

Facts about fracking

Managing wastes from fracking

What wastes are produced from fracking?

Waste material includes solids, liquids and gas. The solid materials are pieces of rock from the drilling of the borehole, known as drill cuttings. Waste liquids come from the discarded fluids used to help the drilling process, known as drilling muds, and the waste water that returns to the surface after fracking, known as flowback fluid. Waste gas is gas that cannot be used and needs to be collected.

There are strict environmental regulations in place to control the storage and disposal of all wastes produced during fracking.

How is the waste regulated?

The waste is regulated through environmental permits which shale gas companies must apply for from the Environment Agency.

As part of the permit, companies must have an approved Waste Management Plan.

The plan describes the types of extractive waste that will be generated at the site and sets out how the operator will manage, minimise and dispose safely of the waste.



What happens to the drilling muds and cuttings from drilling?

Drilling mud is put down the well to help the drill equipment rotate and move through the rock creating the borehole. During the process rock is broken up into small pieces called 'cuttings'. The drilling muds transport cuttings from the well back to the surface to prevent clogging of the well. At the surface the cuttings are separated from the drilling mud.

Drilling mud can be reused by the operator to reduce waste, or returned to the mud producer for reuse elsewhere. If the drilling mud cannot be used again it is usually transported off site in skips by an authorised contractor and taken to a licensed waste facility.

How are waste gases controlled?

Waste gas is captured and can then be used to generate energy, a process known as green completions. However at the exploration stage this is unlikely to be cost effective if the site is temporary without a connection to the grid. In this situation the operator will need to safely dispose of the waste gas using a flare. The flare should be enclosed to burn the methane efficiently and reduce air, noise and light pollution.

How are leaks controlled?

Methane is a strong greenhouse gas. It is important to prevent it leaking into the atmosphere to minimize the impact of climate change and into the ground to protect groundwater.

Unplanned releases of gas, for example leaks from valves and well heads above ground and from the well casing underground are strictly controlled through conditions in the environmental permit. The operator must monitor for leaks, for example using infra-red cameras, and fix them.



Operators must inspect equipment to detect any leaks. They must tell us how they will do this in their Emissions Monitoring Plan which the Environment Agency must agree with before operations start.

What is in the waste water?

The waste water or flowback fluid that returns from the well is likely to contain high quantities of natural minerals and metals that have dissolved into the water from the shale and other rock formations. The fluid may also contain naturally occurring radioactive material (NORM) and a small proportion of the non-hazardous chemicals added during the fracking process.

How is the flowback fluid treated?

The Environment Agency is experienced at regulating sites that treat these types of wastes. The composition is similar to produced waters from the North Sea which are already treated at sites in England. The techniques used to treat flowback fluid are already used to treat other industrial effluents with similar contaminants and low level radioactivity. The waste water treatment works accepting flowback fluid must have permits and treated waters must meet a high standard to ensure the environment is protected.



Typically, the waste water will be treated using a chemical process followed by filtration to separate out minerals, metals and naturally occurring radioactive material (NORM) from the water.

How much radiation is in flowback fluid?

Naturally occurring radioactive material (NORM) occurs in our natural environment, we encounter it every day through soil, food, water and the air we breathe. It is also in building materials and items we commonly use.

Operators accumulating and storing NORM waste are required to have a Radioactive Substances environmental permit. The waste must then be treated at a permitted treatment facility, also regulated by the Environment Agency, which specialises in removing and disposing of NORM safely.

The level of radioactivity in untreated flowback fluid is low. After treatment at a permitted waste water treatment facility the maximum annual dose that could be received by a member of the public, from the final disposal, would be less than that from a single dental x-ray.

