



INFORMATION SHEET

BTEX: Questions & Answers

May 2015

The NSW Government bans the use of BTEX chemicals in CSG drilling additives and CSG fracture stimulation additives in this state because of their potential danger to human and animal health if they occur in high enough concentrations for prolonged periods of time.

A Code was developed in consultation with the Environment Protection Authority in 2011.
<http://www.trade.nsw.gov.au/policies/items/ban-on-use-of-btex-compounds-in-csg-activities>

Why was there a need for an investigation?

An investigation began following notification from AGL on 27 January 2015 that traces of BTEX (benzene, toluene, ethylbenzene and xylenes) compounds had been detected in routine flowback water sampling from the Waukivory 13 well (which is a pilot project near Gloucester).

What did the investigation find?

The investigation has concluded that the BTEX detected in the flowback water from the Waukivory well comes from the interaction of flowback water with the naturally occurring BTEX compounds present in the deeper coal seams. Sampling of the fracture stimulation fluids conducted by Division of Resources and Energy (DRE), EPA and AGL did not detect any BTEX compounds in the fracture stimulation fluids.

Why did it take so long?

DRE undertook a comprehensive investigation of why BTEX traces were recorded, including sampling and analysis of flowback water samples, literature review and review and examination of the fracture stimulation well completion reports. Given the scientific nature of the issues involved, the investigation report and available evidence were sent for independent review by Dr Johnson Jnr and other academics from the University of Queensland to ensure that the DRE assessment and conclusions were scientifically sound.

Where did the BTEX come from?

The investigation concluded that the BTEX detected in the flowback water has come from naturally occurring BTEX in the deeper coal seams of the Gloucester Basin of approximately 600+ metres underground. Reports prepared for coal exploration in the area since the 1980's have identified the presence of traces of oil in the coal seams at depth.

What is stopping the BTEX leaching into other aquifers?

Hydrogeologically, the deeper coal seams containing naturally occurring BTEX compounds are separated from the shallower beneficial aquifers by several geological layers including the Jo Doth tuff, which is of very low permeability (penetration) and acts as a barrier to the migration of water from the deeper seams.

Are there dangers from airborne BTEX?

A study by Environmental Risk Sciences Pty Ltd has concluded that the levels of BTEX being detected would be considered insignificant in relation to exposure and would pose no potential for harm to human health associated with the BTEX emissions from the holding tank.

What happens now?

DRE will require AGL to sample and analyse flowback water on a daily basis to monitor trends in BTEX levels.

If the data shows samples reaching a trigger level of 1,900 parts per billion (ppb) AGL will be required to notify DRE and EPA within 24 hours, and investigate the reasons for the increase. Any actions taken will be subject to approval by DRE.

Current monitoring shows the benzene levels are typically around 200-400 ppb, well below the 1900 ppb investigation trigger level.

The initial level for human health impacts for benzene is 19,000 ppb.

Will AGL be allowed to resume operations?

As the investigation has now been completed with no adverse findings AGL can resume their operations.

AGL have an application to change the manner in which the flowback water is disposed of which is currently under consideration by the relevant agencies.