take from Withers property Denman looking east to Mount Arthur operations. 23 April 2005 3pm.

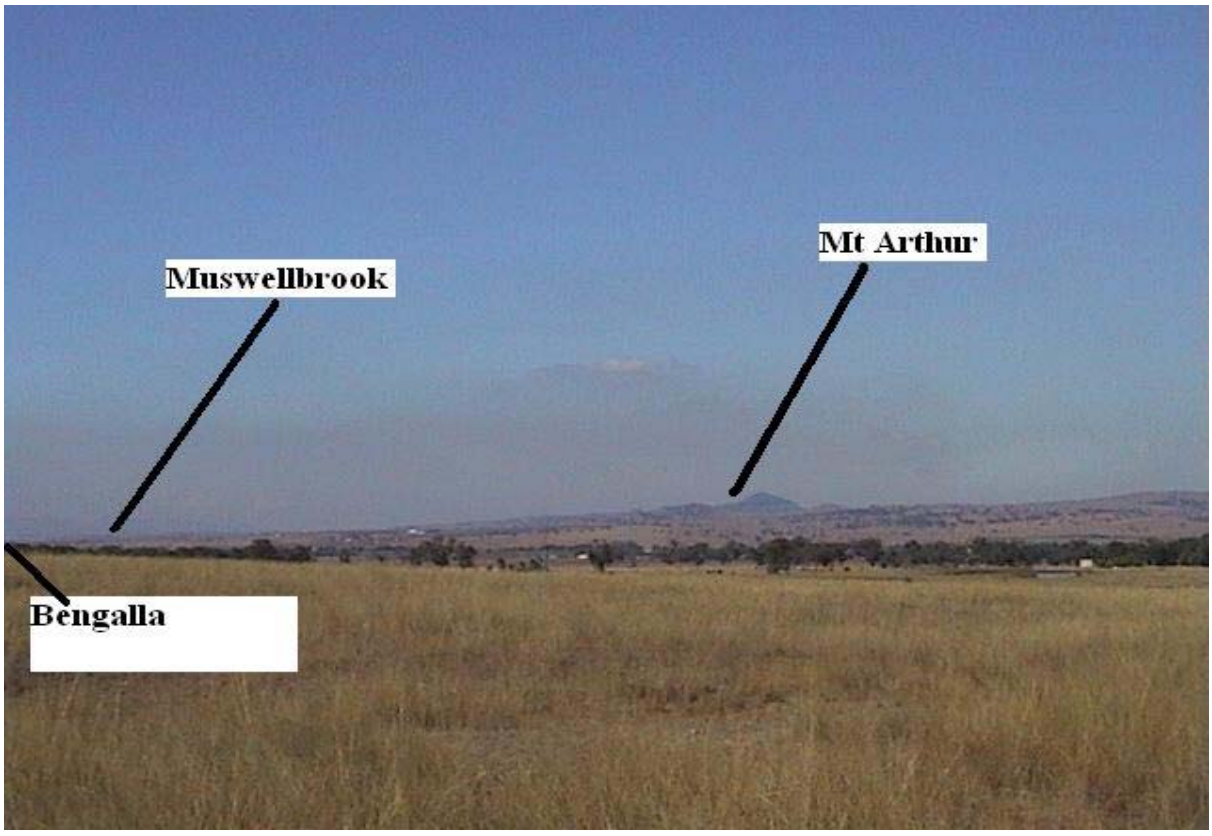

Figure 6: Taken from Withers Property looking east-showing location of Bengalla and Mt Arthur North Mine operations in relationship to Muswellbrook township. 23 April 2005. 3 pm

Figure 7: Taken from writers back verandah looking south-east towards township of Denman. My residence is 15 kilometers form the nearest operating open cut mine. Dust trail obvious in sky from Muswellbrook out to Merriwa Gap in the Great Dividing ranges. Common occurrence.

Figure 8: Dust affected sunsets. 13 August 2005. New England Hwy heading back towards Muswellbrook on sunset. Picture taken heading north into Camberwell, a small rural hamlet surrounded by open cut mine operations.

Figure 9: Dust trail in sky. Taken from Wybong Road looking south to Mt Arthur. 14 August, 9am.

Figure 10: Dust cloud from Bengalla operations. Photo taken from Denman Road looking N/W across Edenglassie Vineyards and Hunter River flats. Dust coming off end of bund wall and out of pit operations. 19th August 2005.

Figure 11: Taken from Wybong Road looking S/E back over South Muswellbrook residential area. 3 September 2005. 9am