



## Fact Sheet: BTEX.

Gloucester Gas Project  
March 2015

Many people have been asking us why AGL's Waukivory Pilot Project near Gloucester has been suspended because of "BTEX". To ensure that you have access to the facts, we've compiled the most common questions along with answers we have sourced from a range of authorities.

### What is BTEX?

BTEX stands for Benzene, Toluene, Ethylbenzene and Xylene. These chemical compounds most commonly occur in oil-based products such as petrol, diesel and thinners. BTEX is used in cosmetics, glues, inks and pharmaceutical products<sup>1</sup>. In fact, they are among the most abundantly-produced chemicals in the world<sup>2</sup>.

### Why are people concerned about BTEX?

While BTEX naturally occurs in oil and gas reservoirs, many governments have banned its use in oil and gas extraction to avoid adding it to the environment. Benzene is also a known carcinogen, so everyone wants to minimise exposure to it.

### Where did the BTEX come from?

BTEX can be found in crude oil, coal and gas deposits<sup>3</sup>. AGL has been monitoring BTEX in surface and groundwater in Gloucester as part of its exploration activities since 2010. Trace levels of BTEX has been found in groundwater previously in the Gloucester area.

AGL believes that the BTEX found in the Waukivory Pilot flowback water is naturally occurring.

### How certain are you that AGL didn't cause the BTEX?

Our hydraulic fracturing fluid underwent independent analysis at a NATA-accredited laboratory. The analysis detected no BTEX, so we are certain it was not introduced by us.

### How much BTEX has been found in the water at Waukivory?

Of the five samples we originally took at Waukivory in which we found BTEX, four were within the range of 12-70 parts per billion and the fifth showed 555 parts per billion<sup>4</sup>.

### What risk does that pose to the environment and community?

When BTEX was detected in the flowback water we immediately sought expert advice, which confirmed that at the levels recorded there was no risk to the community or the environment.

While the BTEX levels might sound high, they are actually very small (parts per billion).

Each day, you may breath in anywhere between 90 and 1,300 parts per billion of Benzene<sup>5</sup>.

In water, one part per billion is about the same as a teaspoon in an Olympic swimming pool<sup>6</sup>. BTEX levels would need to be above 1,000 parts per billion before having any effect on marine life<sup>7</sup>.

Cigarette smoke, motor vehicle exhaust and the fumes you breathe in while refuelling your car at the service station are far greater sources of exposure to BTEX in the community.

### What is happening with the flowback water from your gas wells?

The flowback water is held securely at our above-ground storage tank at Waukivory. It will continue to be held there until the outcome of the investigations by the NSW Environment Protection Authority (EPA) and NSW Trade & Investment - Division of Resources and Energy (DRE). We then will make arrangements for its proper and lawful treatment and disposal as trade waste water.

### If flowback water has got BTEX in it, how can you dispose of it as waste water?

The BTEX levels in our above-ground storage tank are below those set in the NSW Government's Liquid Trade Waste Regulation Guidelines, so the water can appropriately be treated and disposed of by an EPA-licensed trade waste facility<sup>8</sup>.

## So what are you doing about the BTEX?

Pumping at Waukivory had stopped prior to the detection of BTEX in the flowback water. So, apart from some further water brought to the surface as part of the EPA/DRE testing, we currently only have the water in the above-ground storage tank. The wells, pumps and tanks are isolated from the environment.

We are also going to undertake daily sampling and testing of future flowback water to monitor the BTEX levels.

## If you are so interested in informing the community, why didn't you reveal the BTEX results straight away?

When we received the test results, our immediate step was to establish whether the BTEX posed any threat to human health or the environment. The expert advice provided to us was that there was none.

It is important to us that we provide the community with correct information.

We proceeded to verify the sampling procedures and to identify any potential contamination of the samples. We also reviewed historical monitoring data, conducted site inspections to assess our monitoring points, and checked our flowback system.

Given the community's concern about BTEX, AGL subsequently determined that a full review of the sampling results was warranted, so we voluntarily suspended operations and informed the relevant authorities.

## This is the third case of water contamination I have heard about at Waukivory. Surely that shows the project is a risk to the environment?

It is important to understand there have not been any 'contamination' issues at Waukivory. What we did is notify the EPA, as we are required, when our water sampling detected two other particular compounds - monoethanolamine and THPS.

## Monoethanolamine.

Monoethanolamine is added to hydraulic fracturing fluid (as monoethanolamine borate) to increase its viscosity. However, our baseline sampling found background levels of monoethanolamine in groundwater and surface water in September and October 2014, before hydraulic fracturing operations commenced. That is most likely because monoethanolamine is also a known constituent of mammal urine and associated with agricultural land and bush areas.

## THPS.

THPS is added to hydraulic fracturing fluid to prevent bacteria growth in the coal seam. We announced last month that some surface water monitoring results showed THPS levels of 57 and 59 parts per billion. This is 7 and 9 parts per billion over the level we have to advise the EPA, but these results also fall within the margin of error limits for the laboratory tests, which is plus or minus 50 parts per billion.

## References.

- <sup>1</sup> Griffith University 2010; <https://www.ehp.qld.gov.au/management/coal-seam-gas/pdf/btex-report.pdf>
- <sup>2</sup> <http://www.ehp.qld.gov.au/management/non-mining/btex-chemicals.html>
- <sup>3</sup> Griffith University 2010; <https://www.ehp.qld.gov.au/management/coal-seam-gas/pdf/btex-report.pdf>
- <sup>4</sup> AGL ASX statement, 27 January 2015
- <sup>5</sup> Griffith University 2010; <https://www.ehp.qld.gov.au/management/coal-seam-gas/pdf/btex-report.pdf>
- <sup>6</sup> Griffith University 2010; <https://www.ehp.qld.gov.au/management/coal-seam-gas/pdf/btex-report.pdf>
- <sup>7</sup> Griffith University 2010; <https://www.ehp.qld.gov.au/management/coal-seam-gas/pdf/btex-report.pdf>
- <sup>8</sup> [http://www.water.nsw.gov.au/ArticleDocuments/36/town\\_planning\\_water\\_utilities\\_liquid\\_trade\\_waste\\_guidelines.pdf.aspx](http://www.water.nsw.gov.au/ArticleDocuments/36/town_planning_water_utilities_liquid_trade_waste_guidelines.pdf.aspx)

If you have any questions about our management and treatment of local water resources, or the Gloucester Gas Project, please contact us at [gloucester@agl.com.au](mailto:gloucester@agl.com.au) or phone 1300 799 716.

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