



Finger-prick blood sampling kit being used.

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Northumbria University leads pioneering research to tackle hidden lead exposure in children

A pioneering new study, led by [Professor Jane Entwistle](#), Associate Pro Vice-Chancellor for the [Faculty of Science and Environment at Northumbria University](#), has been launched in Leeds to screen children for lead exposure.

The Elevated Childhood Lead Interagency Prevalence Study (ECLIPS), which brings together experts in environmental science, health, epidemiology and economics, has obtained funding from UK Research and Innovation (UKRI)

and will use an innovative home-testing approach that could transform how the UK monitors and responds to lead exposure in children.

Research participants will use finger-prick blood sampling kits at home alongside providing soil and house dust samples and survey data to help understand possible sources of exposure.

Starting today, letters will be sent to around 150,000 households in Leeds inviting them to take part in the study. The aim is to build an initial research cohort of 500 participants with children aged 1-6.

[Professor Jane Entwistle](#), project lead and Associate Pro Vice-Chancellor for the [Faculty of Science and Environment at Northumbria University](#), said: “There have been regulatory interventions that have successfully reduced the levels of lead in petrol, paint, plumbing, drinking glasses, kitchen items and toys.

“However, lead pollution remains common in the environment, being found in soil, water, dust, food and air and many children are therefore still affected by exposure.

“Pregnant women, unborn babies and children are especially vulnerable, and even low levels of exposure can reduce a child’s attention span, diminish their school success and increase aggressive behaviour.”

Exposure to lead can be particularly harmful to children. Possible dangers include damage to the nervous system, delayed growth, and hearing loss, among many other adverse and long-term health effects, as well as implications for social, economic, educational and social well-being.

Amongst cases currently reported to the UK Health Security Agency’s lead exposure in children surveillance system (LEICSS), those most affected are young males aged 1 to 4 years old, more commonly living in deprived areas and in older housing, with the main sources of exposure including contaminated soil and paint. Children with learning or developmental difficulties are at higher risk of exposure to lead; 82% of reported cases under investigation displayed pica behaviour (the persistent eating of non-food items) and 69% experienced learning difficulties.

Debapriya Mondal, Principal Epidemiologist at UKHSA, said: “There is no safe level of lead exposure, and while less common today, we can still be exposed in our everyday lives and crucially these serious health impacts are preventable.

“Detection in children often relies on blood tests ordered by physicians only when there is a high clinical suspicion of lead poisoning, meaning that cases with no obvious symptoms are missed.

“This study, even though only carried out in one area, will tell us if this screening method can be widely used to determine the prevalence levels across the United Kingdom.”

The ECLIPS study originated from UKHSA’s Lead Exposure, Public Health Intervention and Surveillance Group (LEPHIS).

Leeds was selected as the pilot location for this study as data monitored by the UK Health Security Agency shows that Yorkshire and Humber has reported the most cases of childhood lead poisoning over the past decade. This higher detection rate is attributed to increased testing of children in the area as a result of increased local awareness of the dangers of lead poisoning.

Researchers believe similar numbers of cases likely exist in other areas of the UK, but the lack of awareness means fewer children are being tested.

Dr Carys Lippiatt, Consultant Clinical Scientist in Biochemistry at Leeds Teaching Hospitals NHS Trust said: “At the moment, if we need to test a child for lead exposure, they have to come into a clinic for a venous blood sample test. This takes time for the family and healthcare professional and is often distressing for the child. However, since COVID-19, home testing has become more acceptable.

This new technique collects an accurately measured blood spot from a finger prick, similar to that used by diabetic children to test blood glucose, allowing samples to be collected in the relaxed environment of the home without a healthcare professional.”

If successful, the methods developed could be used across the UK as part of a

national screening programme, as well as adapted to test for other pollutants and diseases. The approach has the potential to revolutionise blood lead sample collection, both for national screening studies and for continual regular monitoring where clinically relevant.

ECLIPS is funded by UK Research and Innovation (UKRI) under its cross-research council responsive mode pilot scheme. The study is co-led by Northumbria University, UK Health Security Agency, Leeds Teaching Hospitals NHS Trust, the Universities of Bristol, Oxford and Warwick, the Health and Safety Executive, Synnovis, and the LEAPP Alliance.

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