

# UNDERGROUND COAL GASIFICATION

- AN IDIOTS GUIDE TO BURNING COAL UNDER THE SEA -

In simple terms Underground Coal Gasification (UCG) involves setting fire to coal underground. Once alight, the fire is starved of oxygen with the aim of creating synthetic gas (syngas) which can be brought to the surface. UCG is chemically similar to the production of "town gas" in the last century, but this partial burning of the coal happens underground, releasing toxic and carcinogenic coal tars into the environment. At the surface, toxic and explosive gasses emerge at high temperatures mixed with huge volumes of steam (which condenses into liquid waste). The process also produces significant quantities of climate changing CO<sup>2</sup>.

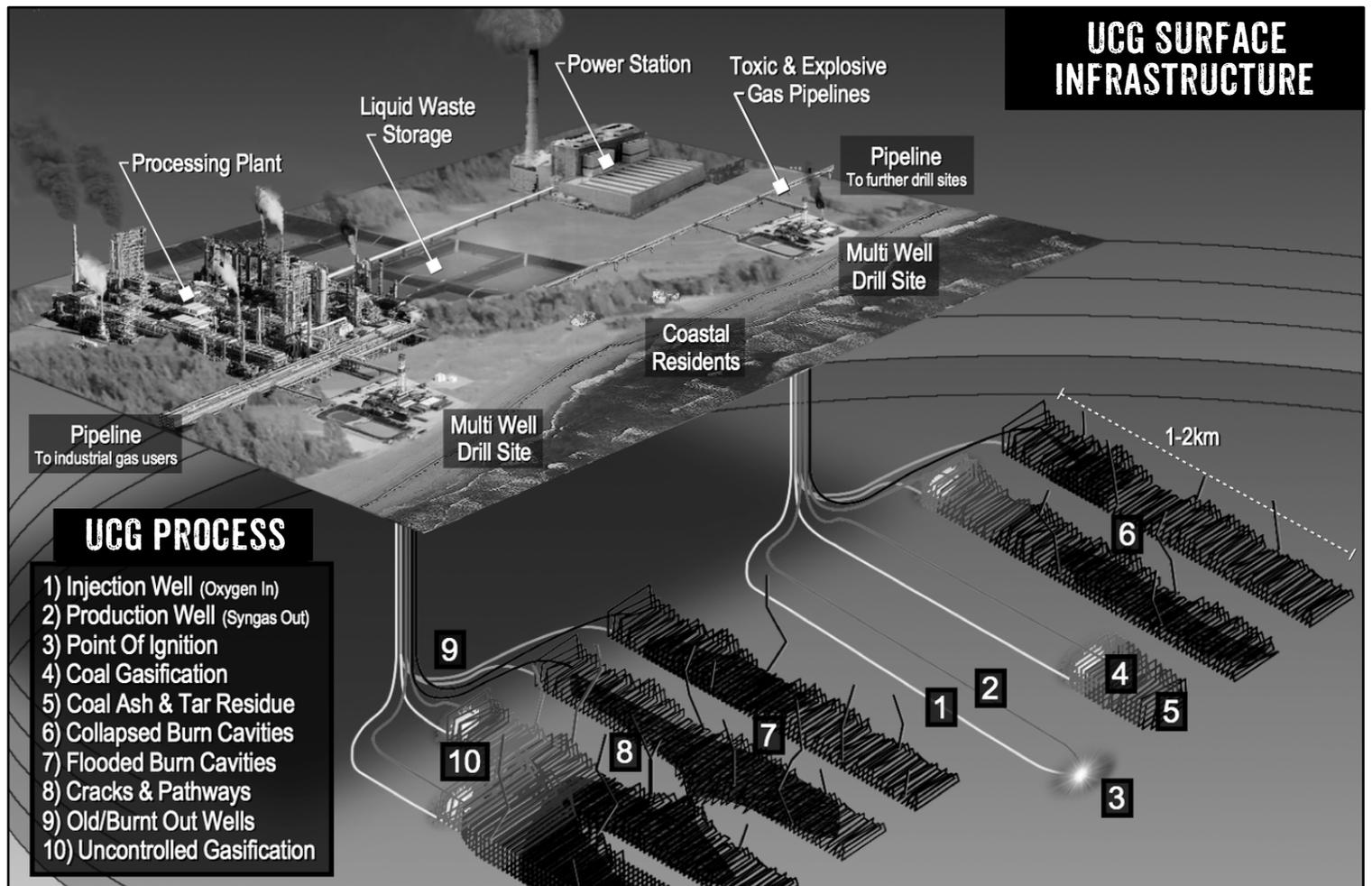
In the UK, 27 UCG licences have already been issued around our coastline by the Coal Authority. All the UK licences are just offshore, but many are close to large cities such as Edinburgh, Newcastle, Liverpool and Swansea. With a track record of failure and groundwater contamination, UCG tests around the world have usually occurred in low population density areas (see overleaf). UCG has never been tried offshore, near cities or on this scale before. If it's not stopped, the UK's coastal areas could be the global guinea pigs for this experimental technology.

Just like Fracking, UCG requires access to vast areas of land for a small return of gas and in the process creates massive quantities of waste and pollution. To take UCG beyond testing would require thousands of wells and huge onshore production infrastructure (see diagram below).

## WHAT CAN WE DO ABOUT IT?

A strong, grass-roots, community-led campaign is needed to stop UCG before it becomes established. Only by acting together in a network of organised groups, can communities successfully defend themselves against this industry.

Turn over for more info and to find out how you can get involved...



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# UNDERGROUND COAL GASIFICATION - UK THREAT

In the UK, 27 UCG licences have been issued just offshore, to a variety of start up companies created to develop the technology. UCG is highly speculative as the technology is unproven and experimental. The companies involved are using a combination of lies and spin to attract support and investment.

## CLUFF NATURAL RESOURCES

With 9 UCG licences, Cluff have been talking up their plans to secure private investment. They have expressed interest in numerous sites over the years but most recently focused their attention on brownfield sites adjoining the Firth of Forth. Strong local opposition in Fife diverted their plans to Kincardine just north of Edinburgh where community resistance intensified. The company has now indicated that it is looking at sites south of the border in northern England, at Whitehaven and Workington in Cumbria, or on the north east coast near Durham.

## FIVE-QUARTER ENERGY

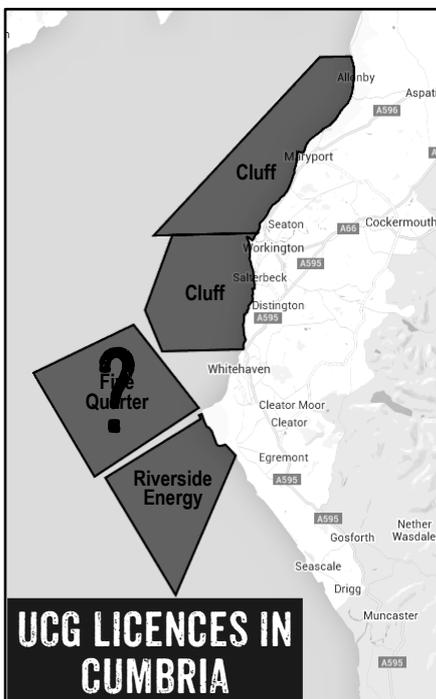
With a total of 11 UK licence blocks, Five-Quarter managed to secure government funding for their plans. Six licence blocks are located just off the coast of Northumberland stretching from Newcastle to Alnwick. In May 2013 Five-Quarter received £15 million from a Regional Growth Fund to help them develop plans for a UCG processing plant at Blyth. More recently the UK Government granted Five-Quarter for a £1bn loan guaranteed. To gasify the 1 billion tonnes of coal contained in 5 of these licence areas, at least 2,000 pairs of wells would need to be drilled. In March 2016 support and investment evaporated and Five-Quarter folded.

## UCG HEADING ONSHORE!!!

By starting offshore, the UCG industry aims to minimise visibility and community resistance. However, it's sights are definitely set onshore where costs can be minimised. Cluff Natural Resources have already been scared away from one onshore site in Warwickshire by a strong and vocal local campaign. If UCG is allowed to gain a foothold in the UK there is a danger that it will spread to all areas where there is coal left to burn.

## UCG SPIN BUSTING

- UCG isn't safe, it's an experimental technology with a track record of failure
- It is NOT possible to create "green energy" by burning coal, UCG inevitably releases toxic & carcinogenic compounds into the environment and massive amounts of CO<sup>2</sup>
- Each tonne of coal gasified will produce around 1 cubic meter of toxic water
- Calling UCG "Deep Gas Winning" does not make it safe
- Superheated UCG wells will pass through aquifers used for supplying water to humans, animals and agriculture, most UCG tests have failed due to leaking wells and/or blow-outs and explosions
- Pipelines carrying toxic & explosive gas and processing plants will put humans and animals at risk
- Despite industry claims, Carbon Capture & Storage (CCS) is also an unproven technology



## UCG: TRACK RECORD OF FAILURE

UCG is an experimental technology. Small scale trials of UCG over the last 80 years have invariably resulted in severe water contamination (including long-term contamination of aquifers) and/or explosions:

- 1987 Rocky Mountain, Wyoming** - High levels of benzene and other carcinogenic contaminants were forced into groundwater.
- 1997 El Tremedal, Spain** - Drill site explosion and blowout of toxic water, Syngas escaped the burn cavity to surrounding rock strata.
- 1999 Linc Energy, Chinchilla, Queensland** - Test discontinued, 300km<sup>2</sup> of farmland contaminated with toxic gas. Company charged with causing serious environmental harm (2015).
- 2007 Eskom, Majuba, South Africa** - Two well failures and high volumes of liquid waste caused disposal problems. The Syngas produced contained toxic and corrosive hydrogen sulphide.
- 2010 Cougar Energy, Kingaroy, Queensland** - The Kingaroy UCG well exploded after only five days of operation and resulted in carcinogenic benzene and toluene being detected in groundwater and in the fat of animals grazing in fields at the surface. Prosecuted & Fined (2013).

## TIME TO GET ORGANISED

This industry is dangerous. It's proponents argue that by doing things slightly differently (and on a bigger scale) they will avoid previous problems. The reality is that UCG testing in the UK poses a huge threat to millions of people. **For more information go to: [frack-off.org/ucg](http://frack-off.org/ucg)** If you live close to a licence area and are considering raising awareness or starting a community group to oppose the UCG threat, the time to act is now. If you would like any assistance please email: [outreach@frack-off.org](mailto:outreach@frack-off.org)

