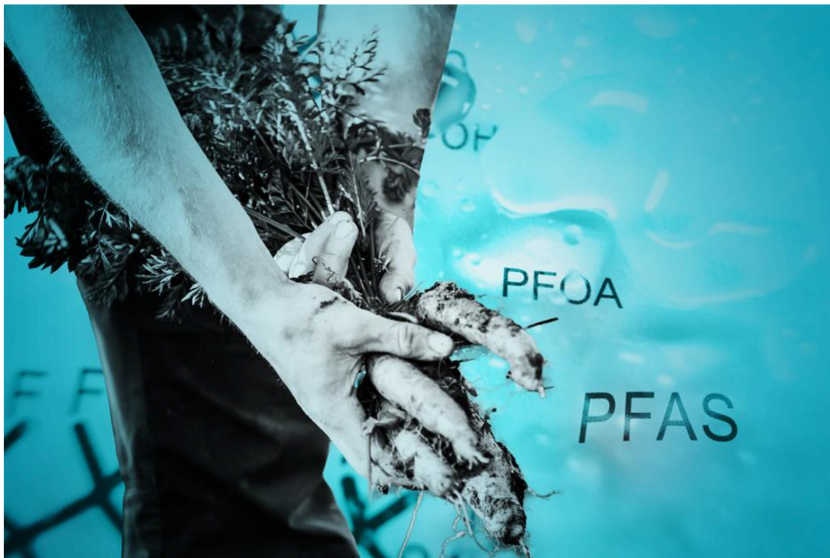


Gardens used to grow food in most PFAS-polluted town contaminated with forever chemicals

Pippa Neill

03 Oct 2024

EXCLUSIVE: Communal gardens used for growing food next to a factory in the UK's most PFAS-polluted town have been found to be contaminated with 'forever chemicals', with individuals advised to wash and peel vegetables and clean their homes of dust regularly.



Source - Gettyimages



The advice follows [similar guidance](#) issued to residents near a chemical plant in Lancashire, who have been told by local authority officials to take precautions with food grown in soil while an investigation into potential PFAS contamination gets underway.

Earlier this year, an ENDS investigation revealed that the town of Bentham, Yorkshire, is the [most PFAS polluted place](#) known in the UK. The town is home to firefighting foam manufacturing company Angus Fire.

In the wake of ENDS' investigation, 10 members of Bentham Town Council met with Angus Fire executives to discuss the revelations. Angus Fire informed the town council that it was conducting further testing of the water and soil on its site. The town [council asked the firm](#) to extend this testing to also include several offsite locations. Specifically, the town council asked the firm to test agricultural land and communal gardens near the factory and the town's playing fields. All three locations are owned by Angus Fire and are leased to the community.

The results of this testing have now been published in [two complex 70-page reports](#).

The testing has revealed that the soil adjacent to gardens on Duke Street - a small residential street located near Angus Fire's wastewater lagoons - is contaminated with elevated levels of PFAS. The land is



Compliance Search

NEW
FEATURE

Discover all ENDS content in one place, including legislation summaries to keep up to date with compliance deadlines

Search...



Opens in a new tab/window

Compliance

NEW
FEATURE

owned by Angus Fire and is made available for use by the Duke Street residents.

The report states that 5% of this land is used for growing food.

Soil samples exceed the ‘hazard index’ for PFAS

Consultancy firm Ramboll, which conducted the testing on behalf of Angus Fire, sampled the soil in the gardens for four specific PFAS chemicals: PFOS, PFOA, PFHxS and PFNA. The first three are [poisonous chemicals](#) that are banned internationally.

The consultants compared the results to the Contaminated Land Applications in Real Environments interim category 4 screening levels for Residential Land Use with Consumption of Homegrown Produce.

They found that four of the seven samples exceeded a hazard index of 1.0. This index grades a soil sample according to its concentration of these four types of PFAS. If a soil sample is graded 1.0 or more it indicates that further assessment is necessary. One sample recorded a hazard index of 2.01.

The document states that while exceeding this hazard index “does not necessarily indicate adverse health effects will result or that a person will become sick, it does indicate that further evaluation is appropriate”. The document states that Angus Fire is working on developing a plan for this evaluation.

The document also advises that “exposure to PFAS could be mitigated (in part) by removing shoes before entering the home, routine cleaning of residences to remove dust, and peeling or thoroughly washing homegrown produce.” Angus Fire has said it met with the residents to discuss the findings.

In a summary document shared with the public, Angus Fire said it “does not downplay the seriousness of these results”, but said it is “important to view them in a broader context”.

“A hazard level above 1.0 is not in itself an indicator of adverse health effects, merely that further assessment is considered to be necessary”, the firm said.

There are currently no UK or EU-wide legal limits for PFAS in soil. However, in Belgium, Flanders [adheres to a guideline value](#) of 3,000 ng/kg for PFOS, 3,000 ng/kg for PFOA, and 8,000 ng/kg for the sum of PFAS.

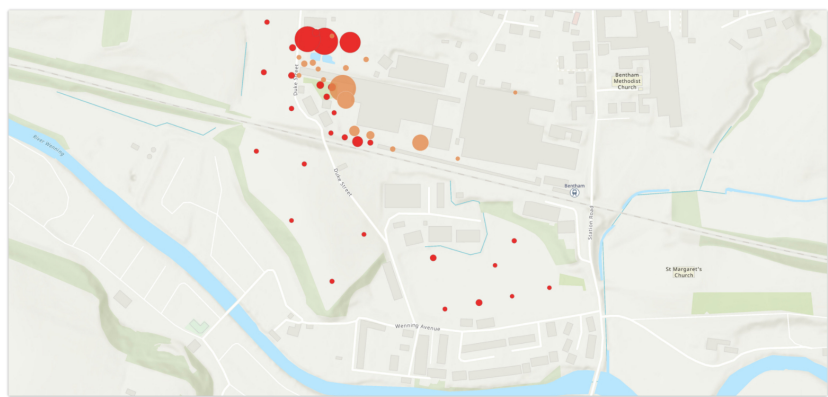
In one of the soil samples recorded in Bentham, the total PFAS value was six times higher than this figure.

Deadlines

Plan ahead with our Calendar feature highlighting upcoming compliance deadlines

-Choose an area-

The sites tested for PFAS in and around Angus Fire’s site in Bentham, Yorkshire



Note: Red circles show soil testing results; orange circles show water testing results. Locations are approximate. To view a high-resolution version of the map right-click to open in a new tab

The soil testing results for PFAS at various locations in and around Angus Fire’s site in Bentham, Yorkshire

Total PFAS sum, ng/l

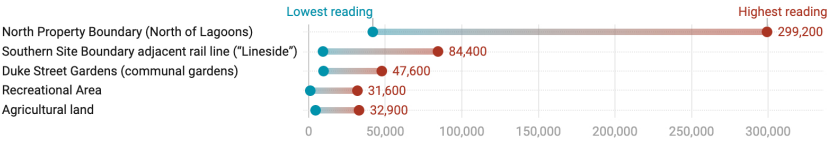


Chart: ENDS Report • Created with Datawrapper

Commenting on these findings, Dr Patrick Byrne, a reader in hydrology and environmental pollution at Liverpool John Moores University said that given these results, a “comprehensive survey of PFAS in soil beyond the site would be sensible to determine if PFAS concentrations are elevated compared to background concentrations, or not.”

An Angus Fire spokesperson told ENDS they are “already planning further detailed site investigations

working with the same independent expert teams and in consultation with the regulator, which will inform both a short and long term mitigation plan for the site. As with previous reports relating to the site, Angus Fire will publish the results from further planned investigations on our [microsite](#), so that everyone can see them". The spokesperson emphasised that "PFAS chemicals are no longer manufactured or tested at the Bentham site or by Angus anywhere."

The firm said they have "proactively shared all test results publicly" and said they are currently engaging with "local stakeholders" to explain the impacts of the results. They added that in line with "international best practice, while we await the results of further investigations, residents have been advised to take a number of standard precautionary measures".

Residents 'shocked and saddened'

As well as testing the soil in Bentham, Ramboll also tested groundwater on the site. Previous testing from 2008 recorded a PFAS sum of 1,199,000 ng/l in one location. ENDS reported [earlier this year](#) that this is the highest ever level of PFAS pollution known to be recorded in the UK.

The water testing results for PFAS at various locations in and around Angus Fire's site in Bentham, Yorkshire

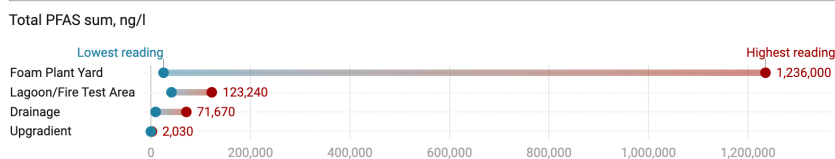


Chart: ENDS Report • Created with [Datawrapper](#)

The latest testing shows that one sample taken contained an even higher concentration of PFAS, at a record PFAS sum of 1,236,000ng/l. This sample includes 8,050ng/l of PFOA and 3,380ng/l of PFOS. As it stands, the UK has no set standard for acceptable total PFAS levels in groundwater, but for comparison, in the EU proposals for a new standard level of 500 ng/l in groundwater [have been debated](#) in recent years.

Commenting on the latest findings, a spokesperson from Cleaner Bentham, a grassroots organisation set up on the back of ENDS' initial investigation, said: "We are shocked and saddened by these results, in particular that the level of PFAS contamination has increased since 2008.

"To only now advise residents to wash homegrown vegetables and clean their houses is extremely concerning. We need more robust testing across Bentham to understand the full extent of any contamination."

An Angus Fire spokesperson said that while in "absolute terms" this number is "slightly higher" than the 2008 figure, "given uncertainties and improvements in analysis over this time period, they are in the same order of magnitude and therefore potentially indicative of the same or similar conditions."

The Ramboll report flags that the PFAS in the groundwater exceeds the Drinking Water Inspectorate's guideline values of 100 ng/l for PFOS and PFOA. However, the report states that this criteria is not directly applicable to groundwater. The document states that Angus Fire is currently preparing a work plan that will include further evaluation of potential potable water exposure pathways as well as evaluation of other data gaps.

Calls for biomonitoring of workers and residents

A total of five samples were also collected from stormwater and from the site's effluent drainage system.

A water sample from the sewer discharge point into the river Wenning recorded a PFAS sum of 36,990ng/l with 620 ng/l of PFOA and 2,740 ng/l of PFOS. Stormwater runoff from the company's contaminated wastewater lagoons is directed to the wastewater treatment network before being discharged at this discharge point to the river Wenning. While open until earlier this year, these lagoons are now covered.

A water sample from a stormwater drainage point, which receives storm water from both onsite and offsite sources, recorded a PFAS sum of 9,890ng/l with 210 ng/l of PFOA and 770 ng/l of PFOS. Effluent from the factory is directed to an "offsite drainage ditch" before being discharged into the river Wenning from this discharge point.

The Ramboll report states that given the maximum allowable concentration for PFOS in inland surface waters is 36,000 ng/l "adverse impacts to ecological receptors [...] are not anticipated". This is a threshold [intended](#) to protect the aquatic environment from short-term toxic effects.

However, Dr Bryne has highlighted to ENDS that the mean annual environmental quality standard limit for PFOS in inland waters, which is [based](#) on the estimated risk to human health from consuming fishery products, is 0.65ng/l. He added that continuous discharges like this "will have negative impacts on ecosystems that are not detected because we are not looking close enough, or we are not looking at all."

"These chemicals are highly persistent, they will last for 1,000s of years, and they bioaccumulate in the

environment", he said.

An Angus Fire spokesperson said it is "too early" to comment on "what if any impacts historic discharges may have had on ecological receptors".

They said the firm is "working in close consultation with the regulator and its advisors on a work plan to further assess and characterise conditions on and off site. Only when environmental consultants Ramboll have collected these additional data will we be able to comment on the potential for continuous discharges from the site".

Responding to the new data, Dr Anna Watson at the charity CHEM Trust said: "It is shocking to hear that more record-breaking levels of PFAS pollution are being found at Bentham. Angus Fire says it is no longer producing banned toxic PFAS, but due to their extreme persistence in the environment, they will be here for decades to come.

"The regulator, health agencies and the UK government must demand that Angus Fire provides information to local residents and commits to pay for the biomonitoring of workers and residents and the clean-up of the local water supply and surrounding soil."

Leigh Day solicitor Robyn Taylor told ENDS that it is "concerned" to learn of the findings published by Angus Fire which confirm elevated levels of PFAS around the firm's site in Bentham.

"Leigh Day has been investigating the issue of PFAS contamination in various locations for some time now, and we know from the individuals who contact us that there is a growing awareness of the threat to human and ecological health these 'forever chemicals' pose. Clearly, more needs to be done to properly regulate and consistently monitor this group of chemicals. We welcome contact regarding these issues as we continue our investigations."

The UK Health Security Agency Health said it will "continue to liaise with the local authority and the Environment Agency to support their response and develop any further guidance as required on identification of any public health risks."

An Environment Agency spokesperson said: "We are working with North Yorkshire Council and looking into historic PFAS contamination from the Angus Fire site.

"Our primary focus is to assess the risk to the environment and provide support to our partners on risk to residents."

Related Articles

1-3 of 4

REVEALED: The Environment Agency was warned of the 'chronic threat' posed by PFAS foams twenty years ago - why did nothing happen?

REVEALED: The links between a Yorkshire foam firm and 9,000 PFAS lawsuits

How the Environment Agency hamstrung investigations into PFAS contamination

God's on Waters? how a Yo town bec most PF/ polluted the UK - c the regul happen

Most read

1-3 of 5



Government freezes REUL Act measures 'nudging courts' to depart from EU case law



Gove: Labour's green agenda is 'penny farthing' with little to say on nature



'End of an era': UK's last coal-fired power station shuts down



Northern long-dek Improver

Text size [A](#) [A](#) [A](#)

JOIN, SHARE, LIKE, FOLLOW US ON:



ENDS Portfolio

- [ENDS Europe](#)
- [ENDS Compliance Manager](#)
- [ENDS Waste and Bioenergy](#)
- [Waste Planning](#)
- [Mineral Planning](#)
- [ENDS JobSearch](#)
- [Policy Development Tracker](#)
- [ENDS Directory](#)
- [Market Reports](#)

Commercial

- [Advertiser information](#)

Help & Information

- [About us](#)
- [Cookie Policy](#)
- [Editorial Complaint?](#)
- [Privacy Policy](#)
- [Contact Us](#)
- [Advertiser Information](#)
- [Customer Services](#)
- [Terms & Conditions](#)

Subscription & Registration

- [Subscription Benefits](#)
- [Register](#)
- [Take a Free Trial](#)