

# Evidence

## Hazard assessment of chemicals used in oil and gas well development Project summary SC140017

This project assessed the properties of a range of chemicals that might be proposed for use in hydraulic fracturing in the oil and gas industry. Of the 31 substances investigated, 27 were found to be non-hazardous. There was insufficient information to make firm recommendations on the other four substances.

The results will be used to help the Environment Agency understand the risks from oil and gas exploration and production, and to ensure that environmental permits include conditions that protect groundwater. Groundwater is an important natural resource. It is used for drinking water supply and provides flow for many of our rivers. Activities that could affect groundwater must be controlled so that they do not cause pollution.

The findings are relevant to anyone interested in unconventional oil and gas operations, including oil and gas companies and planners, members of the public and non-governmental organisations.

### **Hazardous substances and non-hazardous pollutants**

Hazardous substances are defined as substances that are persistent, bio-accumulative and toxic, or substances that are of equivalent concern. Non-hazardous pollutants are all other substances.

We determine which chemicals are 'hazardous substances' or 'non-hazardous pollutants' under the Environmental Permitting Regulations 2010, to implement the Water Framework Directive and Groundwater Directive. Any 'hazardous substances' must be prevented from entering groundwater and the entry of 'non-hazardous pollutants' must be limited to avoid pollution.

The Petroleum Act 1998 requires operators of oil and gas extraction sites to demonstrate that the substances they propose to use in hydraulic fracturing have been approved, or are subject to approval, by the Environment Agency, before a hydraulic fracturing consent can be issued.

Criteria for determining if a substance is hazardous are set out in a methodology developed by the Joint Agency Groundwater Directive Advisory Group (JAGDAG). JAGDAG comprises technical experts from the

environment agencies in the UK and the Republic of Ireland and relevant business and industry sectors.

This system of assessment was developed for use for all activities, not just the oil and gas industry.

### **Assessment of substances**

This project made recommendations on 31 substances that have been used as additives in hydraulic fracturing fluid in other countries. Data were collated for each substance on persistence, bioaccumulation and toxicity. Any other characteristics that might give rise to an 'equivalent concern' were assessed, and compared with the criteria in the JAGDAG methodology.

The four substances that had insufficient information to make firm recommendations were considered to be hazardous on a precautionary basis. They will be reviewed again when further information becomes available.

Further information with a complete list of the substances considered and discussion on groups and mixtures of substances are available on the JAGDAG website (<https://www.wfduk.org/stakeholders/jagdags-work-area-0>). A formal public consultation will take place on all the recommendations and final decisions will take account of any comments received.

This summary relates to the following project:

**Report:** SC140017

**Title:** Oil and gas: groundwater hazardous substances

**September 2017**

**Project manager:** Ian Davey, Research, Analysis and Evaluation

**Research Contractor:** Amec Foster Wheeler Environment & Infrastructure UK Limited, Cannon Court, Abbey Lawn, Abbey Foregate, Shrewsbury SY2 5DE, UK

This project was funded by the Environment Agency's Research, Analysis and Evaluation group, which provides scientific knowledge, tools and techniques to enable us to protect and manage the environment as effectively as possible.

Enquiries: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk).

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