PRESS RELEASE

4th August 2015

The fate of phosphate in our drinking water

Phosphate that is put into our drinking water to prevent lead poisoning can potentially cause environmental damage as a result of leakage, according to a ground breaking study by the British Geological Survey and Lancaster University.

Phosphate in tap water ‘looks’ very different from the phosphate coming out of waste water treatment works or from that used in agricultural fertilisers. Researchers have used small variations in the chemistry of phosphate as a label, based on analysing the isotopes of phosphate. This label makes it possible to differentiate between phosphate getting into the environment that has come from leaking mains, rather than from other sources.

In the UK, phosphorus is routinely added to drinking water supplies in a form known as phosphate. It is added to effectively prevent any lead entering the water supply, which can come from the corrosion of old piping. Lead is a toxic metal and adding phosphate has proven to be very successful in reducing human exposure to it. But just what is the fate of this phosphate?

Latest statistics show that the biggest UK water utilities lose around 25% of drinking water to leakage – or around 40 litres per customer per day. Based on the amount of phosphate which is presently added to tap water, this is equivalent to around 1200 tonnes of phosphorus entering the environment every year. Although phosphate is not harmful to humans, anthropogenic, or man-made, inputs of phosphorus are well known to have a significant impact on ecosystems, and can damage the health of rivers and lakes (known as eutrophication). What ultimately happens to phosphate after leakage is currently unknown. However, as the UK water industry focuses on lowering the amount of leakage that is acceptable, this may also cut down any negative effects on the environment of phosphate leaking from drinking water.

Professor Rob Ward, Director of Groundwater Science at the British Geological Survey commented on the research “This study has for the first time estimated the amount of phosphorous entering the environment directly from leaking water pipes. Whilst the addition of phosphorus to drinking water is beneficial to our health by reducing our exposure to lead from old pipes, its leakage can have a very damaging impact on the environment by affecting the ecology of streams, rivers and estuaries.”

The study has shown the potential to differentiate between phosphate in tap water, fertilisers and waste water using isotopes. This means that in the future we may be able to better understand the sources of phosphate in the environment and target measures and investments for better environmental benefit. The latest technical advancements described above give us some of the tools necessary to do this.

*Ends*
For further details or to arrange media interviews please contact:

Sarah Nice, BGS Press Office, Keyworth, Nottingham, NG12 5GG
Office: +44 (0)115 936 3605  Mobile: +44 (0)7989 115657
E-mail: sebr@bgs.ac.uk  Twitter @Sarahnice1

Notes for Editors

The following are available for interview:

- Dr Daren Gooddy, British Geological Survey
- Professor Rob Ward, British Geological Survey
- Dr Ben Surridge, Lancaster University

You can find a link to the paper here: http://pubs.acs.org/doi/pdf/10.1021/acs.est.5b01137

For additional information go to: www.bgs.ac.uk

The British Geological Survey

The British Geological Survey (BGS), a component body of the Natural Environment Research Council (NERC), is the nation's principal supplier of objective, impartial and up-to-date geological expertise and information for decision making for governmental, commercial and individual users. The BGS maintains and develops the nation's understanding of its geology to improve policy making, enhance national wealth and reduce risk. It also collaborates with the national and international scientific community in carrying out research in strategic areas, including energy and natural resources, our vulnerability to environmental change and hazards, and our general knowledge of the Earth system. More about the BGS can be found at www.bgs.ac.uk.

The Natural Environment Research Council

The Natural Environment Research Council (NERC) is the UK's main agency for funding and managing world-class research, training and knowledge exchange in the environmental sciences. It coordinates some of the world’s most exciting research projects, tackling major issues such as climate change, food security, environmental influences on human health, the genetic make-up of life on earth, and much more. NERC receives around £300 million a year from the government's science budget, which it uses to fund research and training in universities and its own research centres. www.nerc.ac.uk

Lancaster University

Lancaster University is ranked among the top 10 universities in the UK and the top 150 in the world. It is the highest ranked University in the North West of England in the Guardian, Times/Sunday Times and Complete University Guide. It is also top for employability and student satisfaction in its region. 83% of Lancaster's research is judged to be internationally excellent and world leading. www.lancs.ac.uk