

## Coal Seam Gas (CSG) Impacts - A One Page Summary

### **Atmospheric Impacts**

Severe climate change impact: In 2011 Cornell University researchers showed that fugitive methane gas emissions (aka "leaks") from unconventional gas operations were as high as 4% - 8% when assessed from initial drill to final use. The Green House Gas (GHG) footprint of unconventional gas is thus comparable to that of coal over the 100 year time frame. However, over the 20 year horizon, which is crucial in terms of climate change tipping points, the GHG footprint is *"at least 20% greater than and perhaps more than twice as great as that of coal."*

More recently the U.S. National Oceanic and Atmospheric Administration (NOAA) has confirmed these high rates of methane leakage. These results show that the *"clean green"* marketing image of CSG is completely unfounded; in fact large scale CSG exploitation is one of the very worst paths to follow if we wish to avoid severe climate change outcomes.

Local health impacts: New research from Southern Cross University suggests that methane and other coal seam gases are leaking from Australian gas fields at far greater rates than previously thought. Residents in the Tara gas fields of south-western Queensland are already reporting health impacts, with children being hardest hit. Despite such ongoing indications of possible health impacts, from both overseas and Australian gas field residents, there still have been no proper studies done on community health risks associated with CSG - yet the industry is expanding at break neck speed.

### **Land and Waterway Impacts**

Wherever the CSG industry goes it builds gas field infrastructure: concrete pads for the myriad of CSG wells, compressor units, and storage tanks; connecting roads and pipelines; and holding ponds and/or treatment plants for the "produced" water. This infrastructure criss-crosses the landscape and requires significant additional truck traffic for both initial construction and ongoing servicing. Such infrastructure growth effectively industrialises what were formerly urban and semi-rural residential areas, productive agricultural areas, or important natural conservation areas.

Further, with the gas extraction comes large quantities of "produced" water which is actually water polluted with large quantities of salt and a myriad of other contaminants from coal seams and drilling fluids. Holding, separating, and disposing of these pollutants is a major task, and failures are already on record with polluted waters escaping to contaminate soils and water ways.

### **Sub-Surface Impacts - Groundwater Quality and Quantity**

A CSG well is drilled down a long way, with further horizontal drilling possible along the coal seam itself. In its descent the drilling path passes through many strata. In many instances the well bore hole will pass through aquifers that are used by people and/or are vital parts of natural groundwater flows. The activity of hydraulic fracturing ("fracking") can lead to previously unconnected strata becoming connected, with this in turn potentially leading to the pollution of clean water aquifers. Even where fracking is not employed the breakdown of well bore hole casings over time (or through seismic activity) can result in new cross-strata connections and possible contamination. The contaminants come from both the drilling/extraction chemicals and the many substances (potentially including heavy metals and radionuclides) previously locked in the coal seam itself.

Further, to release the gas vast amounts of groundwater also need to be extracted. Such large scale water extraction can cause groundwater levels to drop significantly and hence directly reduce water availability to both humans and the natural environment. This groundwater may have taken millennia to accumulate but is being extracted in just a few years.

**Caveat Emptor - CSG is a one way street :** Even with the best of management, accidents will happen in any industry. CSG however is particularly dangerous, for many of its possible (in some cases inevitable) bad outcomes are such that they cannot be undone. Greenhouse gases once released cannot be recalled, good soil once polluted with salt and toxins is well nigh impossible to rehabilitate, serious human health impacts can have life-long and possibly inter-generational repercussions, and once an aquifer is damaged it cannot be repaired.