



Why fracking should never happen in Ireland

Caroll O'Dolan and Susan Carton say the oil and gas exploration method known as fracking is a major threat to public health

'FRACKING' AND ITS reported dangers are frequently highlighted in the media and in public debate. Yet despite this, many members of the public, including doctors, may not know much about what exactly this process is and why it is a potential danger to health.

Concerned Health Professionals of Ireland (CHPI), covering both the Republic and Northern Ireland, was recently formed to highlight the public health risks and harms from high volume hydraulic fracturing (HVHF), or fracking.

This is the exploration and extraction of oil and gas from shale rock, tight sands and coal seams. The CHPI website – www.chpi.ie provides a platform for information and houses an anti-fracking petition which CHPI has created.

For health professionals the key concerns, drawn from a wealth of evidence, are;

- Fracking is detrimental to the physical and mental health of local, regional and global populations
- The sources of the risks and harms to health are primarily: air pollution, water contamination and the psychosocial impacts of the industrial processes
- Regulation (even gold standard regulation) does not mitigate the health impacts.

To date fracking is at a very preliminary/licensing stage on the island of Ireland and no commercial fracking has yet taken place. This does not mean we should not be alert to its dangers. Widespread fracking in the US has led to serious concerns about its detrimental effects.

So what are the major concerns about fracking?

Air pollution

According to the South West Pennsylvania Environmental Health Project, a non-profit public health organisation (see www.environmentalhealthproject.org):

“At each stage of unconventional oil and gas development (UOGD or ‘fracking’), emissions that can affect human health are released into the air. If you live within a three-mile radius of any type of UOGD operations, you may be particularly affected by air pollution.”

Common air pollutants around UOGD sites include:

- Toxic chemicals and particulate matter (PM) from truck traffic exhaust
- Toxic chemicals such as benzene, toluene, ethylbenzene, xylene, formaldehyde, and other hydrocarbons from condensate tanks, dehydrators, wastewater impoundment pits, and pipelines associated with UOGD
- Toxic chemicals from fugitive emissions, blowdowns, and accidents at compressor stations
- Volatile organic chemical releases from flaring, a process used to burn off excess gas

- Silica dust from ‘frac sand’ which is widely used to hold open fractures created in rock during the UOGD process.” Some examples from a compendium of data¹ on fracking show evidence that:

- Decreased birth weight^{2,3} and increased premature birth rate⁴ (both predictors of increased risk of life-long ill health) are associated with women living closer to fracking sites
- Infant mortality rose six times above the normal background rate over three years since the advent of HVHF at Uintah, Utah⁵
- A 281% increase in volatile organic compounds (VOCs are known carcinogens and neurological disruptors) has been predicted at HVHF area of Eaglesford, Texas⁶
- Research estimates total annual VOC emissions at fracking sites is now equivalent to 100 million cars⁷ (The US currently has 150 million cars on its roads)
- There is an increased risk of congenital heart defects associated with living within 10 miles of gas wells⁸
- The American Lung Association says air quality in rural areas close to fracking sites is now worse than air quality in urban areas⁹
- The Colorado School of Public Health (2010) showed an increased risk of ill health, both cancer and non-cancer, of people living near frack pads.¹⁰

Water pollution

What is pumped into the wells at extreme high pressure is called the frack water or ‘frack fluid’. Even if this frack fluid contains no added chemicals (a very unlikely scenario) what comes back up in the frack ‘flow back’ water poses serious health problems to humans. On average, 50% of the frack fluid returns as flowback water.

The average fracked well uses 19,000,000 litres of water. Thus, thousands of millions of litres of contaminated water will be present on the surface in the fracking areas. This flowback will contain varying amounts of benzene (causes leukaemia, cancer and spina bifida), mercury (brain and kidney damage), arsenic (cancers), ethyl benzenes (respiratory disease, fatigue and headaches), toluene (birth defects and central nervous system damage) and volatile organic compounds (disrupts our endocrine system causing lung, gut and reproductive disease). There is no proven system in place to store or treat such vast quantities of toxic liquid and its risk to local residents’ health is obvious.

HVHF wells have significant leakage/integrity problems in both the short and long-term. The percentage of leaking wells varies from 5% (immediately), to 50+% at 15 years.¹¹

The earthquakes¹¹ triggered by fracking damage both the well casing and also the cement, further increase the well failure rates. Industry apparently has no solutions for rectifying this chronic problem.

Examples from the 2015 compendium of scientific, medical and media findings on fracking¹ show evidence of risks and harms:

- Colorado State data reveal more than 350 instances of groundwater contamination¹³ resulting from more than 2,000 spills from oil and gas operators over five years
- The EPA concedes that insufficient baseline drinking water data and lack of long-term systematic studies limited the power of its findings on water contamination¹⁴; meaning the contamination it found near fracking sites could be easily denied by the industry
- An EPA examination of water contamination across the US concludes: “construction issues, sustained casing pressure and the presence on natural faults and fractures can work together to create pathways for fluids to migrate to drinking water resources”¹⁵
- USGS and Virginia Tech University have established that petroleum-based hydrocarbons can break down underground and promote leaching of arsenic into groundwater¹⁶
- A University of Missouri team tested chemicals used in one frack area. Of the 24 fracking chemicals tested, all 24 interfered with one or more hormone receptors in humans.¹⁷ There is no safe level of exposure to hormone-disrupting chemicals.

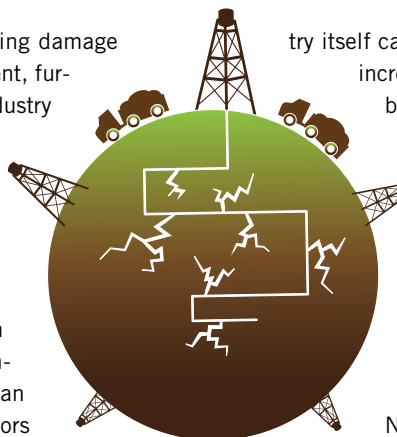
Public health

The compendium states: “By several measures, evidence for fracking-related health problems is emerging across the US. In Pennsylvania, as the number of gas wells increase in a community, so do rates of hospitalisation. Drilling and fracking operations are correlated with elevated motor vehicle fatalities (Texas), self-reported skin and respiratory problems (Southwestern Pennsylvania), ambulance runs and emergency room visits (North Dakota), infant deaths (Utah), birth defects (Colorado), and low birthweight (multiple states). Benzene levels in ambient air surrounding drilling and fracking operations are sufficient to elevate risks for future cancers in both workers and nearby residents, according to studies.”¹

Examples from the evidence of risks and harms include:

MVC (motor vehicle collisions), including fatal MVCs, have increased by 50% since the fracking boom began, especially on rural roads in fracking areas.^{18,19} This can to some extent be explained by population growth in fracking project areas, but it is also an effect of the industrial process itself. There are between 100 and 1,000 truck journeys made per well. The studies cited show a high level of non-compliance with safety standards in the trucks.

Hospital emergency department use is up by over 300% and ambulance calls up 200% since the arrival of the fracking industry in North Dakota.²⁰ Again, this could partially be explained by population growth, but, again the indus-



try itself can be dangerous for workers – with reported increases in trauma patients, extremity injuries, burns and pressure burns etc.

Other effects include increased hospitalisations²¹ of people living close to intensively fracked areas, and an increased incidence of STDs.²²

According to the North Dakota Health Department, the number of HIV and AIDS cases in the state more than doubled between 2012 and 2014. The upsurge in HIV cases has been attributed by the North Dakota director of disease control, Kirby Kruger, to the growth of the drilling and fracking industry, with the proliferation of

‘man camps’ housing young male workers, and the growth of prostitution accompanying this. In addition, there are reported psychosocial impacts such as noise pollution²³, light pollution²⁴ and stress and anxiety.²⁵

A key issue with fracking is methane leakage. Methane is 86 times more potent at trapping heat (greenhouse gas) than carbon dioxide over a 20-year period. Methane leakage seriously worsens climate change.


The methane leakage rate is averaging at least 8% from HVHF wells, up from 6% five years ago. Even at a very low 2% or 3% leakage rate, methane is still much more damaging for climate change over the medium (20-year) or long-term (100-year) timespan than carbon dioxide produced by coal-fired power stations.

Fracking on this island is still at an exploratory stage and we have been spared its harmful effects to date; however, there is no room for complacency. Fracking could have a particularly devastating effect in Ireland.

Ireland’s topography includes lots of porous limestone and is a honeycomb of aquifers (underground layers of water-bearing permeable rock that provide drinking water) which could be threatened with contamination by fracking.

Also, given the compact size of our island and the way rural housing is randomly distributed, there are literally no significant locations where one could plan to frack that would not directly impact local populations and threaten contaminating the water supply.

‘Healthy Ireland’ is the national framework for action to improve the health and wellbeing of the people of Ireland. Its main focus is on prevention and keeping people healthier for longer. One of the stated goals is to protect the public from threats to health and wellbeing. Fracking is incongruent with this goal.

In light of this independent evidence, the only responsible conclusion to be drawn is that fracking cannot proceed on the island of Ireland. If you are a health professional, please read the research and sign our petition requesting the Government to ban HVHF www.chpi.ie 

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References on request