

Submission in response to public consultation for document: **ALARP Demonstration Guidance Document under the Petroleum Safety Framework**

I am concerned that the *ALARP Demonstration Guidance Document under the Petroleum Safety Framework* is not designed to adequately address the serious risks posed by onshore unconventional gas extraction, notably in the case of hydraulic fracturing.

It is my view that the risks posed by this gas extraction are such that they cannot be adequately addressed to protect the health of local residents, and that such gas extraction should under no circumstances be permitted in Ireland. I understand that the CER is not in a position to ban unconventional shale gas extraction, but the CER does have the authority to grant or refuse permits on safety grounds. For this authority to be meaningful, the CER's regulatory system must be designed to realistically address the serious risks posed by unconventional gas extraction.

The risks to human health posed by hydraulic fracturing (fracking) include chronic illnesses caused by exposure to toxic and hazardous chemicals and radioactive substances in drinking water and in the air, and injuries and possibly death due to accidents and explosions. This list of possible risks is not exhaustive, as the full extent of the risks to human and animal health associated with hydraulic fracking have not yet been sufficiently evaluated.

Many of the severe effects of hydraulic fracking activities on human health that have been reported in the United States would be classified as chronic ailments (see this list of reported health effects suffered by people in Pennsylvania:

<http://pennsylvaniaallianceforcleanwaterandair.wordpress.com/the-list/>).

However, the ALARP guidance discusses "risk tolerability limits" in terms of *fatalities*. Is one to draw the conclusion that only fatality risks are to be controlled by the CER? If so, this is a critical failing of the proposed regulatory system.

In my view, the ALARP guidance must:

1. Define risk tolerability limits in a way that includes all known health impacts (not just fatalities) associated with hydraulic fracturing, especially chronic ailments, and with special attention paid to the particular risks to infants and children of exposure to toxic chemicals in the water and air.
2. Identify all of the risks for which petroleum undertakings will be required to demonstrate ALARP. It is not acceptable to leave the definition of the risks to be managed to the petroleum undertakings. These must be prescribed, using a multi-disciplinary approach and the latest information from the United States to ensure that all the many and varied risks to human and animal health are mitigated.
3. Require that the cumulative health and safety risks posed by all of the onshore gas installations and all associated preparatory, extraction, transport activities are taken into account in evaluating the risks to be managed and the tolerability levels.
4. Include the risks that will continue to be posed by gas extraction activities even after wells have been decommissioned (continuing migration of methane and NORMs, with the possibility of drinking water contamination and explosions) in any evaluation of the safety risks posed by the gas extraction activity.
5. Require that a Health Impact Assessment, including baseline data collection and the evaluation of the cumulative risks associated with each installation in the context of other activities in the local area, be included in the evaluation and identification of safety risks.
6. Consider the impact on human health of contaminated food, as well as the risks to animal (livestock) of living in proximity to gas installations. Particular attention should be paid to the risks to livestock of contact with highly toxic fracturing wastewater, which in the United States is stored in open pits on wellpads and has caused numerous cases of livestock deaths, birth defects, and health problems. Considering that the areas of Ireland for which shale gas extraction is proposed are rural, agricultural areas, the possible risks to society of contaminated food must also be evaluated.
7. Particular attention must be paid to the toxic chemicals that are used and released by hydraulic fracturing, as many of these are known to have serious health implications as endocrine disruptors even in very small doses. (See *Air Pollution and Natural Gas Extraction* <http://www.endocrinedisruption.com/chemicals.air.php>)
8. The precautionary principle must be applied, not only by petroleum undertakings

that apply for safety permits, but also by the CER that is in a position to either grant or refuse to grant such permits. Because the full safety and health impacts of shale gas extraction are not yet known, the precautionary principle would require the CER to refuse to grant any permit for this activity unless and until it can be proven that the health risks can be mitigated to the point that they are acceptable to the people who will face these risks.

In general, I find rather sickening that the Irish government or the CER would consider that the very serious health risks posed by shale gas extraction could be in any way acceptable, and in particular that the issue of ALARP would be determined on a cost per fatality basis. How much benzene or arsenic would you consider to be ALARP in *your* drinking water? What quantity of VOC emissions would be acceptable for *your* children to breathe?

For the people living in the areas covered by the license options, no level of risk is acceptable when it comes to the very real possibility of significant VOC emissions near their homes, polluted well water, polluted surface water, substantially increased heavy truck traffic on country roads that are not designed for such traffic, and the risk of blowouts/explosions of wells (including drinking water wells, which are now being fitted with methane vents in parts of Pennsylvania to prevent such explosions), pipelines, and compressor stations.

It is therefore my view that the CER should never grant a safety permit for shale gas extraction in Ireland – the risks to human health and safety are too great, and the long-term impacts have yet to be fully evaluated. It would be irresponsible of the CER to grant a permit for such an inherently dangerous activity.

Final comment about the appropriateness of regulating onshore shale gas extraction by the ALARP methodology:

A system of safety regulation based on ALARP assumes that the regulatory body has sufficient expertise in the activity being regulated to evaluate whether, in this case, the petroleum undertakings being regulated have adequately identified all the risks posed by their activity and are taking all “reasonably practicable” measures to mitigate these risks.

Having seen a number of the CER documents that will form the basis of the future regulation of onshore shale gas extraction in Ireland, I am not at all confident that the CER has the required expertise and resources to adequately control this highly polluting industrial activity. It was only after significant public complaint that the words “hydraulic fracturing” even made it into CER documentation. The words “wastewater”, “flowback water” or even “chemicals” still cannot be found in any of the CER documents currently open for consultation.

There need to be prescribed limits placed on this activity, and I am very concerned that the CER does not seem to be planning such limits, but will rather let the industry dictate what is reasonable practice. This is unacceptable. Since I have found no prescribed limits in the CER documents I have seen to date (nor even a description of what hydraulic fracturing involves), I take the liberty of proposing a few below.

1. There shall be no well pad within 800 m of any dwelling or public building.
2. There shall be no pipeline within 500 m of any dwelling, public building, or road.
3. There shall be no horizontal wells drilled within 1 km vertically or horizontally of any aquifer or drinking water abstraction point.
4. Fracking wastewater shall not be stored in open pits in the ground.
5. VOCs from fracking wastewater shall not be allowed to evaporate into the atmosphere.
6. All chemicals and the quantities used shall be publicly disclosed.
7. Only certified welders shall be employed to construct pipelines.
8. Well pads must be manned at all times during gas production.
9. Wastewater must be tested for radioactive substances and treated in wastewater treatment facilities designed to treat radioactive waste.

These just are a few basic, minimal, safety precautions that come to the mind of a lay person. I hope that the CER will be expand on this list to establish a meaningful regulatory framework for unconventional shale gas extraction. For reference, I recommend highly this European Parliament report (*Impacts of Shale Gas and Shale Oil Extraction on the Environment and on Human Health*), which identifies the risks to human health posed by shale gas extraction and the inadequacies of the present EU environmental regulations with regard to this activity.

<http://www.europarl.europa.eu/document/activities/cont/201107/20110715ATT24183/20110715ATT24183EN.pdf>