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CWBE Centre of Excellence in Water-Based Early-Warning Systems for Health Protection

CWBE Newsletter - July 2026

Find out what we've been up to since our last newsletter



In this newsletter, you can read about:

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Team news

Harry Elliss, who has recently submitted his PhD thesis, starts this month as a Post Doctoral Research Assistant on the PACIFIC project. Harry's work will focus on the Cam & Wellow living lab, researching the environmental risks, fate and source apportionment of a broad range of chemical classes to freshwater, including pharmaceuticals, personal care products, hazardous chemicals and others!

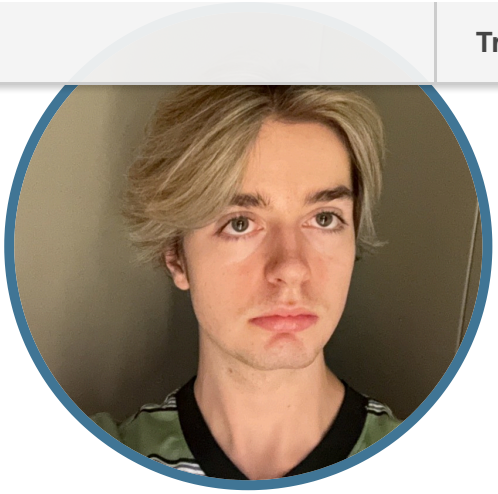




Keegan Hoog has started as a CWBE PhD student in Nuno Reis' group. Keegan's PhD is looking into rapid, near-the-source detection of key pathogens in bathing waters. Jointly funded by Wessex Water, this PhD project will develop advanced, portable, and power-free microfluidic tools for detecting pathogens in bathing waters. This project is in great alignment with Wessex Water's (WW) urgent need and interest in monitoring microbiological water quality for protection of swimmers, especially during Spring/Summertime.

Our Mass Spectrometry facility has welcomed Jack Bailey into CWBE for a 7 week BMSS summer studentship. Jack is a current MSci Natural Sciences student at Bath and his project with Bob Challen and Neil Byrnes, is looking to develop a method

analysis of polychlorinated biphenyls (PCBs). PCBs are highly stable, persistent legacy contaminants that accumulate in ecosystems. PCB analysis is currently performed using GC-MS, however SFC-MS offers some potential advantages, such as allowing for simultaneous analysis with other contaminants, as well as being more environmentally friendly. He is testing three ion sources: ESI, APCI, and UniSpray, as part of this, to assess if these ion sources are viable alternatives to currently used hard ionisation techniques.



Another Bath student, Sara Nicolae (BSc Chemistry) has been recruited by Dr Emma Vaughan and Dr Franek Bydelak to help with the UKWIR projects. Sara is excited to be joining the team as a summer intern, working on the CWBE studentship over the coming months. So far, she's been getting involved in preparing for the upcoming wetland sampling campaign, which has included washing and organizing bottles for the different chemical and biological analysis streams, crushing and sieving wetland sediments, and preparing sample extraction kits.



And finally, we said goodbye to Yuesong Wu, student at Monash University, who had been working with us in CWBE for 10 months as part of his joint PhD programme.

Infrastructure and facilities

All our shiny new labs and offices are now up and running, we just have one more room to complete to house some extra freezers. Here are some of our labs in use!







CWBE Events and activities

CWBE Conference

On 6th May 2026, we held our CWBE Conference, straight after the Red-ALERT CDT Conference and what an action packed agenda we had. We started with a great talk from Dr Josh Bunce, Deputy Director of Research at the Environment Agency, followed by Thomas ter Laak, KWR Water Research Institute, who presented his work on WBE from the Netherlands. Other speakers were Sara Castiglioni, Istituto di Ricerche Farmacologiche Mario Negri, Milan, Italy; Andrew Singer, UK Centre for Ecology & Hydrology (UKCEH); David W Graham, Durham University and Isabelle Durance, Cardiff University. All our speakers came together at the end for a really insightful panel discussion.

We also had flash presentations by our early career researchers - some PhD students presenting were only in their first year. They all presented brilliantly and this was an excellent way to showcase the exciting work we are doing in CWBE. Together with a poster session and prize giving, we had a really packed day full of amazing talks and networking opportunities. Congratulations to Harry Elliss for winning the Best Student Presentation award; Neil Byrnes, PhD for winning Best PDRA Presentation award and Maria Cortada Roca, PhD for winning Best Poster award.

Thank you to all involved in organising the event and to all our speakers. We look forward to next year!





Spring Sampling Campaign

The volunteers from CWBE were out in force again, led by Dr Nicola Ceolotto, to complete another sampling campaign near the Paulton and Radstock WRCs. This time, over 20 staff and students volunteered to help across 8 days in early May. During the days of sampling, team members gained comprehensive hands-on experience, and learnt how each decision (from site selection to sampling approaches) directly affects the quality of the results.

This time, the weather was….dry (mostly) and the rivers were not too deep. And all the equipment remained firmly secured in place this time (thanks to some strategically placed padlocks and chains).





River Avon litter pick….by kayak!

We have a really amazing team of people in CWBE. Our research requires collecting samples of river water (and wastewater) and so the amount of rubbish that gets dumped or blown into our local waterways has not gone unnoticed by our researchers. So, on a warm Sunday in May, one of our CWBE PDRAs, Dr Franciszek Bydałek, organised for a group of 8 CWBE researchers (including our Director, PDRAs and PhD students) to head out for a 5 hour, 5km paddle on the River Avon, armed with litter pickers, bin bags and gloves.

While others in the team were still taking part in our spring 2026 sampling campaign (river water samples collected every day for 7 days from 4 locations), Franek led the team along the river and after a rest break at Warleigh Weir, they headed back to Batheaston with (sadly) lots of rubbish. Very well done to the team - Franciszek Bydałek, Barbara Kasprzyk-Hordern, Kheti Mhlongo, Neil Byrnes, Ben Faill, Monish Sundarrajan, Dalia Elabbadi and Emma Vaughan.

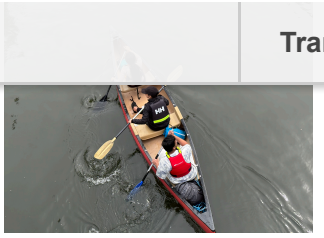












CWBE Papers - latest

µSTRAW: In-Field Detection of *Escherichia coli.*

Crescenzo Ianniello, Barbara Kasprzyk-Hordern, Nuno M Reis.

ACS Sensors Vol 11 Issue 3

Spatial occurrence and distribution of micropollutants (pharmaceuticals and personal care products) in the eThekwini catchment, South Africa

Tolulope I. Lawrence, Natalie Sims, Barbara Kasprzyk-Hordern, Sreekantha B. Jonnalagadda, Bice S. Martincigh. Environmental Pollution Volume 399, 15 June 2026, 128139

A new multi-residue method for PFAS analysis in wastewater for environmental and public health risk assessment

Dalia Elabbadi, Harry Elliss, Megan Robertson, John Bagnall & Barbara Kasprzyk-Hordern.

Analytical and Bioanalytical Chemistry 12 March 2026

Spatiotemporal profiling of antimicrobial agents during wastewater treatment – a national study.

Adegbenro P. Daso, Holly J. Tipper, Daniel S. Read, Barbara Kasprzyk-Hordern. Environmental Advances Volume 23, April 2026, 100696

Understanding the Role of Deconjugation of Phase II Metabolites in Wastewater: Implications for Wastewater-Based Epidemiology

Harry Elliss, Katarina Hricova, Evie Griffiths, Neil Andrew Byrnes, Ben Faill, Eva Hawkins, Kit Proctor, Megan Robertson, John Bagnall, Barbara Kasprzyk-Hordern

Environmental Science & Technology Vol 60 Issue 7

CWBE Spotlight

Dr Neil Byrnes



Dr Neil Byrnes, is a Post Doctoral Researcher based at the University of Bath. He is currently working on the Cam and Wellow Brook Partnership Project - a project supported by the Water Industry National Environment Programme. In collaboration with Wessex Water, Bath and North East Somerset Council, Bristol Avon Rivers Trust and the Environment Agency, Neil will assess the environmental and public health risks from chemical contamination in the local water catchment, inform evidence-based interventions and monitor their impact and assist in the development of a One Health Platform.

Q1: Can you give us a brief overview of your area of expertise?

My area of expertise lies at the intersection of pharmacy and analytical chemistry. As a pharmacist by training, my clinical experience practicing in Canada gave me a detail-oriented lens. Through my MSc in Analytical Toxicology and PhD in Chemistry, I developed strong technical skills in chemical analysis (e.g., LC–MS, GC–MS, GC×GC–MS, etc.). Together, these experiences allow me to leverage my clinical background and analytical chemistry expertise to inform evidence-based One Health interventions.

Q2: What is your favourite thing about the work you are doing?

I enjoy the dynamic atmosphere of my current role. I enjoy assessing analytical challenges and systematically working towards a viable solution. In this way, I am always learning something new. I also highly value how my research doesn't just exist within a laboratory; rather, it can be applied to solve real-world problems.

Q3: What / who is your biggest source of inspiration?

I can't say I have a single source of inspiration. Rather, I'd argue that I draw inspiration from researchers in the field collectively. I find it especially inspiring when I come across papers that introduce novel approaches or attempt to tackle fundamental challenges using robust analytical methodology to draw valid conclusions. These works motivate me to keep using my curiosity to drive novel research and produce results that are both technically sound and impactful.

Q4: What are you most proud of in your career so far?

This may be counterintuitive, but I would say I am most proud of my pharmacy degree. I always wanted to be a pharmacist—it was a dream I had from a young age. I was drawn to learning about medicines: How do they work? Why choose one over another? Why do we get side effects? From my initial doubts about being accepted into the University of Toronto's pharmacy program, through to being accepted and enduring four gruelling years of intense study, I am very proud of this achievement. It was a significant period of personal growth and learning which helped set the foundation for all my future studies.

Q5: If you could travel anywhere in the world, where would you go and why?

I would love to travel to Egypt. I have always been fascinated by the pyramids and would love to tour inside one! I'd also visit the Sphinx and explore the museums. There's so much history to unpack!

Q6: What are you most passionate about outside of work / study?

A secret of mine (which is very poorly kept) is that I love Pokémon. I think this stems partly from childhood nostalgia, but also my love of collecting. From collecting the cards as a kid to beating all the video games and catching them all, I could likely give Ash Ketchum a run for his money!

Read Neil's latest publications:

Understanding the Role of Deconjugation of Phase II Metabolites in Wastewater: Implications for Wastewater-Based Epidemiology

Harry Elliss, Katarina Hricova, Evie Griffiths, **Neil Andrew Byrnes**, Ben Faill, Eva Hawkins, Kit Proctor, Megan Robertson, John Bagnall, Barbara Kasprzyk-Hordern. 24 Feb 2026, In: Environmental Science & Technology. 60, 7, p. 5789-5803 15 p.

One Health water-based epidemiology: current methodologies, challenges and future directions

Neil Byrnes, Joseph Beaney, Nicola Ceolotto, Dalia Elabbadi, Harry Elliss, Ben Faill, Eva Hawkins, Bhagya Ranathunge, Barbara Kasprzyk-Hordern. JournalTrac - Trends in Analytical Chemistry Publication status Submitted - 16 Nov 2025

Assessing the Risk of Antimicrobial Resistance and Potential Environmental Harm Through National-Scale Surveillance of Antimicrobials in Hospital and Community Wastewater

Neil Andrew Byrnes, Reshma Silvester, Gareth Cross, Andrew J. Weightman, Davey L. Jones, Barbara Kasprzyk-Hordern. Environment International, August 2025; Article: 109606 Volume 202

Metagenomic profiling of hospital wastewater: A comprehensive national scale analysis of antimicrobial resistance genes and opportunistic pathogens

Reshma Silvester, William B. Perry, Gordon Webster, Laura Rushton, Amy Baldwin, Daniel A. Pass, **Neil Andrew Byrnes,** Kata Farkas, Margaret Heginbothom, Noel Craine, Gareth Cross, Peter Kille, Barbara Kasprzyk-Hordern, Andrew J. Weightman, Davey L. Jones. Journal of Infection Volume 90, Issue 6, June 2025, 106503

CWBE public engagement

CWBE took part in the Festival of Nature

Fantastic efforts by our CWBE team of volunteers at this year's Festival of Nature event in SouthGate, Bath, in early June. Kheti Mhlongo, Monish Sundarrajan, Afzal Hussain and Dalia Elabbadi braved the incessant rain (weirdly exactly the same weather as last year's event) to talk to members of the public about the amazing work they do. Hopefully they inspired some young visitors to become tomorrow's wastewater detectives!





CWBE and Red-ALERT student, Joseph Beaney, took part in this year's **Pint of Science** in Bath. Joe spoke to a lively audience about the hidden chemicals in our water. Top job Joe!





Awards and prizes

Two years in and we have built a really amazing Centre here at CWBE. Thanks to the team we have in place (and the amazing infrastructure), we are delivering excellent research. But we are doing so with sustainability at the forefront of our minds. The CWBE / Red-ALERT CDT Green Impact team started in September 2025 and throughout the year has undertaken a variety of tasks including litter picks, community gardening, and digital declutter days. Through the Green

Impact scheme, there were over 200 different actions to choose from, and the online toolkit broke the University's sustainability goals into simple, manageable actions.

At the recent University of Bath Sustainability Awards, we were delighted to find out that we had not only been awarded the **Gold Award** but also came top out of 41 teams that took part! The winning team included staff and PGR students - Helena Lake, Emma Vaughan, Paula Buxton, Bibian Okokhere-Edeghoghon, Bilikis Folarin, Joseph Beaney, Ben Faill and Maddy McCarthy. Congratulations to all, as well as others in the Centre and CDT who helped us to achieve this award.

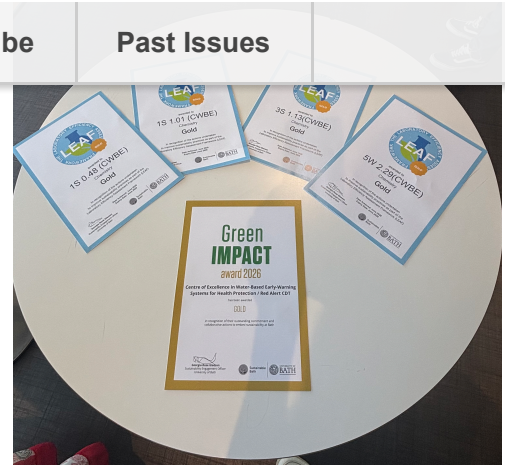








Continuing the theme of sustainability - we also submitted for LEAF accreditation for all the CWBE labs in Science. LEAF is the Laboratory Efficiency Assessment Framework (LEAF), an international sustainability standard for research and teaching labs. It allows lab teams to be audited on their operations, to reduce environmental impact (like waste, water, and energy use), and cut costs. Thanks to the herculean amount of work put into the submission by CWBE's Technical Specialist, Dr Bibian Okokhere-Edeghoghon, we were also delighted to receive **Gold** status in LEAF across all our labs. This is a huge achievement and the auditors stated our labs were "the best they had ever seen". Congratulations to Bibian and everyone who helped with the submissions.





CWBE first year PhD student, Kheti Mhlongo recently received a prize for her talk at the Chemistry PhD talks, titled: ‘Proteomics Approaches to Wastewater-based Epidemiology’. Congratulations Kheti!





Congratulations to CWBE member, Dr Hannah Leese from the Department of Chemical Engineering, who has won this year's University Excellence in Doctoral Supervision Prize. Hannah was announced as the winner at the Doctoral Research Celebration Evening that took place at Komedia on Wednesday 10 June 2026.

In other news

The CWBE team have delivered lots of talks and attended many conferences and events. Here are just a few:

- Ben Faill presented at the Waters Annual Technology Forum 2026.
- Andrea Estevez Danta presented a poster and an oral communication at Society of Environmental Toxicology and Chemistry (SETAC) Europe Annual Meeting in Maastricht within the framework of the Spanish ESAR-Net, as well as serving as chair of one of the sessions. PhD student Lara Pearson also attended SETAC as a volunteer and found the experience really useful.
- Joe Beaney and Ben Faill attended the conference and presented posters at 'Nontarget 2026 - Nontarget screening of organic chemicals in the environment' in Ascona, Switzerland in April.
- Enzo Ianielli delivered a presentation at the conference 'Rapid Methods Europe 2026' in Amsterdam.
- Bhagya Ranathunge, Neil Byrnes and Ben Faill presented at the annual Chemistry Bolland Symposium at the University of Bath. Lots of other CWBE PhD students presented posters. The Bolland Symposium is an annual, postgraduate-organized conference hosted by the Department of Chemistry at the University of Bath.
- Dalia Elabbadi presented at the Institute of Sustainability and Climate Change Summer Showcase, giving a 5 minute 'ignite' talk.
- Andrea Estevez Danta, Sumrati Gurtoo, Kheti Mhlongo and Bob Challen attended the 76th London Biological Mass Spectrometry Discussion Group (LBMSDG) meeting to be held on 17- June-2026 at the University of Westminster.
- Jan Hofman, member of the Scientific Committee for the conference, attended the IWA Micropol conference in Toronto. Every two years, the IWA Micropol and Ecohazard conference brings together colleagues from around the world to hear about the latest research developments on the fate and effects of micropollutants in water, wastewater and drinking water, including technologies for removing these contaminants from water.

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