

Aycliffe Quarry Landfill Site, Aycliffe

30 January 2024

Landfill gases and odours: frequently asked questions of the Environment Agency and UK Health Security Agency

What is the role of the Environment Agency?

The Environment Agency is the primary waste regulator and are responsible for granting or refusing environmental permits, setting the conditions and making sure that permit holders comply with them. They carry out regular audits and inspections to check that the operators are complying with their permit conditions. They also investigate complaints of odour and make sure site operators are taking measures to prevent or minimise odours off site.

The Environment Agency is collecting air quality monitoring data from Aycliffe Quarry Landfill Site and is sharing this with UK Health Security Agency (UKHSA) to help them provide health advice.

(The telephone numbers at the bottom of this page are for the Environment Agency only).

What is the role of UKHSA

UKHSA is responsible for protecting every member of every community from the impact of infectious diseases, chemical, biological, radiological and nuclear incidents and other health threats. It provides intellectual, scientific and operational leadership at national and local level, as well as on the global stage, to make the nation health secure. UKHSA is an executive agency, sponsored by the Department of Health and Social Care.

UKHSA has no regulatory powers but, in relation to the odour issues at Aycliffe Quarry Landfill site, is supporting the regulators by providing health protection advice based on the interpretation of the available monitoring results in relation to potential health effects.

What is landfill gas?

Landfill gases are formed in a landfill when biodegradable waste (such as food scraps, paper, and wood) rot and decompose (breakdown by bacteria) or evaporate. The gas is a mixture of mostly methane and carbon dioxide. It also contains several other gases in very small quantities. The gas, if not properly contained within the engineered landfill, can seep out into the air and lead to these unpleasant smells. The different gases that can make-up landfill gas vary depending upon the type of waste on a landfill site and how far the waste has broken down.

What can I smell in the landfill gas from Aycliffe Quarry?

The smells are a result of the landfill gas not being controlled and kept on Aycliffe Quarry Landfill site. Landfill gas is mostly methane and carbon dioxide, which are odourless and colourless. However, the gas also contains hydrogen sulphide that, even in small quantities, has a strong smell of rotten eggs. This is what residents can smell.

customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
03459 88 11 88

Although the hydrogen sulphide smell can be strong and unpleasant, it does not automatically mean that it is harmful. Our sense of smell is very sensitive and is often stimulated at very low levels which UKHSA would not expect to be harmful.

What is hydrogen sulphide?

Hydrogen sulphide occurs both naturally and through human activity and is a trace gas commonly found in landfill gas which causes the rotten egg smell. Hydrogen sulphide can be smelt at much lower concentrations than the levels that cause harm.

Where are the smells being reported?

The smell has been reported across a wide area covering parts of Darlington and Newton Aycliffe. It is not exclusive to one location due to changes in wind direction.

Are the smells causing or going to cause health effects?

The human nose is very sensitive to smell, and there are many things that have a very strong smell, even at levels below which there is a direct harmful effect to health. However strong smells are unpleasant and can impact on wellbeing leading to stress and anxiety.

Some people may also experience symptoms, such as nausea, headaches or dizziness, as a reaction to strong smells, even when the substances that cause those smells are themselves not harmful to health. Some residents symptoms may be as a result of their reaction to particular smells.

What are the health effects of hydrogen sulphide?

In order for hydrogen sulphide to cause any adverse health effects, you must come into contact with it. This could be by breathing it in, or by skin and eye contact.

Following exposure to any substance, the adverse health effects depend on several factors, including the amount to which you are exposed (dose), the way in which you are exposed, the duration of exposure, the form of the chemical and if you were exposed to any other chemicals.

The first noticeable effect of hydrogen sulphide at very low concentrations is its unpleasant odour. At higher concentrations it may cause eye, nose and throat irritation.

Strong unpleasant odours are known to cause symptoms such as nausea, headaches, stress and anxiety even when the substance that causes the smell are below levels that could cause any significant or long-term harm to health. It may also disturb sleep if experienced at night at low levels.

UKHSA do not expect there to be any long-term health consequences from the levels of hydrogen sulphide detected around Aycliffe Quarry Landfill Site. However, the unpleasant odour may cause discomfort and some short term health effects.

If you are concerned about your symptoms, please contact your GP or call NHS 111.

Why have the Environment Agency measured hydrogen sulphide?

Hydrogen sulphide is a key cause of odour from landfills. The Environment Agency can use this to show how far the landfill gas has spread and the amount of gas present.

How have the Environment Agency measured hydrogen sulphide?

The Environment Agency has undertaken initial monitoring to measure snapshots of hydrogen sulphide levels. The monitoring equipment is very sensitive and can detect levels of hydrogen sulphide at very low levels.

Environment Agency officers have been going out during the week taking readings on the landfill and in the areas surrounding the landfill site. The locations have been guided by where residents have most frequently reported the smell.

How does UKHSA review the data from the Environment Agency?

UKHSA review the data and compare the results with relevant health based guidelines. The key guidelines used for comparison for hydrogen sulphide are the World Health Organisation (WHO) Air Quality Guidelines for Europe.

What have the readings shown?

Hydrogen sulphide levels have frequently been detected at concentrations where most people would detect an odour or an offensive smell. The odours experienced around Aycliffe Quarry Landfill Site have been intermittent over several months at different locations.

While the odour can be smelt at different locations, the data shows that the levels of hydrogen sulphide are well below the World Health Organization (WHO) Air Quality Guideline for Europe.

The current monitoring programme is being extended by the Environment Agency and they are also considering an additional fixed monitoring unit in place to support a public health risk assessment by UKHSA.

What are the WHO guidelines for hydrogen sulphide?

WHO Air Quality Guidelines for Europe for hydrogen sulphide are: 0.15 mg/m³ (107 parts per billion) with an averaging time of 24 hours. In order to avoid substantial complaints about odour annoyance, hydrogen sulphide concentrations should not be allowed to exceed 7 µg/m³ (5 parts per billion), with a 30-minute averaging period.

Inhalation of an air pollutant in concentrations and for exposure times below a WHO guideline value will not have adverse effects on health and, in the case of odorous compounds, will not create a nuisance.

Can hydrogen sulphide cause cancer?

There is no evidence to suggest that exposure to hydrogen sulphide would cause cancer in humans.

Does hydrogen sulphide damage an unborn child?

There is no evidence to suggest that exposure to hydrogen sulphide can affect the health of an unborn child.

What are you planning to do next to understand the risk?

Further mobile air quality modelling will take place until the landfill operator has completed the agreed engineering works to mitigate the odour. The Environment Agency is also considering the deployment of a fixed site monitoring unit. This would continually measure particulates, hydrogen sulphide and methane.

The Environment Agency will continue to share the monitoring data with UKHSA for review and interpretation. This will then be shared with the local community.

What should I do if I am concerned about my symptoms?

If you are concerned about your symptoms contact your GP or call NHS 111.

What can I do to reduce my risk?

The key to reducing the impact on the community is effective gas management on site at Aycliffe Quarry Landfill. The Environment Agency is continuing to regulate the site as a priority to make sure the company make the necessary improvements to reduce the odour as quickly as possible.

Individuals can close doors and windows whilst the smell is present and then open them to vent the smell from the premises when the smell has cleared.

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What will happen next?

The Environment Agency will continue to visit the landfill site to ensure that improvements are being made. and continue with mobile air quality monitoring until this work is completed. The Environment Agency will share the monitoring results with UKHSA as they become available, and UKHSA will continue to analyse and review the data collected.

Where can I find more out about hydrogen sulphide?

If you search for the term hydrogen sulphide on .gov.uk, you will find more information. You can also look at the World Health Organisation website for more information.

Will this document be updated?

The Environment Agency and UKHSA will update this document as new information becomes available.