



## CSG Review - Health Impacts

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History: This message has been replied to and forwarded.

### CSG Review. Health Impacts

#### Introduction

The author of this submission is a retired psychiatrist living in the Gloucester area. I worked from Gloucester Medical Centre for 9 years prior to my retirement 6 years ago. My work included seeing people with psychological impacts of mining. This led me to develop my knowledge of all the health impacts of mining and this has been my principal retirement activity. The Gloucester valley has two open cut coal mines and a third one proposed for the edge of town. The community for the past five years have been vehemently opposed to the expansion of mining with 85% being the typical 'opposed' figure.

The Gloucester Gas Project commenced whilst I was still working but we were still very ignorant of the health and environmental impacts of CSG in 2007 and the project was still in a very early exploratory phase so that I didn't treat people with impacts from CSG at that time. If I was still in clinical practice I would certainly be seeing people now whose stressors include those from an unwanted mining company causing social disruption and threatening the future and lifestyles of the 4,000 people who live in the area of the Gloucester Gas Project. AGL have indicated the project will only be viable if the whole field is developed since the costs of building a 100km pipeline and a processing unit are very considerable. This involves 300+ wells from just north of Gloucester covering much of the valley floor for 40km to Stroud.

#### Cumulative Impacts

Many CSG developments will be occurring in areas such as Gloucester where there is coal mining as well as CSG Mining. The cumulative impact becomes intertwined both psychologically and from toxic effects so that it is ridiculous to consider them separately. Our mayor for example had two coal companies and AGL all seeking to explore on his land at the same time and pressuring him to sell where he had farmed and raised his family for 40 years. A lovely home, a farm improved over years to being a model farm, an exquisite setting in a heritage landscape with views of the Gloucester Bucketts. It would be incredible if his family did not suffer stress exacerbated health damage. It is impossible to apportion the degree of stress put on that family by any one of the mining companies. This suggests to me a central fund is required to pay compensation and all the accumulated health consequences.

#### Health Impacts of Mining (Including CSG Mining)

- 1) Psychological and Social
- 2) Noise
- 3) Air Pollution
- 4) Water Pollution

#### 1) Psychological Health damage from Mining

These are the earliest health effects seen and commence in the exploratory phase with psychodynamic causes and resulting in emotional disturbances. Typically the first stressor is learning from a minute map totally lacking in detail in the local paper or The Land newspaper that your residence is subject of an exploration license. Slowly it emerges your future and life

plans may have to change. The threatened loss will trigger anxiety and/or depression and in people with pre-existing psychological problems the stress is likely to cause an exacerbation of a previously stabilised condition. I saw people with paranoid illnesses, who had come to the bush to escape, being pursued by assertive mining companies. It is a wonder no-one has been shot yet so far as I know.

A few people find they are offered unexpectedly large amounts of money whilst the majority are financially disadvantaged. This causes social division. Those entering into sales are forced to sign 'silence' clauses about the deal further alienating the 'lucky' few from the rest of the community. For most people their properties lose value because they are near to a proposed mine but not in it. No-one wants to live near a mine. (This was recently acknowledged by the Deputy Premier). This phenomenon is seen in it's most stark form with a CSG Field because they cover an enormous area in comparison to a coal mine. Areas may have exploratory licenses over them for 20years with mines being developed in stages and residents delaying developments all that time for fear they will be wasted.

Later stages of exploration may involve test wells with drilling chemicals, fracking, flaring and pumps. These emit a variety of poisons including hydrocarbon brain poisons (PAH and VOC's) that can cause gradual cognitive damage (learning, memory etc) some with associated behavioural problems . The very young, the elderly, the chronically sick and the socially disadvantaged are at high risk. The level of risk is unknown and is a typical example of why NSW Health Dept stated further detailed studies are needed before further Gas Fields are developed. (Pereira showed that pregnant women living where there was high level of diesel fumes had children at age 5yrs with a loss of 5 IQ points) Endocrine disruptors found in drilling and fracking fluids can also have an impact on brain functioning.

After the landscape has been impacted then grief is experienced for the loss of a loved landscape that in the past provided solace. this has been labelled solastalgia.

## 2) Noise Effects

The loudest noise comes from the Central Processing Units and recently I heard the experience of someone 7km from such a unit in Qld who was bothered by the noise. In NSW it will be possible to drill a well 200metres from a house and the noise will come from pumps which are likely to operate 24hrs/day. Vehicle noise may well be closer.

Low frequency noise travels much farther and is not dampened by insulation because it's transmission is as much by vibration through solids and not through air which is the mode of transmission of middle and high frequency noise.

The recency of the CSG industry in Australia means we do not have information of the character of noise in each of the above sources.

Wind farm low frequency noise has been shown by Michael Nissenbaum et al to lead to more sleep quality disruption the closer you live to a wind farm, also day time sleepiness increases and there is a progressive loss of mental wellbeing as measured by the SF 36 the closer you live to a wind farm. These researchers suggested the 2km zone as an appropriate one. Although this buffer zone has been suggested for CSG there is no evidence it is the appropriate distance for this different causation.

## 3) Air Pollution

Methane emissions may be accompanied by other hydrocarbons such as carcinogenic BTEX

chemicals. The degree to which this happens will vary between wells and illustrates the need to measure baseline levels of methane etc at multiple sites over the whole field before drilling commences and after fracking occurs and regularly during mining. In the Gloucester Valley there have been 17 Pilot Wells, all fracked, and lots of evidence of fugitive emissions, but no measurement of methane or radon gas which may be a marker for methane.

Methane is obviously a safety hazard since it is explosive when mixed 15% with air and the pictures of rivers and kitchen taps flaming have been used to highlight this very real risk. The typical rural situation is a farm shed with a dirt floor that is leaking methane unbeknown to the owner. Pipelines are a source of community anxiety for their real or imagined safety risk.

Pumps, vehicles, flaring and the Central Processing Unit all emit fine and ultrafine particles which may be carcinogenic and also increase respiratory and cardiovascular pathology. They will have a cumulative impact with particles from other sources, mining, burning off etc. Fine particles need to be continuously monitored with real time results accessible on line and not averaged over the past 24 hours since peaks of only a few hours can lead to acute asthma attacks and cardiac dysrhythmias and 'high at risk' people need to have the opportunity to move to an air filtered environment when there are peak levels.

#### Water Pollution and Drawdown

Drilling runs the risk of causing connectivity between ground and surface water aquifers. Fracking further increases this risk. Depressurisation leads to large quantities of produced water with toxic components including heavy metals, BTEX, drilling and fracking chemicals and methane. In the Gloucester valley the Gas Project is in a water catchment area for 75,000 customers of MidCoast water who were excluded from negotiations until it was too late for their objections to count. This appalling deliberate sabotage of the early planning process should certainly never be repeated but also should be publicised and the culprits held accountable. Pastures, stock and native animal health are all endangered by this pollution.

#### Reduced river flows

In some situations reduced river flows from the withdrawal of water from groundwater recharge systems will have impacts on human and animal health.

#### Cumulative Water studies

Since each coal mine and the CSG Field each impact on the water system of the area it is ridiculous for each project to be allowed to conduct their own EIS which may say very different things to the other companies EIS's. At Gloucester at the moment the Council are lobbying for there to be a combined Valley water study involving all companies and all levels of government.

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