RE: Dr W Somerville Submission to the NSW Chief Scientist and Engineer's Review of Coal Seam Gas (CSG) Activities in NSW

Dr Wayne Somerville to: csg.review 25/04/2013 07:07 AM

From: "Dr Wayne Somerville" <waynes@bordernet.com.au>
To: <csg.review@chiefscientist.nsw.gov.au>

Dear Rebecca,

Thanks for your email reply.

Cheers,

Wayne

Dr Wayne Somerville
Clinical Psychologist
Ph/Fax: 02 66333158
email: waynes@bordernet.com.au
www.CreeksBend.com

-----Original Message-----
From: rebecca.radford@chiefscientist.nsw.gov.au [
mailto:rebecca.radford@chiefscientist.nsw.gov.au] On Behalf Of
csg.review@chiefscientist.nsw.gov.au
Sent: Tuesday, 23 April 2013 9:38 AM
To: waynes@bordernet.com.au
Subject: Re: Dr W Somerville Submission to the NSW Chief Scientist and Engineer's Review of Coal Seam Gas (CSG) Activities in NSW

Dear Dr Somerville

Thank you for your email. It has been forwarded to the Coal Seam Gas review team and your comments will be taken into consideration as part of the review process.

Kind regards
Rebecca Radford

Office of the NSW Chief Scientist & Engineer
Level 49 MLC Centre | 19 Martin Place | Sydney NSW 2001 | GPO Box 5477 | Sydney NSW 2001
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From: "Dr Wayne Somerville" <waynes@bordernet.com.au>
To: <csg.review@chiefscientist.nsw.gov.au>
Date: 23/04/2013 07:08 AM
Subject: Dr W Somerville Submission to the NSW Chief Scientist and Engineer's Review of Coal Seam Gas (CSG) Activities in NSW

To Professor Mary O'Kane
NSW Chief Scientist & Engineer
email: csg.review@chiefscientist.nsw.gov.au

Dear Professor O'Kane,

Please find attached my submission to the NSW Chief Scientist and Engineer's Review of Coal Seam Gas (CSG) Activities in NSW.

Please do not hesitate to contact me if you require further information regarding this submission, or I can be of any further assistance.

Yours faithfully,

Dr Wayne Somerville
Clinical Psychologist
Ph/Fax: 02 66333158
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[attachment "Dr W Somerville Submission to NSW Chief Scientist's CSG Review.pdf" deleted by Rebecca Radford/SRD/NSW]

Submission for NSW Chief Scientist and Engineer's Review of
Coal Seam Gas (CSG) Activities in NSW:
Unassessed Risks to Human Health

To Professor Mary O'Kane

NSW Chief Scientist & Engineer

email: csg.review@chiefscientist.nsw.gov.au

Second Submission by Dr Wayne Somerville B.A.(Hons.), M.Clin.Psych., D.Psy, MAPS

Clinical and Consulting Psychologist

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25 April 2013

Professor Mary O'Kane
NSW Chief Scientist & Engineer
email: csg.review@chiefscientist.nsw.gov.au

Dear Professor O'Kane,

RE: Review of Coal Seam Gas (CSG) Activities in NSW – Health Impacts

This submission, my second to this review, addresses Term of Reference Number 2, which requested the Chief Scientist and Engineer to, "identify and assess any gaps in the identification and management of risk arising from coal seam gas exploration, assessment and production, particularly as they relate to human health, the environment & water catchments".

Specifically, the current submission addresses the lack of scientific research needed to inform a proper assessment and management of risks posed to human health by coal seam gas exploration and production.

On the Need for Baseline and Ongoing Assessments of CSG-related Health Impacts

Proposed CSG industrialisation has the potential to cause significant harm to human physical and mental health and to environmental water, soil, and air systems across all areas of NSW potentially affected by CSG industrialisation.

Recent scientific research into the impacts of CSG mining on air and water quality, and the past responses of certain industries that have harmed community health, indicate an urgent need for baseline and ongoing assessment of human health and environmental systems across all areas potentially impacted by the CSG industry.

Southern Cross University's (SCU) fugitive CSG emissions research

Scientists from the Southern Cross University's (SCU) Centre for Coastal Biogeochemistry have reported very high levels of methane, CO2, and radon venting into the atmosphere across landscapes affected by CSG mining near Tara in Queensland.[1&2]

> "We are talking about enrichment (levels of methane) over scales of 10, 15, 30 kilometres. So this suggests that we don't have just one leaking well, it suggests that we have got wide scale enrichment of atmospheric methane."[3]

Global atmospheric methane concentration has risen nearly 160% since pre-industrial times, to a current level of 1.8 ppm[4]. Santos and Maher (2012)[5] reported atmospheric methane concentrations in the range of 1.78 ppm to 1.94 ppm in the 500 km they drove until they reached the Tara gas fields.

[1] Santos, I. and Maher, D. (2012). Submission to Department of Climate Change and Energy Efficiency on National Greenhouse and Energy Reporting Determination, Fugitive Emissions from Coal Seam Gas.
[2] Tait, D.R., Santos, I., Maher, D.T., Cyronak, T.J. and Davis, R.J. (2013). Enrichment of radon and carbon dioxide in the open atmosphere of an Australian coal seam gas field, *Environ. Sci. Technol.*, Publication Date (Web) 27 Feb 2013.
[3] Dr Damien Maher, "Air, water and CSG: Current research and future perspectives", SCU presentation, 14/11/2012.
[4] Lavelle, M. (2012). Good Gas, Bad Gas. National Geographic, December 2012, Page 96.
[5] Santos, I. and Maher, D. (2012). Submission to Department of Climate Change and Energy Efficiency on National Greenhouse and Energy Reporting Determination, Fugitive Emissions from Coal Seam Gas.

In the Tara area, Dr Santos and Dr Maher found methane concentrations three times higher than in surrounding countryside, with hotspot concentrations of CH4 as high as 6.89 ppm. The chemical "fingerprint" (i.e., methane-CO2 isotope ratio) indicated that the emissions were coal seam gases.[6]

The SCU research findings are consistent with the possibility that horizontal drilling, fracturing, and depressurisation due to removal of water from coal seams result in the uncontrollable escape of fugitive methane emissions across affected landscapes. The methane potentially vents into the atmosphere via natural cracks and fissures in the rock strata, faulty cement bore casings, existing water bores, aquifers, old uncapped drill holes, cracks created by fracking, and direct seepage through the soil and rock strata.

CSG is predominantly methane, but can also contain other gases including carbon dioxide, carbon monoxide, nitrogen, and hydrocarbons such as ethane, propane, butane, benzene, toluene, xylenes, carbon disulfide, hexane, cyclohexane, ethylbenzene, as well as particulates.

The SCU findings are also consistent with the possibility that exposure to toxic coal seam gases could be responsible for at least some of the symptoms of illness suffered by people who live amongst the Tara gas fields. As Dr Helen Redmond from the Doctors for the Environment noted, there are many similarities between the health problems suffered by Tara residents and those experienced by communities living in gas fields overseas[7], and the SCU research establishes the presence of high levels of coal seam gases in the Tara atmosphere.

Government and industry responses to CSG-related risks to health

To date, in Australia there has been no measurement of levels of atmospheric methane and other coal seam gases, or of baseline physical and mental health functioning, prior to the commencement of CSG drilling operations. Such data could be readily obtained, and is essential for scientific assessment of impacts and management of risks to human health.

Notwithstanding legal responsibilities for duty of care and due diligence, the NSW and Queensland Governments appear reluctant to obtain the baseline data necessary for the assessment of foreseeable health and environmental impacts due to CSG operations and contaminants. It is as if "risk management" has been replaced by "damage control" that seeks to deny and avoid information concerning the health impacts of the industry.

Federal Energy and Resources Minister Martin Ferguson[8] did not read the SCU scientists' submission to the Federal Climate Change Department before he criticised them and their research. The Australian Petroleum Production and Exploration Association (APPEA) [9] similarly impugned the motives of the SCU researchers while failing to address the important implications of their measurement of atmospheric emissions.

The CSG industry has used lack of pre-drilling baseline measures in Tara to argue that there is no scientific evidence that high levels of atmospheric methane are the result of their CSG mining operations. Similarly, they use the lack of baseline data to deny any responsibility for the unprecedented eruptions of methane in the Condamine River and the health problems reported by people in Tara.

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[6] Santos, I. and Maher, D. (2012). Submission to Department of Climate Change and Energy Efficiency on National Greenhouse and Energy Reporting Determination, Fugitive Emissions from Coal Seam Gas.
[7] Cubby, B. "Doctors raise alarm over toxic coal seam gas leaks", Brisbane Times, 17/11/2012.
[8] Hannam, P. and Cubby, B. "Minister slams 'unscientific' report on gas leak", Brisbane Times, 20/11/2012.
[9] Ibid.

The responses of the CSG industry indicate that it is unlikely to appropriately address the risks posed by elevated levels of coal seam gas pollution. Rather, the CSG industry appears likely to adopt tactics used in the past by the lead, tobacco, and asbestos industries to counter scientific findings that question the safety of their products.

In the late 1970s, court documents proved that asbestos industry officials had known since the 1930s that asbestos was dangerous, but had deliberately concealed this information as they promoted their product.

The 1964 US Surgeon General's Report found that cigarette smoking was the cause of lung and laryngeal cancer and chronic bronchitis. Nonetheless, up until the court-ordered release of documents in the late 1990s, the tobacco industry lied about the known health impacts of smoking, and besmirched the reputations of scientists in order to impugn independent research findings.

Tetraethyl lead was known to be a potent neurotoxin when it was introduced as a petrol additive in 1923, but as a result of an industry policy of denying negative health impacts, leaded petrol was not phased out nationally in Australia until January 2002.

The lead, tobacco, asbestos, and coal industries were established and widely promoted even though they were known to have adverse health consequences. Each of these industries flourished and were massively developed over decades as health professionals and scientists studied the deleterious health impacts of these products.

Research ultimately contributed to successful litigation and claims of compensation against the asbestos and tobacco industries. Nonetheless, for decades these research efforts failed to prevent avoidable illness and suffering, and even today such research is having a limited effect in ameliorating the harm caused by these industries.

Implications for Protecting Human Health

If the CSG industrialisation of the Northern Rivers and other areas of NSW proceeds in the absence of adequate baseline and ongoing assessment of health impacts, it seems likely that the CSG industry will be rapidly expanded while health professionals are marginalised to a game of "catch up" in which their research efforts do little to nothing to prevent avoidable illness in the community.

As is the case with coal, once the CSG industry is entrenched, the community will have to live with the health impacts, regardless of how serious these might be. Once the industry is firmly established, negative health impacts are likely to be treated as acceptable "collateral damage", rather than as any reason to curtail or discontinue the mining activity.

If health professionals and Government agencies charged with protecting community health are to achieve any timely, significant reduction or elimination of avoidable CSG-related illnesses, they will: a) require adequate baseline assessments, and ongoing monitoring, of physical and mental health in affected communities, and b) need to be able to rapidly establish an association between exposure to pathogenic agents and the onset of any symptoms of illness.

The current research programs being undertaken by Southern Cross University scientists provide the foundations for a more general research effort that could provide continuous monitoring of air and water quality in CSG affected regions. The "real time" environmental monitoring, including the chemical "fingerprinting" and identification of specific sources of methane and other coal seam gas emissions, makes it possible for health professionals to associate the onset of acute symptoms with significant changes in levels of exposure to environmental pollutants. Such a monitoring program has the potential to identify "dose related" correlations between exposure to CSG pollutants and negative health impacts.

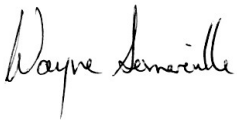
The identification and treatment of illnesses suffered by people exposed to asbestos and tobacco smoke were protracted and complicated, at least in part, because the cancers, respiratory illnesses, and other health problems associated with tobacco and asbestos typically develop over long periods of time.

By contrast, the experience in south-east Queensland CSG gasfields suggests that in the case of illnesses associated with exposure to toxic coal seam gases, effects will manifest soon after exposure as symptoms of acute gas poisoning, and also as slower developing illnesses such as cancer, hypertension, and other medical conditions.

I strongly urge the current review by the NSW Chief Scientist and Engineer to recognise that the impacts of CSG activity on human health have yet to be properly assessed, and recommend an appropriate, independent, assessment of baseline health, and ongoing monitoring of the impact of exposure to CSG pollutants, in all communities that are potentially affected by CSG industrialisation.

Please contact me if you require further information about this submission, or if I can be of any further assistance to the Chief Scientist and Engineer's review.

Yours faithfully,



Dr Wayne Somerville
Clinical Psychologist