

Cougar Energy UCG incident – update

What is happening at the Kingaroy UCG plant?

The Cougar Energy pilot UCG project has been temporarily closed because water quality tests detected benzene and toluene in groundwater monitoring bores close to the plant.

While subsequent water samples show acceptable levels of benzene and toluene under the Australian Drinking Water Guideline, the plant will remain closed until further environmental evaluation can take place.

What are benzene and toluene?

Benzene and toluene are liquid by-products of petrochemicals.

Benzene is a carcinogen found in cigarette smoke, wood smoke, petrol and exhaust fumes from motor vehicles, and industrial emissions. It is used as an industrial solvent and may be used in the production of drugs, plastics, synthetic rubber and dyes.

Toluene is widely used in industrial processes and as a solvent.

The Australian Drinking Water Guidelines sets the following acceptable levels for each:

- Benzene 0.001 mg/L, which is equivalent to 1 part per billion (ppb)
- Toluene 0.8 mg/L, which is equivalent to 800 ppb

What have been the test results to date?

All of the sampling carried out to date by both Cougar Energy and DERM indicates that benzene has only been detected in one bore (monitoring bore 37) at a maximum concentration of 2 parts per billion (above drinking water guideline of 1 ppb).

Further, all of the sampling carried out indicates that toluene has been detected in one bore (monitoring bore 38) at levels between 4 and 45 parts per billion (well below drinking water quality guideline for health of 800 ppb). Toluene has also been detected

What is the Difference between UCG and CSG Production Processes?

Underground Coal Gasification (UCG) and Coal Seam Gas (CSG) are two very different processes used to extract gas from coal seams.

The UCG process occurs underground converting coal to a synthesised (or non-natural) gas via enforced combustion.

The CSG process involves drawing water from the coal seams which releases the Coal Seam Gas which is primarily a naturally occurring methane gas.

at the limit of detection (0.1 ppb) at 2 sites within a 1 km radius of the plant. Neither toluene or benzene has been detected at the other sampling sites at this time.

It has been reported in the media that monitoring undertaken by Cougar indicated that benzene had been detected at 84 parts per billion in monitoring bore 38, and that toluene had been detected in a privately owned bore known as the Plantation bore, which is located approximately 1 kilometre from the plant. The laboratory that undertook the analysis has provided both Cougar and the Department with written confirmation that this test result is not valid, it made an error with both the 84 ppb benzene result, and the detection of toluene at the Plantation bore.

The department is continuing to sample a wider area around the Cougar Energy plant particularly within a 2km radius of the plant.

The department is committed to sampling bores beyond this area, including sampling at identified landholder's bores where requested.

Where are the UCG trials in Queensland?

There are three UCG trials currently underway:

- Cougar Energy <www.cougarenergy.com.au> near Kingaroy
- Linc Energy <www.lincenergy.com.au> near Chinchilla
- Carbon Energy <www.carbonenergy.com.au> at Bloodwood Creek, near Chinchilla

How do I find new updates on new sampling results?

The DERM website <www.derm.qld.gov.au> will be updated regularly as additional sample results are received.

Have Kingaroy residents been exposed to the chemicals?

Kingaroy's town drinking water has not been affected. The community's drinking water is drawn from Gordonbrook and Boondooma dams. The bore from which local water carriers draw their water to top up water tanks has been tested weekly and has not shown any levels of benzene or toluene.

What is the extent of the groundwater contamination?

The Department is undertaking an extensive monitoring program to determine if there has been any further contamination. As groundwater normally travels at a slow rate within an aquifer, it is considered most unlikely that if there is further contamination that it will have extended beyond a one to two kilometre radius from the plant.

for more information please turn over

What is the role of the Department of Environment and Resource Management (DERM)?

The role of DERM is to monitor the UCG pilot projects, in particular the environmental impacts of their activities on adjacent land, groundwater, air quality and rural communities.

The early identification of potential environmental issues is a priority for the government. The government has announced environmental evaluations are to be undertaken on all three sites and has requested an interim report from the scientific expert panel to determine whether the trials should continue.

An environmental authority was required for each of the three trial sites before operations could commence. A substantial environmental assessment process was required to be undertaken prior to the environmental authorities being issued.

The issue of environmental authorities is subject strict conditions aimed to prevent or minimise environmental harm, and in relation to groundwater the release of contaminants is expressly prohibited.

The government views such incidents seriously and it is for this reason that action has been taken requiring Cougar Energy to cease activities until it can be assured that groundwater resources are protected.

DERM has begun an investigation into whether Cougar Energy has breached its environmental authority and whether it has caused environmental harm.

The maximum penalty for a willful breach of a condition of an environmental authority is \$1 million for a company and \$200 000 or two years imprisonment for an individual. The maximum penalty for causing serious environmental harm is \$2 082 500 for a company and \$416 500 or five years imprisonment for an individual.

What is the Role of the independent expert panel?

On 18 February 2009, the Queensland Government released its policy position on the development of the underground coal gasification (UCG) technology. The key objective of the UCG policy is to provide the approved UCG pilot projects with the opportunity to demonstrate the technical, environmental and commercial viability of the technology.

In accordance with the UCG Policy, the Independent Scientific Expert Panel has been appointed and will assist with the review of reports submitted by the individual UCG pilot projects.

The Independent Scientific Expert Panel's advice will inform the preparation of a Government Report on the future of the UCG industry.

What is the role of the Department of Employment, Economic Development and Innovation?

The Department of Employment, Economic Development and Innovation (DEEDI) administers the *Mineral Resources Act 1989*.

In the case of UCG, DEEDI is the lead agency for overseeing the pilot program it is responsible for granting mineral development licences.

What is the Underground Coal Gasification process?

Underground coal gasification (UCG) is the process by which coal is converted to gas underground via enforced combustion. UCG is used to access coal resources that are either uneconomic to work by conventional open cut or underground coal mining methods, or are inaccessible due to depth, geology or other mining and safety considerations.

The UCG process is initiated by drilling two adjacent boreholes into a coal seam, which is generally at a depth greater than 100 metres. An oxidant such as air or oxygen mixed with steam is then injected under pressure and is ignited at the coal seam. The hot combustion gases flow through the coal towards the second borehole, with the resulting chemical reactions converting synthetic gas which is then extracted through a second borehole.

The gas which is a mixture of hydrogen, carbon monoxide, methane, carbon dioxide and higher hydrocarbons, along with nitrogen (if air is used as the oxidant) is a synthesis gas commonly referred to as syngas. Syngas can be used to fuel power generators and is also used in the production of various chemicals including ammonia for fertiliser, methanol and liquid fuels.

What is the Coal Seam Gas process?

Coal seam gas (CSG) collects in underground coal seams by bonding to the surface of coal particles. The coal seams are generally filled with water, and it is the pressure of the water that keeps the gas as a thin film on the surface of the coal.

Coal seam gas is extracted through wells drilled into coal seams. The initial phase of CSG production usually involves the extraction of water from the coal seams in order to reduce the water pressure and release gas from the coal.

If the pressure within the seam is high, the gas may flow to the surface unaided. Conversely, the gas may have to be pumped to the surface if the pressure is lower. When coal seam gas comes to the surface, water in the gas is separated.

Coal seam gas is a natural gas consisting primarily of methane it is used in the same ways as natural gas including fuelling natural gas appliances such as heaters and stoves and the generation of electricity.