

The Women's Health Research Program

Health Bulletin
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Fracking (fracking)... a new way to find natural gas or a serious health concern going under the radar?

Wikipedia defines hydraulic fracking (or fracking) as “the fracturing of rock by a pressurized liquid.” It is a method being used to extract natural gas from across the globe, with the number of fracking wells increasing rapidly. The process involves injecting sand, water and chemicals at high pressure into the coal seam gas well. This causes fractures in the coal seam allowing the gas to flow to the surface of the well.

Serious concerns about this process include the release of methane into the air (a potent greenhouse gas), increased seismic (earthquake) activity in areas where fracking is occurring and contamination of ground water by toxins. A major challenge is also the management of waste water, which contains a number of toxic chemicals, from the fracking process 1.

A paper just published in the medical journal *Endocrinology*, Jan 2014 reinforces the danger of fracking for humans and the environment 2.

Hundreds of chemicals are used in the fracking process, including over one hundred chemicals known as “endocrine disruptors”. These are chemicals that interfere with hormone production or action in mammals. ▶

The International Congress on Challenges in Women's Health

The International Congress on Challenges In Women's Health was held in Mumbai, India in December 2013. This Congress, held by the Indian Menopause Society and supported by the International Menopause Society, to address the increasing health issues facing Indian women at midlife.

The Congress opened with a public forum addressing the issue of “Caring for the Caregiver in Her Changing World – Are we doing enough?”

Professor Susan Davis of the Women's Health Research Program, was an invited panelist, along with Dr Himanshu Bhushan, Deputy Commissioner, Ministry of Health & Family Welfare, Government of India,



Professor Susan Davis [left] attended *The International Congress on Challenges In Women's Health*, Mumbai, India, December 2013.

Dr Asha Manocha, Health Officer, Dignity Foundation, Dr Arvind Mathur, Medical Officer: South East Asia Region, WHO. Speakers also included Ms Ameera Shah, Managing Director and

CEO, Metropolis Healthcare, Mr Ujwal Uke, Principal Secretary, Women & Child Development Department, Government of Maharashtra and Ms Shai Venkatraman, Documentary Film Maker.



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They are associated with cancers, birth defects, sexual development problems, fertility problems and a number of other serious effects.

The researchers (Kassotis and colleagues) hypothesized that some of the chemicals used in natural gas drilling operations and also surface and ground water samples collected in a drilling-dense region of Colorado would have actions similar to estrogen and androgen receptors.

The researchers collected water samples and examined these for estrogen and androgen receptor actions. Of the 39 unique water samples collected, estrogenic, anti-estrogenic, androgenic, and anti-androgenic activities were found in 89%, 41%, 12%, and 46% of the

samples, respectively. The authors reported that "The Colorado River, the drainage basin for this region, exhibited moderate levels of estrogenic, anti-estrogenic, and anti-androgenic activities, suggesting that higher localized activity at sites with known natural gas related spills surrounding the river might be contributing to the multiple receptor activities observed in this water source.

This means that fracking may increase the risk of reproductive, metabolic, neurological and other diseases, especially in children who are exposed to water contaminated by fracking. That the fracking wells are often placed in farming regions means that these chemicals may ultimately get into the food chain.

How is Australia affected? Fracking has been banned in Victoria and this ban has been extended until 2015. Fracking is occurring in NSW and Queensland and a battle to prevent fracking in Western Australia is raging. Is fracking safe and should it be allowed? From a human health perspective, the evidence indicates safety concerns, both short and long term.

1. Finkel ML, Hays J. *The implications of unconventional drilling for natural gas: a global public health concern. Public health* 2013;127(10):889-93.
1. Kassotis CD et al *Estrogen and Androgen Receptor Activities of Hydraulic Fracturing Chemicals and Surface and Ground Water in a Drilling-Dense Region. Endocrinology. Published online Jan 2014.*

Get involved in Research

Does anti-androgen therapy impair cognitive function in women with polycystic ovarian syndrome?

There is evidence that testosterone is important for normal brain function in women. If this is the case then blocking testosterone action might impair normal brain function. Women with a condition called polycystic ovarian syndrome (PCOS) tend to have elevated testosterone levels and are commonly treated with a medication (spironolactone) to lower their testosterone and block testosterone action.

The aim of this study is to determine whether spironolactone treatment of women with PCOS results in any change

on the brain function assessed by sensitive tests of verbal and spatial learning and memory. The findings will not only inform us about the safety of this treatment in women with PCOS but also add to our understanding of the role of testosterone in brain function in women.

Our approach: PCOS is the most common hormonal disorder in women, affecting around 15% of women of reproductive age. Affected women commonly experience excessive facial and body hair and acne. The standard treatment for this is "anti-

androgen" therapy (spironolactone) which blocks testosterone production and action.

We will recruit to this study 2 groups of women with PCOS:

Group 1 will be 25 premenopausal women with PCOS who have been taking the anti-androgen, spironolactone, 100mg daily for at least 3 months. Group 2 will be 25 premenopausal women with PCOS who are to commence spironolactone 100mg daily for excess hair growth/ acne. We will exclude women taking other medications that might confound the study outcome.

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