Queensland Alliance for
Environmental Health Sciences

The University Of Queensland
AUSTRALIA

CREATE CHANGE



Photo by Matthew Abbott

Annual Report

2025/2026

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Acknowledgement of Country

Queensland Alliance for Environmental Health Sciences acknowledges the Traditional Owners and their custodianship of the lands on which we live, work and learn.

We pay our respects to their Ancestors and their descendants, who continue cultural and spiritual connections to Country. We recognise their valuable contributions to Australian and global society.

Cover image: Dr Cassandra Rauert, 2026 National Geographic 33

ABOUT QAEHS

Our vision is to improve human health through environmental health science.

Bringing together leading researchers, practitioners and partners to address environmental health challenges affecting communities in Queensland, Australia and around the world. Through excellence in research, training and partnership engagement, we generate the evidence, expertise and capability needed to inform policy, support decision-making and improve public health outcomes.

Our partnership with Queensland Health

QAEHS was established in 2016 by The University of Queensland and Queensland Health as the successor to the National Research Centre for Environmental Toxicology (Entox), continuing a collaborative investment in environmental health science that began in 1991.

Created to strengthen Queensland's capacity to understand and manage environmental risks to human health, QAEHS combines research excellence, education and policy engagement to address environmental health challenges at local, national and global scales.

Through its long-standing partnership with Queensland Health, QAEHS delivers independent scientific expertise, supports evidence-based policy and practice, develops future environmental health leaders and advances research that improves health outcomes for communities. This report outlines QAEHS's performance and achievements under the 2023–2028 Queensland Health Agreement during the 2025–26 reporting period.

DIRECTOR'S MESSAGE



Improving human health through environmental health science remains at the heart of everything we do at QAEHS.

I am pleased to share our Annual Report for 2025-26, reflecting on another year of research excellence, collaboration and impact as we continue to address complex environmental health challenges facing communities in Queensland, Australia and globally.

Over the past year, the Centre has continued to strengthen its position as a nationally and internationally recognised centre for environmental health science research. Through our multidisciplinary research programs and strong partnerships, we are translating science into evidence and outcomes that address emerging environmental health challenges.

Our research excellence and global reach continue to strengthen. This year our researchers have produced more than 200 peer-reviewed publications, with 86.2% published in leading Q1 journals, and our research continues to inform policy and practice nationally and internationally. Recognition through Clarivate Highly Cited Researcher status for two QAEHS researchers reflects the global influence and impact of our research community.

This year, we secured $8 million in new research funding across 35 projects, contributing to more than $132 million in awarded funding since the Centre's establishment in 2016. Our diverse funding portfolio, spanning competitive national and international grants, contract research, philanthropic investment and state and federal government partnerships, reflects the strength and relevance of our research. Contract research accounted for 40% of our total research income in 2025-26, highlighting the applied value of our research and the confidence our partners place in our ability to address real-world environmental health challenges.

One of the year's most significant achievements was the recognition of Dr Cassandra Rauert, who was named in the 2026 National Geographic 33 list of global changemakers. The list brings together an extraordinary group of scientists, explorers, innovators, conservationists and public figures whose work is shaping the future. Dr Rauert's inclusion recognises her pioneering contributions to plastics and human health research and places her among an influential cohort of global leaders driving change on some of the world's most pressing challenges. It is a proud moment for both Dr Rauert and QAEHS, and a powerful reflection of the global impact of our research.

A major highlight of the year was the successful delivery of Plastics2026 Global Symposium in Brisbane. Bringing together 239 delegates from 29 countries, this inaugural international event brought together researchers, policymakers and industry leaders to advance global understanding of plastics and human health, strengthening collaboration and knowledge exchange in this critical area. It was an inspiring and forward-looking event, and I am immensely proud of the QAEHS team and our partners who brought this global gathering to life.

We also celebrated Dr Elvis Okoffo's success in securing a highly competitive Australian Research Council Discovery Early Career Researcher Award (DECRA) Fellowship, reflecting the quality of his research and the emerging scientific leadership within our Centre.

Our partnership with Queensland Health remains central to our purpose and impact. Our role in connecting government, researchers and industry provides a unique platform for translating environmental health science into evidence, innovation and action. This year's report showcases research outcomes enabled through Queensland Health investment and support, demonstrating how strategic collaboration between research, policy and practice can address priority challenges.

Our research visitors, honorary and adjunct collaborators continue to deepen our connections and strengthen the exchange of knowledge, expertise and research capability globally. These collaborations enhance scientific innovation and provide valuable opportunities for our researchers and students to engage with leading experts from around the world.

Research infrastructure remains a key foundation of our success. The Australian Environmental Specimen Bank continues to grow as a unique national capability, preserving samples that provide a critical resource for understanding chemical exposures, emerging risks and environmental change over time. This year, we established an external Advisory Group to provide strategic guidance and help secure the long-term sustainability, impact and value of this important national archive.

Building capability remains central to our mission. We continue to foster a vibrant community of higher degree research students, early-career researchers and research professionals, developing the skilled workforce needed to address emerging environmental health challenges. This year, we celebrated 13 PhD completions, bringing the total number of PhD graduates since 2016 to 50. Seven industry placements, including four with Queensland Health, provided students with valuable opportunities to strengthen their professional skills and enhance career readiness. The achievements and recognition of our people throughout the year reflect the talent, creativity and leadership that will shape the future of environmental health science.

The continued success of our students, together with the achievements of our early-career researchers, provides confidence in the long-term strength and sustainability of our research community.

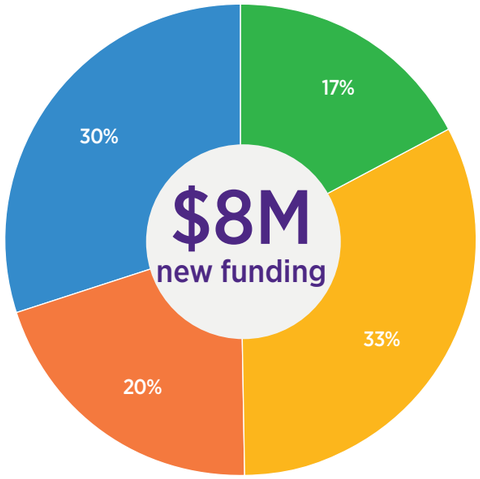
As we look ahead, we do so from a position of strength. The achievements highlighted throughout this report reflect the dedication and expertise of our researchers, students, professional staff, collaborators and partners. Their commitment to excellence, innovation and impact continues to drive our success.

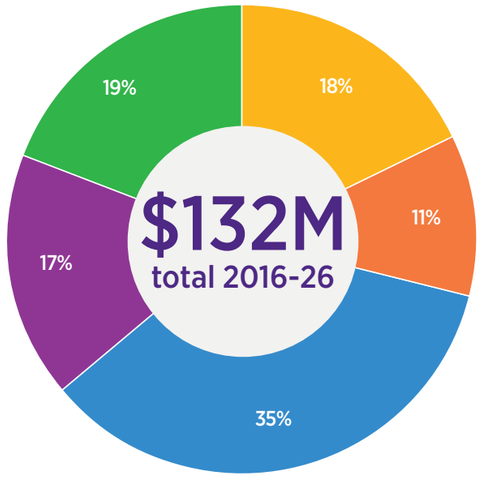
On behalf of the Alliance, I thank everyone who has contributed to another outstanding year for QAEHS.

Professor Kevin Thomas,
Director, QAEHS



2025-2026 Year at a glance





Philanthropic | ARC | Contract Research | Other Grants | NHMRC

35 New grants/projects

25% Competitive grant success

1 New fellowship

9 Years

250 Projects

$44M Industry funding

Policy impact

28 Policy documents citing QAEHS research 2025-26

284 Policy documents citing QAEHS research since 2016

68 Organisations citing QAEHS research in policy documents

Published across

8 UN Sustainable Development Goals

35 Higher Degree by Research Students

6 New PhD students

7 PhD completions

204 Publications

86% in top quartile journals

6% in top 1% highly cited

25,357 citations

Meaningful collaborations

with national and international organisations

14 New collaborators

85 Current collaborators

13 International research visitors

Global recognition

National Geographic 33

Dr Cassandra Rauert was recognised as one of 33 global leaders driving bold and innovative change.

Clarivate Highly Cited Researchers

Professors Kevin Thomas & Jochen Mueller were recognised in this list of the top 1% of most cited researchers globally.

Website
38,677 users

YouTube
1,693 views

DELIVERING IMPACT

We deliver impact by translating science into evidence, action and outcomes that benefit communities, decision-makers, industry and the broader research community.

Through high-quality research, policy engagement, strategic partnerships, research translation, knowledge exchange and community engagement, the Centre continues to address critical environmental health science challenges and strengthen the connection between research and real-world impact.

Communicating and sharing our research through diverse channels, including publications, policy engagement, conferences, seminars, media, digital platforms and community activities, ensures our findings are accessible to a wide range of audiences. These efforts support evidence-informed decision-making, collaboration and innovation, and increase the visibility and uptake of environmental health science research nationally and internationally.

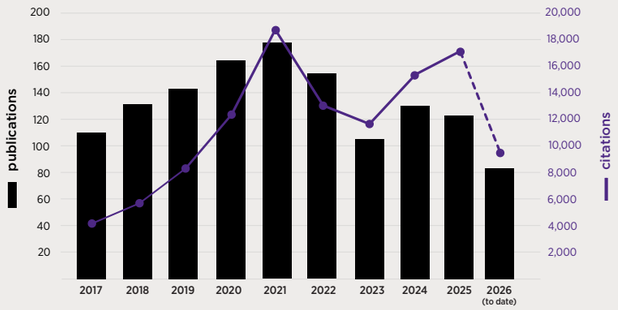
Research quality, influence & global reach

Our research outcomes demonstrate strong scientific quality, influence and global reach.

Through high-quality peer-reviewed publications, international collaborations and engagement with research, government and industry partners, our research generates evidence that informs policy, advances environmental health science and contributes to addressing emerging challenges locally and globally.

Early data for 2026 shows we are on track to exceed our 2025 output. Citations have remained strong and consistent outside the COVID-19 peak period, highlighting the ongoing relevance and impact of our research.

Our research is highly collaborative, with publications co-authored with more than 128 institutions worldwide and cited in 204 countries. This global engagement extends the reach of our research, supporting knowledge exchange, policy development and evidence informed practice.



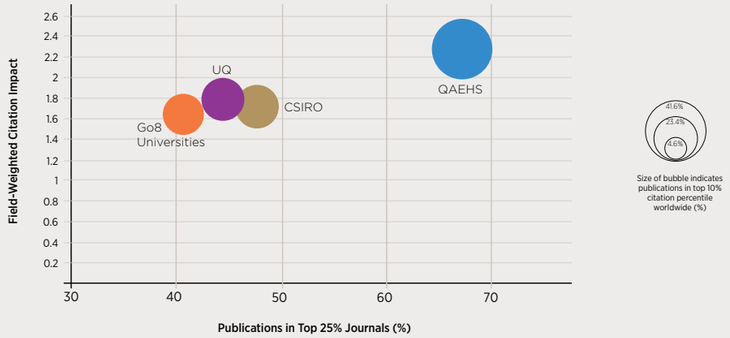
Publication quality

Comparisons with leading Australian research institutions show that our outputs continue to perform above average in research quality, as demonstrated by the key metrics in the figure below.

In 2025–26, our researchers published across 23 subject areas, producing 121 publications in 2025 and 84 to date in 2026, with over 25,000 citations combined.

Our work maintains its strong focus on quality demonstrated by 86.2% of publications appeared in Q1 journals (top 25% of journals worldwide) and 6.3% of our papers rank in the top 1% most cited, more than double the UQ average of 2.9%.

The chart below compares our research metrics to The University of Queensland (UQ), CSIRO and the Group of Eight Universities (Go8). Plotted is the field-weighted citation impact (a measure of the citation impact compared to global averages in the field) against the percentage of publications in the top 25% of journals. Each bubble shows the share of publications in the top 10% globally by citations (see legend).



Policy Impact

During 2025-26, QAEHS research was cited in 28 new policy documents produced by 20 organisations across 12 countries, demonstrating continued international influence on environmental and public health policy. Research informed policy development by organisations including the World Health Organization (WHO), Food and Agriculture Organization (FAO), World Bank, OECD, Australian Criminal Intelligence Commission (ACIC), Washington State Department of Ecology, RIVM Netherlands, Greenpeace International and the International Organization for Migration.

Key areas of policy impact included PFAS and emerging contaminants, microplastics, wastewater-based epidemiology, climate change and health, environmental monitoring, food safety, and chemical risk assessment.

Since 2016 QAEHS research has generated hundreds of policy citations across government, regulatory and international policy documents, reflecting both the breadth and depth of policy engagement. Since 2016, QAEHS research has been cited in 284 unique policy documents produced by 68 organisations across 21 countries.

Top policy areas influenced

- Environmental contaminants and chemical safety (PFAS, microplastics, persistent organic pollutants and emerging contaminants)
- Wastewater-based epidemiology and public health surveillance
- Climate change, health and resilience
- Air quality monitoring and exposure assessment
- Water quality and recycled water management
- Antimicrobial resistance
- Food safety and chemical exposure
- Environmental monitoring and analytical methods.

Examples of significant policy uptake

- Ongoing use of QAEHS wastewater epidemiology research in the Australian Criminal Intelligence Commission's National Wastewater Drug Monitoring Program.
- Citation of QAEHS research in WHO guidance on environmental and wastewater surveillance, including pandemic preparedness and infectious disease monitoring.
- Use of QAEHS PFAS and microplastics research by regulators including the Washington State Department of Ecology, California OEHHA, RIVM (Netherlands) and KCE Belgium.
- Contributions to international climate-health policy through research cited in World Bank, WHO and other global reports, including work associated with the Lancet Countdown on Health and Climate Change.
- Research supporting UNEP, EU and national environmental agencies on persistent organic pollutants, atmospheric monitoring and emerging contaminants.

Global impact

GEOGRAPHY	NUMBER OF UNIQUE POLICY DOCUMENTS
United States	59
Switzerland	50
Australia	25
Norway	25
Other countries	125

Research themes represented demonstrating where QAEHS expertise is shaping policy

THEME	EXAMPLES OF POLICY UPTAKE
PFAS and emerging contaminants	PFAS in consumer products, microplastics, tyre wear particles, persistent organic pollutants and environmental contaminants.
Environmental exposures	Air quality, wildfire smoke, extreme heat, indoor environmental exposures and pollution monitoring.
Human biomonitoring and surveillance	Wastewater-based epidemiology, drug monitoring, infectious disease surveillance and population health assessment.
Chemical risk assessment	Regulatory reviews, hazard assessments, contaminant monitoring frameworks and environmental standards.

Relevance

QAEHS research is influencing decision-making across multiple levels of policy and practice. Citations include high-relevance policy outputs such as government regulatory guidance, official risk assessments, surveillance frameworks and standards produced by organisations including WHO, ACIC, the Washington State Department of Ecology, California OEHHA and RIVM Netherlands. QAEHS research also contributes to evidence reviews and advisory reports prepared by OECD, FAO, the World Bank and European agencies, while supporting broader public debate through reports published by organisations such as Greenpeace, NRDC, Earthjustice and IUCN.

Who is using our research?

ORGANISATION TYPE	EXAMPLES
Australian Government	• Australian Criminal Intelligence Commission (ACIC) • Queensland Government • Australian Government agencies and publicly funded research and policy bodies • Australian Academy of Science.
International Government	• Washington State Department of Ecology (USA) • California Office of Environmental Health Hazard Assessment (USA) • Rijksinstituut voor Volksgezondheid en Milieu (RIVM, Netherlands) • Norwegian Environment Agency (Miljødirektoratet) • Norwegian Institute of Public Health • Danish Health Authority • Environmental Protection Agency Ireland • KCE Belgium.
UN/International Bodies	• World Health Organization (WHO) • United Nations Environment Programme (UNEP) • Food and Agriculture Organization of the United Nations (FAO) • International Organization for Migration (IOM) • World Bank.
Intergovernmental Organisations	• Organisation for Economic Co-operation and Development (OECD) • European Union Publications Office • InterAcademy Partnership.
NGOs	• Greenpeace International • Natural Resources Defense Council (NRDC) • Earthjustice • The Australia Institute • International Union for Conservation of Nature (IUCN).
Professional bodies and research agencies	• National Drug and Alcohol Research Centre (NDARC) • Health Research Board (Ireland) • Canadian Agency for Drugs and Technologies in Health (CADTH) • NILU (Norwegian Institute for Air Research) • IVL Swedish Environmental Research Institute.
Scientific academies and advisory bodies	• Australian Academy of Science • European scientific advisory bodies • Government scientific review panels and expert committees represented through OECD, EU and national evidence reviews.

Altmetric attention

Demonstrating research influence beyond academia

QAEHS research extends beyond traditional academic measures, generating engagement among policymakers, practitioners, industry, media and the broader community. Altmetric Attention Scores provide an indication of the reach and visibility of research outputs by tracking mentions across news media, policy documents, online platforms and other public channels.

During 2025–26, our research outputs generated 804 online mentions across a range of digital and media channels. Of the 166 research outputs tracked, 76 outputs (46%) received measurable attention, demonstrating strong visibility and engagement beyond traditional academic citation metrics.

The majority of attention came from social media, accounting for 633 mentions (79%), indicating substantial public and professional engagement with our research. Additional visibility was generated through News, blogs and podcasts accounting for 161 mentions (20%).

This distribution suggests that research dissemination was particularly effective in reaching online audiences and media channels, with some evidence of influence extending into policy and scholarly discussions.

Overall, the 2025–26 Altmetric data indicate a high level of public and professional engagement with our research, supported by predominantly positive online discussion and strong media visibility.

METRIC	ACHIEVEMENT
Publications tracked	166
Total mentions	804
Outputs receiving attention	76
Publications ranked in top 5% globally	22

The breadth of engagement demonstrates the relevance of QAEHS research to contemporary environmental health challenges. Research addressing plastics and human health, climate-related risks, wastewater surveillance and emerging contaminants attracted substantial international attention, reflecting growing public and policy interest in environmental exposures and their implications for human health.

Top Mentioned Research Outputs

Low-plastic diet and urinary levels of plastic-associated phthalates and bisphenols: the randomized controlled PERTH Trial - Nature Medicine | 2026

324 mentions | Top 5% globally

This paper attracted substantial international attention immediately following publication. Engagement peaked in late April 2026, driven by extensive coverage in major news outlets, social media discussions, and highly active Reddit conversations. Interest remained strong through May and continued into June and July, demonstrating sustained public and scientific engagement with the findings. Media coverage by high-profile outlets, including The Washington Post, MedicalXpress, and The Medical News, amplified the study's reach and highlighted its practical implications for reducing exposure to plastic-associated chemicals through dietary changes. Social media sentiment was overwhelmingly positive, reflecting strong public interest in the study's relevance to environmental health and everyday consumer behaviour.

Communicating Confidence in the Reliability of Micro- and Nanoplastic Identification in Human Health Studies - Environment & Health | 2026

246 mentions | Top 5% globally

The paper attracted significant international attention from the day of publication, generating extensive media coverage and sustained online engagement. Major international and science-focused media outlets, including infobae, GMA News, UOL, Scimex and Imperial College London News, amplified the study's message to broad public and professional audiences. Social media and blog discussions continued for several months after publication, with overwhelmingly positive and neutral-positive sentiment, reflecting strong interest in the paper's contribution to improving the reliability and consistency of micro- and nanoplastic detection in human health research.

Plastics, plastic chemicals, and microplastics: multiple harms to health - The Lancet | 2026

125 mentions | Top 5% globally

The paper attracted significant international attention immediately after publication, with a strong surge in engagement driven by widespread news coverage. Major outlets including Politico Europe, Yahoo! News and MSN, along with numerous international media organisations, amplified the findings to broad public audiences. Continued discussion across social media platforms reflected sustained interest in the research, while predominantly positive and neutral-positive sentiment demonstrated strong engagement with its message on the health risks associated with plastics, plastic chemicals and microplastics.

Release of nanoplastic from polypropylene kettles - npj Emerging Contaminants | 2025

108 mentions | Top 5% globally

Research into nanoplastic release from household products attracted widespread public interest, demonstrating the relevance of QAEHS research to everyday environmental exposures. The paper generated significant international attention following publication, with extensive media coverage and online discussion across multiple platforms. Major outlets amplified the findings to broad public audiences, highlighting concerns about the release of nanoplastics from common household kettles. Interest persisted well beyond the initial publication period, with a second surge of engagement several months later across news media, social media, blogs and Reddit, demonstrating the study's continued relevance to public health, environmental exposure and consumer awareness.

Antibiotic transformation products exert selective pressure for antimicrobial resistance comparable to parent compounds - Nature Water | 2026

91 mentions | Top 5% globally

The paper generated strong early attention, with a concentrated surge of media coverage following publication. Prominent science communication platforms amplified the research to international audiences, drawing attention to evidence that antibiotic transformation products can contribute to antimicrobial resistance even after the original compounds have degraded. The widespread uptake of the findings demonstrates the study's relevance to environmental management, water quality and the global challenge of antimicrobial resistance.

Hospitalization risk and burden for cause-specific cardiovascular diseases following tropical cyclones: A multicountry study - Science Advances, August 2025

66 mentions | Top 5% globally

The paper generated strong international engagement following publication, with attention spanning social media, news media and online science communication channels. Coverage by prominent outlets including Forbes, Earth & Space Science News (Eos) and international weather and climate news platforms helped extend the reach of the research to diverse global audiences. Sustained media interest over several months, combined with overwhelmingly positive audience sentiment, demonstrated the study's relevance to understanding the health consequences of extreme weather events and informing climate adaptation and public health planning worldwide.

Who do we trust on climate change, and why? - Global Environmental Change Part A: Human & Policy Dimensions, March 2026 | 2026

59 mentions | Top 5% globally

The paper generated substantial online attention following publication. Engagement was driven by discussions across Bluesky, X and Reddit, alongside international media coverage that disseminated the findings to diverse audiences. Coverage by EcoDebate in both English and Portuguese helped extend the research's global reach, while overwhelmingly positive audience sentiment reflected strong interest in understanding how trust in climate communicators influences public responses to climate change.

National Wastewater Surveillance of Illicit Tobacco and Vaping Use Trends in Australia - JAMA Network Open, February 2026

59 mentions | Top 5% globally

The paper generated strong attention shortly after publication, with substantial coverage across news media, social media and public health communication channels. Major outlets amplified the findings to domestic and international audiences, drawing attention to evidence of a marked increase in illicit tobacco use in Australia. The research stimulated discussion on tobacco control, vaping trends and the role of wastewater surveillance in monitoring population-level behaviours, demonstrating its relevance to public health policy and regulatory decision-making.

Global impact through the UN sustainable development goals

QAEHS research contributed to eight United Nations Sustainable Development Goals during 2025–26, demonstrating the breadth of impact generated through our research program. Research outputs were most strongly aligned with SDG 3 (Good Health & Wellbeing), while also contributing to goals relating to human health, climate action, clean water, sustainable communities, responsible production and food systems. These contributions highlight the role of environmental health science in addressing interconnected global challenges.

SUSTAINABLE DEVELOPMENT GOAL	PUBLICATIONS
SDG 14 – Life Below Water	10
DG 3 – Good Health & Wellbeing	43
SDG 13 – Climate Action	13
SDG 6 – Clean Water & Sanitation	1
SDG 2 – Zero Hunger	2
SDG 11 – Sustainable Cities & Communities	3
SDG 7 – Affordable & Clean Energy	9
SDG 12 – Responsible Consumption & Production	3

The Australian Environmental Specimen Bank

Many of the chemicals that improve modern life can also persist in the environment in ways that are not fully understood when they are first introduced. In some cases, the environmental and human health impacts of these chemicals only become apparent years or even decades after widespread exposure has occurred.

Understanding these emerging risks requires a One Health approach, recognising that the health of humans, animals and the environment are intrinsically connected. Contaminants can move through air, water, wildlife and food systems before ultimately affecting human health, making it essential to study these interconnected systems together rather than in isolation.

One of the greatest challenges in environmental health is that we cannot predict which contaminants will become tomorrow's public health concerns. By the time new evidence emerges, researchers and policymakers are often left asking critical questions: When did exposure begin? Has it increased over time? Were regulatory interventions effective? Without historical samples, these questions are difficult, if not impossible, to answer.

The Australian Environmental Specimen Bank (AESB) addresses this challenge by preserving biological and environmental samples collected across human, animal and environmental systems - including human blood, urine and breast milk, wastewater, wildlife, biosolids, air and water - for future analysis. As scientific knowledge and analytical technologies advance, these archived specimens can be reanalysed to identify contaminants that were previously unknown or impossible to detect.

By providing a window into the past, the AESB enables researchers to reconstruct exposure histories, measure long-term environmental change and evaluate the effectiveness of interventions. In doing so, it provides a nationally significant research resource that strengthens the evidence needed to anticipate, understand and respond to emerging environmental and public health challenges.

Australian Environmental Specimen Bank

Unexpected Future Uses — Samples Can Become Valuable in Ways Nobody Predicted

One of the most powerful aspects of environmental specimen banking is that the future value of a sample — and the infrastructure supporting it — cannot always be predicted at the time it is established. A strong example of this emerged during the COVID-19 pandemic right here in Queensland.

For many years, wastewater samples had been routinely collected and archived from sites across Australia to support wastewater-based epidemiology research, including monitoring community exposure to pharmaceuticals, nicotine, alcohol and illicit drugs. At the time these programs were established, the primary goal was to better understand patterns of chemical consumption and public health exposure within the population.

However, when the threat of COVID-19 emerged globally in 2020, researchers rapidly recognised that the same wastewater infrastructure could also be used to monitor the spread of SARS-CoV-2 within communities. People infected with COVID-19 shed viral fragments in their waste — including individuals who showed no symptoms — allowing researchers to detect the presence of the virus in wastewater systems even before large numbers of clinical cases were identified.

Existing wastewater sampling programs, analytical expertise and archived specimens suddenly became valuable for an entirely different purpose than originally intended. Wastewater monitoring results provided Queensland with valuable real-time information on the spread of COVID-19 and became an important component of the state's pandemic monitoring and public health response.

This demonstrated an important principle of environmental specimen banking and long-term environmental monitoring: samples and infrastructure established for one scientific question may later become critical for answering a completely different question that could not have been anticipated at the time.

The value of the original wastewater collections was therefore far greater than initially imagined. The same systems and expertise that supported drug monitoring research also contributed to infectious disease surveillance, public health decision-making and pandemic response.

As future environmental, chemical and public health challenges emerge, archived specimens, long-term datasets and environmental monitoring infrastructure may continue to provide new scientific insights in ways that are impossible to fully predict today.

AESB Real-World Impact

The COVID-19 pandemic demonstrated that the value of long-term environmental monitoring extends far beyond the original purpose for which samples and infrastructure were established. Wastewater systems initially developed to monitor community exposure to drugs and pharmaceuticals were rapidly adapted to support infectious disease surveillance during a global public health emergency. By maintaining long-term specimen archives, sampling networks and analytical capability, the AESB helps ensure Australia is better prepared to respond to future environmental and public health threats.





Distinguishing Real Environmental Change from Changes in Measurement

Imagine two studies measuring PFAS in human blood, conducted five years apart in different laboratories using different instruments and analytical methods. Even when researchers attempt to follow the same procedures, analytical science continuously evolves. Instruments become more sensitive, detection limits improve, standards change, and laboratories adopt new methodologies.

This creates a major challenge for long-term environmental health research. If results differ over time, is it because human exposure truly changed — or because the analytical methods changed?

A study by Nilsson et al. demonstrated this problem clearly. When PFAS concentrations measured years apart were compared, some apparent differences were found to result from analytical uncertainty rather than genuine changes in exposure.

This highlights one of the most important functions of the AESB. By preserving archived specimens, researchers can later reanalyse historical samples using the same modern analytical methods and instrumentation. This allows scientists to directly compare past and present samples with far greater confidence, helping distinguish true environmental trends from differences caused by evolving analytical technology.

Without archived specimens, researchers are often forced to compare historical results generated using older methodologies against modern results generated using newer technologies — introducing uncertainty into long-term trend analysis. The AESB therefore strengthens the reliability, comparability, and scientific confidence of environmental health research over time.

AESB Real-World Impact

The AESB helps ensure researchers are comparing "apples with apples" by allowing samples from different time periods to be analysed using the same modern analytical approach. This improves confidence that observed changes reflect genuine environmental trends rather than changes in the measurement process itself.

Applying Tomorrow's Science to Yesterday's Samples - The Value of Retrospective Analysis with Improved Methodologies

Olympics anti-doping policy

Have you ever wondered how an Olympic athlete can win a gold medal, only to be stripped of that medal years later due to a doping scandal? Why were they allowed to receive their medal, and why wasn't the cheating detected at the time?

The answer lies in the concept of retrospective analysis — the ability to go back to a sample collected years earlier and re-test it using improved technology and new scientific knowledge to detect substances that could not be identified at the time.

You may be surprised to learn that the Olympic anti-doping system stores athlete samples for up to 10 years. This allows samples to be re-analysed as science advances and new methods become available to detect drugs that were previously undetectable at the time of collection.

The Australian Environmental Specimen Bank works on the same principle. There are emerging chemicals that may not yet be routinely monitored, fully understood or detectable using existing analytical methods, but may still pose significant risks to environmental and human health. By systematically archiving samples over long periods of time, the AESB enables researchers to effectively look back in time, identify when a chemical first emerged, and better understand the scale of its impacts. Substances that may have been impossible to detect 10 years earlier can become readily identifiable as scientific knowledge and analytical technologies improve.

AESB real world impact

Today's samples can answer tomorrow's questions. As analytical science advances, archived samples can be re-analysed for chemicals that were previously undetectable, helping researchers understand when they first appeared and how their impacts may have changed over time.

Queensland Health Partnership in Action

Maximising the impact of Queensland Health investment

A key objective of the Queensland Health–QAEHS partnership is to maximise the impact of public investment in environmental health science. Queensland Health's support provides the foundation for QAEHS to build research capability, attract competitive investment, build strategic partnerships and undertake innovative research addressing emerging environmental health challenges.

Strategic partnership leverage

Since establishment in 2016, the Queensland Health-QAEHS partnership has achieved a 15.8:1 research leverage outcome, enabling the Centre to attract more than $132 million in research funding and establish a diverse portfolio of nationally and internationally significant research programs.

Direct grant leverage

A key component of this leveraging success has been our ability to secure additional competitive research funding. Since 2016, Queensland Health investment has supported 18 externally funded research grants valued at $14.1 million, generating an additional $11.77 million in external funding. To date, $2.33 million of Queensland Health investment has been strategically allocated to support successful grant applications.

Together, these outcomes demonstrate the value of the Queensland Health-QAEHS partnership in transforming public investment into a substantially expanded research capability, delivering greater impact, innovation and environmental health science outcomes for Queensland and beyond.

Metrics at a Glance

Queensland Health investment and leverage outcomes since 2016.

15.8:1
Overall leverage outcome

14.1M
Total value of leveraged grants

$2.3M
Queensland Health investment

$11.7M
Additional external funding

18
18 successful grants

46%
Competitive grant success rate
19 successful applications from 41 submissions

Lunchbox sessions with Queensland Health

QAEHS theme leaders and researchers were invited to participate in Queensland Health's 'Lunchbox Talks', a 30-minute talk and Q&A via Microsoft teams, held over lunchtime. A QAEHS theme is selected, and a topic is presented on what is currently happening in the scheduled theme.

- Investigating PFAS in drinking water and bottled water, Dr Sara Ghorbani Gorji, 2 July 2025
- Indoor chemical exposure – case studies for PFAS, Dr Fisher Wang, 8 October 2025.

Rapid Risk Assessment workshops

A/Prof's Sarit Kaserzon and Gilda Carvalho together with a team of professionals from QAEHS and Queensland Health have developed a Rapid Risk Assessment (RRA) workshop for Queensland Health public health professionals. The workshop aims to provide participants with an understanding of what constitutes a rapid risk assessment, provide an exemplary digital tool that can guide RRA assessments and discuss case studies and examples of RRA events. The expected outcomes of the workshop are to create a streamlined process that can be used to quickly evaluate potential risks in response to an emerging threat in the initial stages of an event, incident, or situation of public health concern. The RRA workshop has been designed based on best practice WHO and OECD guidelines for RRAs. Delivery of the first workshops are expected in late 2026.

Special Interest Groups

In December 2023, we established special interest groups (SIGs) to facilitate communication and discussion between Queensland Health and QAEHS/UQ on key topics in environmental health sciences. Four initial topics were chosen from Queensland Health's ten nominated priority areas.

The SIGs are intended to be collaborative communities that provide a shared forum for advancing knowledge, sharing the latest scientific findings, discussing research ideas, addressing industry challenges, and exploring potential collaborations. Members work together to develop solutions within their specific fields, fostering innovation and progress.

The Wastewater Surveillance Special Interest Group was officially retired in February 2026 due to a lack of regular engagement.

Research Engagement and Knowledge Exchange

We actively support knowledge exchange and engagement with researchers, government, industry and the broader community to maximise the impact of our research. Through conferences, training, research forums and sector engagement activities, the Centre creates opportunities to share knowledge, build capability and foster collaboration across the environmental health sector.

Annual research forum

Our Annual Research Forum brought together researchers, students, government and industry partners to showcase research, exchange knowledge and strengthen collaboration. Held at UQ Brisbane City on 19 November 2025, the hybrid event attracted more than 80 participants both in person and online.

The program featured presentations from QAEHS Theme Leaders, researchers, higher degree research students and invited speakers from Queensland Health, the Queensland Department of Environment, Tourism, Science and Innovation, Seqwater, the Australian Criminal Intelligence Commission and the Minderoo Foundation. Together, they highlighted emerging research, collaborative initiatives and the translation into policy and practice.

A highlight of the Forum was the student poster session, with 15 PhD projects selected by Queensland Health for presentation. Simran Kaur received the Best Student Research Poster award for Where do tyre particles go? Identifying and quantifying tyre wear particles in balcony road dust. Marina Suzuki, Lily Pan and Marta Lopez shared second place, recognising the high calibre of research undertaken by our students.

Building capability through training and knowledge exchange

QAEHS researchers support the translation and uptake of environmental health science by sharing specialist knowledge, tools, and approaches with government, industry, and international partners. Through targeted training activities and knowledge exchange initiatives, we build capability, strengthen partnerships, and support the application of evidence-based approaches to emerging environmental health challenges.

Industry training supporting water and environmental professionals

QAEHS developed and delivered an industry workshop to build capability in emerging contaminant monitoring for water industry and environmental professionals.

The workshop attracted more than 40 participants from organisations including Seqwater, the Department of Environment, Tourism, Science and Innovation (DETSI), and Queensland Health. To further support knowledge sharing and the training of water and environmental professionals, QAEHS has also developed publicly available resources, including informational and deployment videos on passive sampling technology.

Link: **Water Quality Micro-Pollutant Passive Sampler Monitoring Program - Queensland Alliance for Environmental Health Sciences - University of Queensland**.

International training and capacity building

QAEHS researchers contribute to international capacity building by sharing specialist expertise and supporting the development of environmental health science capability globally. In August 2025, Dr Cassandra Rauert delivered a one-week training program for the Thailand Government in Bangkok focused on microplastics analysis and environmental monitoring. The program included a keynote presentation at the Regional Seminar on “Microplastic Pollution and Analytical Techniques”, followed by a two-day theoretical and practical training course for approximately 20 scientists on the analysis of microplastics in environmental samples.



Image: Industry training at QAEHS, UQ Dutton Park

Seminar series

Our Seminar Series remains a cornerstone of the Centre’s research culture, providing a forum for knowledge exchange, collaboration and discussion of emerging challenges and research. The series brings together researchers, government, industry and partner organisations from across Australia and internationally to share research insights, explore new ideas and strengthen connections across the environmental health science community.

Live streaming continues to extend the reach of the series, enabling participation by Queensland Health staff, collaborators, industry partners and the broader scientific community. During 2025-26, 37 internal, external and visiting researchers and students presented their latest research, showcasing the breadth of expertise across QAEHS’s collaborative network and reinforcing the Centre’s role as a hub for environmental health science.

- **Alberto Celdma Tirado**, Swedish University of Agricultural Sciences – “The role of Ion Mobility Separation coupled to High Resolution Mass Spectrometry for the analysis of small molecules in complex matrices: past, present and future”.
- **Thinh Nguyen**, Hiroshima University – “Environmental degradation of polymers under sunlight and seawater conditions”.
- **Craig Dalton**, University of Newcastle – “How to poison the credibility of regulators: Responding to Hollywood’s advocacy on PFAS”.
- **Uli Klümper**, Technical University Dresden – “Ecological & environmental drivers of antimicrobial resistance in the environment”.
- **Junfei Zhan & Chenglong Ji**, University of Newcastle – “Omics-based analyses revealed the toxicological effects of typical pollutants in the Bohai Sea on marine bivalves”.
- **Detlef Knapp**, North Carolina State University – “Releases of per- and polyfluoroalkyl substances from fluoropolymer production: Community impacts and interventions to reduce human exposure”.
- **Rosemary Cater**, The University of Queensland – “Structural and mechanistic insights into nutrient transport at the blood brain barrier”.
- **Nicola Man & Amy Peacock**, National Drug and Alcohol Research Centre – “Triangulation of wastewater and health data”.
- **Merve Genc**, Istanbul University – “From Forensic Toxicology to Wastewater-Based Epidemiology: Insights from Türkiye”.
- **Dorde Tadic**, European Commission, Directorate General Joint Research Centre – “Development of certified reference materials”.
- **Joeselle Serrana**, Stockholm University – “Metagenome mining for environmental microbiome surveillance and contaminant interactions”.
- **Steve Atkin**, Medical University of Bahrain – “Collaboration on endocrine disrupting chemicals between RCSI Bahrain and The University of Queensland”.
- **Lidia Belova**, University of Antwerp Toxicological Centre – “Ion mobility high-resolution mass spectrometry (IM-HRMS) – an emerging technique facilitating the analysis of environmental contaminants and their metabolites”.
- **David Morrisset**, The University of Queensland – “Measurement techniques in the study of fire safety science”.
- **Branislav Vrana**, RECETOX/Masaryk University – “Analysis of hydrophobic organic contaminants in the Danube River surface water by passive sampling”.
- **Snehal Jadhav**, Deakin University – “Chasing microbial footprints”.
- **Bikram Subedi**, Louisiana State University – “Understanding event highs through wastewater truths”.
- **Xiaoyu Zhang**, Stockholm University – “Modelling environmental exposure to plastic”.
- **Mark Stuart**, International Testing Agency – “Opportunities in clean sport: Anti-doping at the Olympic Games and the new ITA Academic Centre at UQ”.

Conference attendance

Conference participation is an important part of the centre's research engagement, providing opportunities to share new discoveries, build collaborations and translate research into practice.

During 2025–26, 61 researchers across the alliance attended 51 national and international conferences, delivering oral and poster presentations, participating in panel discussions, and contributing as conference organisers, session chairs and scientific committee members. More than 90% of conferences were attended in person, supporting meaningful collaboration, professional development and knowledge exchange across the environmental health sciences community.

SETAC Australasia Conference

Wellington, New Zealand | 25–28 August 2025

A large delegation of QAEHS researchers and HDR students attended the SETAC Australasia Conference, presenting research spanning plastics, PFAS, wastewater epidemiology, environmental monitoring and exposure science. The conference provided valuable opportunities to engage with international experts, establish new collaborations and showcase the breadth of QAEHS research.

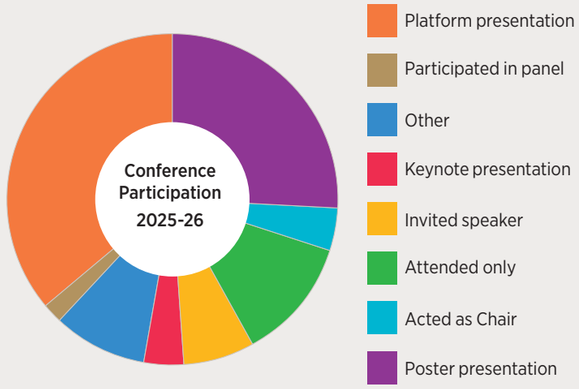
PhD student Haitao Lin was awarded Runner-Up Best Student Poster for his work on characterising environmental nanoplastics, while students highlighted the value of the conference for receiving expert feedback, expanding professional networks and exploring future collaborations.

Queensland Mass Spectrometry Symposium

QAEHS HDR students attended the Queensland Mass Spectrometry Symposium, an annual forum showcasing advances in mass spectrometry across multiple scientific disciplines. The symposium provided opportunities to present research, network with Queensland's mass spectrometry community and gain interdisciplinary perspectives.

Our students were recognised with several awards, including:

- Nicole Schroeter – Lightning Talk Winner
- Dhaya Nadarajan – Equal Second, Oral Presentation
- Tobias Hulleman – Equal Winner, Professional Networking Award



Plastics2026 conference

Brisbane, Australia | 1-4 March 2026

In March 2026, QAEHS hosted the inaugural Plastics2026 conference, bringing together more than 230 scientists, clinicians, policymakers and industry leaders from around the world to advance understanding of plastics and human health.

Across four days, delegates explored emerging research in exposure science, toxicology, epidemiology, analytical chemistry, risk assessment and policy. The program featured nine international keynote speakers, more than 75 oral presentations and over 95 poster presentations, highlighting the rapid growth and global importance of plastics and human health research.

QAEHS researchers made a substantial contribution to the scientific program through keynote, oral, flash and poster presentations, showcasing the Centre's expertise across exposure assessment, human biomonitoring, plastics analytics and environmental health research.

Full details, including the program are available on the **Plastics2026 website**.

International keynote speakers represented leading organisations from around the world, including the United Nations Environment Programme, Minderoo Foundation, Lancet Countdown on Health and Plastics, Fiji's Ministry of Environment and Climate Change, Norwegian University of Science and Technology, Rutgers University, Jinan University, the National Institute for Environmental Studies, the Food Packaging Forum Foundation, and QAEHS.



Image: Dr Sivendra Michael, Fijian Government, Environment and Climate Change



Research Communication and Community Engagement

Effectively communicating our research through diverse channels is essential for translating scientific evidence into accessible information, supporting knowledge exchange and maximising impact. During 2025–26, QAEHS research was shared through traditional media, digital platforms, online resources and community-facing activities, reaching researchers, decision-makers, industry and the broader community.

Media and digital engagement

Media engagement provides an important pathway for translating environmental health research into accessible information for communities, decision-makers and stakeholders. Through media releases, news articles and digital platforms, QAEHS researchers share evidence-based insights on emerging environmental health issues and contribute to public understanding of complex scientific challenges.

During 2025-26, QAEHS research attracted media and digital attention across a range of topics, including plastics and human health, wastewater epidemiology, antimicrobial resistance and environmental exposures. Selected stories highlight the Centre's expertise and demonstrate the relevance of environmental health science to issues affecting communities locally, nationally and globally.

Media engagement

Research stories were amplified through University communication channels, generating strong engagement. Key stories:

STORY	DIGITAL ENGAGEMENT HIGHLIGHTS
Restoring confidence: proposed standards to identify and measure microplastics Prof Kevin Thomas (January 2026)	218 media mentions 282M reach
Hidden antibiotic reservoirs drive antimicrobial resistance Dr Jake O'Brien, Pooja Lakhey (9 June 2026)	14 media mentions 3.5K reach
Australians are drinking plastic particles in their tea, UQ research finds Dr Elvis Okoffo (December 2025)	184 media mentions 40.4M reach

2025-26 Highlights

400+
Media mentions
from selected monitored stories

320M+
Potential media reach
from selected monitored stories

14K +
LinkedIn impressions
from highlighted research stories

2000+
Digital engagements
across selected campaigns

38K+
Total website users
across 171 countries

10
YouTube videos
1,693 total views

9
Community engagement activities

3
Public science festivals

Digital engagement

Top performing posts

STORY	DIGITAL ENGAGEMENT HIGHLIGHTS
Restoring confidence: proposed standards to identify and measure microplastics Prof Kevin Thomas (January 2026)	**LinkedIn** • 2,884 impressions • 1,132 engagements • 39.25% engagement rate • 1,046 clicks • 77 reactions • 8 reposts
Wastewater samples reveal soaring illicit tobacco trends Dr Zhe Wang (February 2026)	**LinkedIn** • 1,622 impressions • 489 engagements • 30.15% engagement rate • 453 clicks • 30 reactions • 3 reposts
Dr Cassandra Rauert recognised in National Geographic's global leaders list	**LinkedIn** • 9,367 impressions • 337 engagements • 186 clicks • 11 comments • 9,367 impressions • 3.6% engagement rate • 133 reactions, 7 reposts
Can having access to leafy spaces improve your health? Chinonso Odebeatu (August 2025)	**LinkedIn** • 372 impressions • 8 engagements • 2.15% engagement rate • 3 clicks, • 3 reactions, • 2 reposts

These stories demonstrate the value of communicating research beyond academic audiences, supporting knowledge exchange, increasing public awareness and strengthening connections between science, policy and community. Broader online engagement with QAEHS research publications, reflected through Altmetric attention, further highlights the growing visibility and reach of our research across academic and public audiences.

Industry knowledge exchange through digital platforms

Dr Richard Bade shared QAEHS expertise on wastewater-based drug surveillance through a SCIEX industry vlog, highlighting advances in wastewater analysis and its application for monitoring emerging public health challenges.

Website engagement

Website engagement increased substantially this year, with 38,677 visitors, representing a 53% increase from 25,280 visitors in 2024-25. Website traffic continued to align with key Centre activities, with peaks corresponding with to media coverage, major announcements and HDR scholarship opportunities. Notably, the Plastics2026 Conference generated particularly strong interest, with its dedicated event webpage contributing significantly to overall website traffic.

Our global audience has expanded, attracting visitors from 171 countries, up from 136 countries in the previous reporting period. Australia remained the largest audience, accounting for 60% of all visitors, while the United States and China retained their positions as the second and third largest audiences. Singapore entered the top ten countries for the first time, likely reflecting increased international engagement following Professor Kevin Thomas' participation at the Singapore International Water Week.

The Plastics2026 Conference webpage was the most visited page, demonstrating strong interest in the Centre's flagship international event. The home page continued to attract a consistently high traffic, followed by the 'Our People' page, highlighting ongoing interest in our researchers and their work. Profiles for Theme Leaders A/Prof Phong Thai and Prof Kevin Thomas also featured among the five most visited pages.

Regular content updates and the introduction of new pages throughout the year contributed to sustained interest. The website continues to serve as a key platform for communicating QAEHS research, connecting with stakeholders and increasing the visibility of the Centre's expertise nationally and internationally.

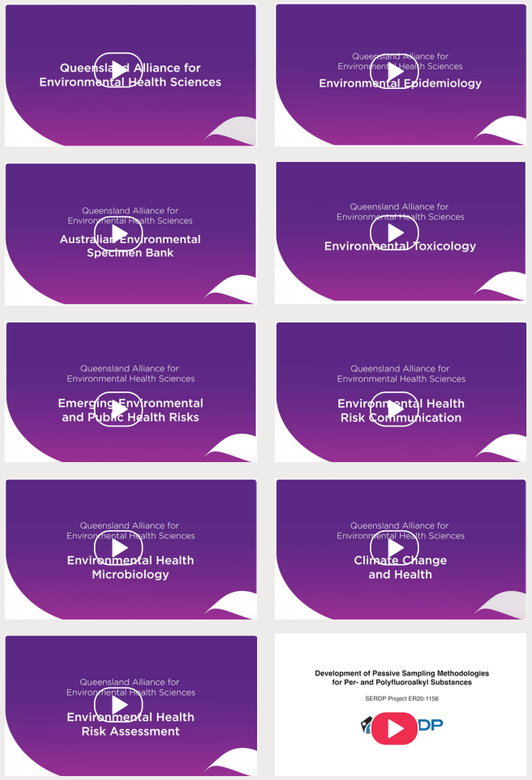
Website engagement has continued to grow over the past decade, reaching its highest level since the Centre's establishment.

YouTube

The Centre uses video content to make environmental health science research more accessible to diverse audiences and extend the reach of the Centre's work beyond traditional research channels. Since launching a dedicated YouTube collection in 2022, QAEHS videos have provided an accessible introduction to the Centre, its research themes, major projects and research infrastructure, including the Australian Environmental Specimen Bank.

Since 2022, our videos received 1,693 views, with the Centre introduction video accounting for more than one-third of total views. All videos remain available through the QAEHS website, providing an ongoing resource for researchers, partners, students and the broader community to learn more about our research.

QAEHS videos



Community engagement and science communication

Community engagement is a core component of our commitment to translating our research into meaningful public impact. By engaging directly with schools, community organisations, policymakers and the broader public, our researchers help improve environmental health science literacy, support evidence-informed decision-making and build trust in science. These interactions also create valuable opportunities to listen to community perspectives, strengthen partnerships and inspire future scientists.

Inspiring the next generation

Brunch with a Scientist

Dr Elvis Okoffo participated in the Queensland Academy for Science, Mathematics and Technology's Brunch with a Scientist, in August 2025. The event provides high school students with the opportunity to speak with scientists and researchers from a variety of fields and industries to inspire them and enrich their knowledge of the career pathways in STEM. Dr Okoffo was one of 8 scientists who participated in the event, attended by approximately 60 students.

The Gap Sustainability Initiative

As part of The Gap Sustainability Initiative, PhD candidate Simran Kaur engaged the local community through presentations and science communication focused on microplastic pollution. She presented at The Gap High School Library in September 2025 on the sources and impacts of microplastics and later authored a community article, The Hidden Life of Our Tyres: The Quiet Connection Between Roads and Creeks in The Gap, raising awareness of pollution from our tyres and its impacts on local waterways.

Wonder of Science

PhD student, Simran Kaur, continues to participate in science communication and outreach through Wonder of Science, including school visits involving Australian curriculum-aligned workshops and student mentoring. The workshops focused on practical science activities, discussion and brainstorming to help students explore scientific concepts in an engaging way. Mentoring supported students with their assessment projects, including selecting and refining a topic, finding relevant and reliable information, developing their ideas and structuring their projects.

Simran also participated in the World Science Festival Queensland Ipswich Community Day in 2025 which included a display and discussion of research on tyre-related pollution for school kids and public, as well as interactive science activities for children of all ages. Participants explored scientific concepts through a rocket-launching activity at different angles, completed an accompanying worksheet, made observations and were encouraged to ask questions and engage with science through hands-on learning.

Public science communication

Beaker Street Science Festival (August 2025)

As a Roving Scientist at the Beaker Street Science Festival, PhD Candidate Madi McLatchie engaged festival attendees in conversations about her research and field work with the Australian Antarctic Division, helping make complex research accessible to the public.

The Roving Scientist Program provides researchers with professional development in science communication while creating opportunities for meaningful conversations between scientists and the public.

2026 Pint of Science

The QAEHS team have contributed again to the national Pint of Science Festival, an initiative that connects researchers with the public through informal, accessible conversations about science, hosted by local pubs. In May 2026, PhD candidate Nicole Schroeter presented "What Can We(e) Reveal? Urine for an Exciting Talk", sharing insights into wastewater-based research and highlighting the role of innovative approaches in understanding population health and emerging environmental health challenges.

The Plastic Country

In conjunction with the Plastics2026 Conference, QAEHS partner Minderoo Foundation hosted a community screening of The Plastic Country film at the State Library of Queensland. The event provided an opportunity for the public to engage with the scale and impacts of the plastics challenge in Australia and explore how science and research are contributing to solutions. Dr Cassandra Rauert represented QAEHS in a panel discussion following the screening, providing expert perspectives on microplastics research, exposure pathways and implications for human health.

Australasian Land and Groundwater Association (ALGA) International Women's Day Event

As part of ALGA's International Women's Day event in March 2026, Dr Cassandra Rauert engaged with professionals across the land and groundwater sector to share the latest evidence on microplastics and their implications for human and environmental health. Her presentation explored microplastic sources, detection techniques and exposure pathways, demonstrating the importance of research-informed approaches to addressing emerging environmental challenges.

The Hut Environmental and Community Association (THECA)

Through THECA's community speaker series, Dr Cassandra Rauert shared QAEHS research with community members in March 2026, presenting on tyre related pollution in the Australian environment. The presentation highlighted emerging research on the sources and impacts of tyre-derived pollutants and supported community understanding of environmental health challenges.

Community partnerships and citizen science

Bayside Creeks Catchment Group

QAEHS researcher Dr Elvis Okoffo engaged with the Bayside Creeks Catchment Group in June 2026, sharing research insights on plastics in the Moreton Bay environment and emerging evidence on human exposure to plastics. The presentation highlighted the role of community awareness and informed actions in reducing exposure to plastics in everyday life and protecting local environments.

Citizen Science for better Reef protection

Through a collaboration with Magnetic Island Community Development Association (MICDA), A/Prof Sarit Kaserzon and team are contributing to a citizen science project supported by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) to strengthen monitoring and protection of the World Heritage environment of Ynbenun (Magnetic Island).

The project empowers community members to participate in monitoring reef health biodiversity and water quality, while building local capability through expert-led training in environmental sampling and data interpretation. QAEHS researchers are supporting citizen scientists to collect and understand data relating to pharmaceuticals and contaminants of concern, contributing to improved scientific understanding, evidence-informed management and enhanced reef resilience.

The multi-stakeholder collaboration brings together community, government, research and industry partners, including the Great Barrier Reef Foundation, Townsville City Council, Great Barrier Reef Marine Park Authority, TropWATER, Healthy Waters Partnership for the Dry Tropics, University of Queensland, Australian Institute of Marine Science, Grover Scientific, Sea Research, BYO Guides and Snorkelling Downunder.

E-Dengue Tool

The E-Dengue team, led by Associate Professor Dung Phung, has undertaken extensive stakeholder engagement to support the co-design and implementation of the E-Dengue tool with Vietnamese health partners. Through fieldwork, consultations and workshops with the Ministry of Health, professional organisations and local health departments, the team is ensuring the tool reflects the needs of end users and supports integration into routine dengue surveillance systems.

STRATEGIC PERFORMANCE

This year, QAEHS continued to advance the priorities outlined in our strategic plan while achieving strong results against our key performance indicators. Together, these outcomes reflect sustained progress across our four strategic pillars while supporting our mission to improve human health through environmental health science.

Looking ahead

The year ahead will mark an important milestone for us as we celebrate 10 years of advancing environmental health science through research, collaboration and partnership. Building on this foundation, we will continue to expand opportunities for knowledge exchange and impact through initiatives including the Research-a-thon, which will bring researchers and stakeholders together to identify challenges and co-design solutions, and the Rapid Risk Assessment Workshops Queensland Roadshow, which will extend opportunities for knowledge exchange and capability building across the state, supporting evidence-informed responses to emerging environmental health challenges. The 2026 Annual Research Forum will provide a platform to celebrate our 10-year anniversary, to reflect on a decade of partnership, and showcase research excellence as we look towards the future of environmental health science innovation.

OUR STRATEGIC PILLARS

ORGANISATION & PEOPLE

Cultivate a dynamic and inclusive workplace culture

- Strengthen identity through alliance partnerships.
- Optimise structures and services to enable research excellence.
- Advance inclusion, equity, leadership and career development.
- Embed Indigenous engagement and cultural capability.
- Develop the next generation of research talent & industry leaders.

FINANCIAL SUSTAINABILITY

Enhance our organisational sustainability and growth

- Improve efficiency through streamlined operations.
- Diversify revenue and strengthen strategic partnerships.
- Build a collaborative, resource-optimised operating model.
- Maximise grant funding and leveraging opportunities.

RESEARCH IMPACT & PARTNERSHIPS

Drive innovation and engagement for research impact

- Align research with industry, government, & community priorities.
- Strengthen and expand strategic partnerships.
- Develop clear research pathways for emerging researchers.
- Increase impact through high-quality outputs & engagement.
- Foster interdisciplinary collaboration, global engagement, & innovation ecosystems.

RESEARCH INFRASTRUCTURE

Optimise research infrastructure for cutting-edge science

- Maintain state-of-the-art research infrastructure and equipment.
- Ensure infrastructure supports growth and future demand.
- Optimise infrastructure planning, utilisation, and investment.
- Ensure long-term sustainability of the Australian Environmental Specimen Bank.

KPI 1: Identify and contribute to solving current and emerging national and international environmental health challenges

Establish a program of high-quality interdisciplinary research

$8M New funding awarded

204 Peer reviewed publications

68 Conference presentations

7 HDR completions

25% Success rate for competitive funding grants (2025)



KPI 2: Build an expert capability in the environmental health sciences

Maintain an Environmental Health Sciences education and training program

35 HDR Candidates

3 PhD industry placements into Queensland Health

Master of Environmental Health Sciences

#4 in Australia for public health (Global Ranking of Academic Subjects 2025)

30 Students enrolled (34 in 2024-25)

#18 in the world for environmental sciences (QS World University Rankings 2026)

17 Graduates

KPI 3: To be Australia's internationally recognised research centre within the environmental health sciences

Engage with internal and external partners to deliver transdisciplinary environmental health science

2 QAEHS Theme Leaders recognised as Clarivate Highly Cited Researchers

4 Keynote and invited presentations

QAEHS Theme Leaders represented on national and international advisory and expert panels

65 Platform presentations

Collaborative Research Output

117 Co-authored with non-UQ partners

KPI 4: Provide science-based knowledge to Queensland Health and the wider community

Work with Queensland Health to target and deliver improved health outcomes for Queenslanders and provide a working environment that fosters interdisciplinary research

28 Policy citations

37 Seminar series presentations

2 Queensland Health lunchbox talks

9 Community engagement activities

Citizen Science project launched on Magnetic Island

Annual Research Forum

RESEARCH EXCELLENCE

QAEHS continues to demonstrate research excellence through internationally recognised research leadership, success in competitive funding schemes, and achievements across all career stages. These accomplishments reflect the quality, innovation and impact of our research and the strength of our research community.

Research leadership & recognition

Global research influence

Prof Kevin Thomas and Prof Jochen Mueller were recognised as Clarivate Highly Cited Researchers

Prof Kevin Thomas and Prof Jochen Mueller were recognised as *Clarivate Highly Cited Researchers*, reflecting the global influence and impact of their research contributions in environmental health sciences.

Dr Cassandra Rauert recognised among global leaders driving change

Dr Cassie Rauert was recognised in the 2026 *National Geographic 33* list of global leaders driving innovative solutions to address some of the world's most pressing challenges. The recognition highlights her contributions to environmental health research and her work advancing understanding of emerging environmental contaminants and their impacts on human health.

Dr Elvis Okoffo recognised for leadership in microplastics and environmental health research

Dr Elvis Okoffo received international recognition for his contributions to microplastics and environmental health research, including the *Dick Vethaak Award* from the Plastic Soup Foundation, recognition through the *James J. Morgan Early Career Award* for the Asia-Pacific region, and the *SETAC Australasia Early-Career Medal*, highlighting his emerging leadership in advancing understanding of plastic-related contaminants and their impacts on human health and the environment.



Editorial leadership and contribution to the global research community

Prof Jochen Mueller contributes to the global environmental science community through editorial leadership roles and as an invited keynote and plenary speaker at leading international scientific conferences. His ARC Australian Laureate Fellowship further reflects his internationally recognised expertise and leadership in environmental chemistry.

A/Prof Nick Osborne provides international research leadership through editorial roles with leading environmental health and epidemiology journals, including Editor of the *International Journal of Epidemiology* and Associate Editor of the *Archives of Environmental and Occupational Health*.

A/Prof Phong Thai contributes to global environmental science research through editorial leadership roles with *Global Environmental Science*, supporting the advancement and dissemination of research in the field.

Prof Kelly Fielding provides research leadership through contributions to international and national scientific networks, including membership of the Editorial Board of the *Journal of Environmental Psychology*, the Advisory Board for the Australian Centre for Water and Environmental Bioengineering, and the Australia New Zealand Environmental Psychology Network Steering Committee.

International scientific leadership and advisory roles

Prof Kevin Thomas provides scientific leadership through appointments to national and international advisory groups and collaborative research initiatives. He is a member of the Australian Research Council (ARC) College of Experts, Co-Chair of the Plastic Measurement Brains Trust, and a member of the Scientific Advisory Board of the UK Centre of Excellence in Water-Based Early-Warning Systems for Health Protection. He also contributes his expertise to international advisory panels, including the United Nations Environment Programme and other European scientific initiatives.

A/Prof Sarit Kaserzon has been recognised for her expertise through international scientific leadership roles, including invitations to editorial boards of leading journals and contributions to national and international research assessment activities. She was also invited to contribute to national research assessment through the Australian Research Council (ARC) College of Experts.

Research program and sector leadership

A/Prof Sarit Kaserzon provides leadership across national and international research networks, including as Theme Lead for the UQ-Exeter Institute Global Environmental Futures Theme and through leadership roles in PFAS research initiatives and scientific conferences.

Research mentorship and capability development

Prof Kevin Thomas received the 2025 UQ Faculty of Health, Medicine and Behavioural Sciences Award for Excellence in Research Mentorship, recognising his commitment to developing researchers and fostering the next generation of environmental health science leaders.



Research awards and emerging Talent

Academic/ECR Recognition

Dr Reena Que: Winner, Plastics2026 Early & Mid-Career Academic Flash Presentation.

Dr Grace Davies: Runner Up, Plastics2026 Early & Mid-Career Academic Flash Presentation.

Celebrating emerging research talent

QAEHS HDR students achieved outstanding recognition across national and international conferences and forums during 2025-26, with students receiving awards for oral presentations, posters and research communication at events including SETAC Australasia, the Queensland Mass Spectrometry Symposium, HyTECH Bi-Annual Meeting, the QAEHS Annual Research Forum and the LGC Microplastics Poster Competition.

- **Honglin Chen**: Winner, LGC Microplastics Poster Competition, March 2026.
- **Lily Pan**: 2nd Place, Best Student Presentation, HyTECH Bi-Annual Meeting, February 2026.
- **Tobias Hulleman**: 2nd Place, Best Student Poster, HyTECH Bi-Annual Meeting, February 2026.
- **Ruvini Weerasinghe**: 3rd Place, Best Student Poster, HyTECH Bi-Annual Meeting, February 2026.
- **Dhaya Nadarajan**: 2nd Place (tie) Best Student Oral Presentation, Queensland Mass Spectrometry Symposium, January 2026.
- **Nicole Schroeter**: Winner of Lightning Talk, Queensland Mass Spectrometry Symposium, January 2026.
- **Simran Kaur**: 1st Place Student Presentation, QAEHS Annual Research Forum in November 2025.
- **Marina Suzuki**: 2nd Place (tie) Student Presentation, QAEHS Annual Research Forum in November 2025.
- **Lily Pan**: 2nd Place (tie) Student Presentation, QAEHS Annual Research Forum in November 2025.
- **Marta Lopez**: 2nd Place (tie) Student Presentation, QAEHS Annual Research Forum, November 2025.
- **Haitao Lin**: Runner Up, Best Student Poster, SETAC Australasia conference, New Zealand, September 2025.

Competitive research funding

Australian Research Council (ARC) Discovery Early Career Researcher Award (DECRA) Fellowship

Dr Elvis Okoffo was awarded an ARC DECRA Fellowship for his project, Tracking absorbable plastic contaminants in drinking water. The fellowship recognises the significance, innovation and potential impact of his research, while supporting the development of the next generation of environmental health science leaders.

Diversified research funding portfolio

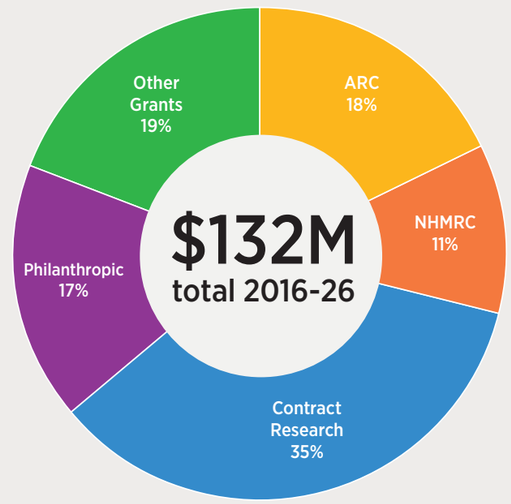
Since 2016, the Alliance has secured $132 million in research funding. In 2025–26, QAEHS researchers achieved success across competitive funding schemes and contract research, with $8 million in new research funding awarded. Outcomes from a further 33 competitive grant applications valued at $31 million, remain pending.

Twenty-nine percent of the Centre's research funding (2016-2026) is derived from competitive Australian Research Council (ARC) and National Health and Medical Research Council (NHMRC) funding schemes, reflecting our success in securing highly competitive national research investment. Beyond these major schemes, the Centre has secured a diverse portfolio of competitive funding from international and national schemes, including the US Department of Defense (DoD), Horizon Europe, the United Nations Environment Programme (UNEP), the Halton Foundation, Advance Queensland and the Australian Academy of Sciences. Details of all research grants and other projects active during the reporting period are provided in Appendix D.

$8M
New Funding 2025-26

25%
Success rate 2025-26

33
Applications currently under assessment



RESEARCH ACTIVITY

Research impact in 2025-26

QAEHS research continues to provide the evidence, surveillance systems and analytical capabilities needed to address some of the most significant environmental health challenges facing Queensland and Australia. During 2025-26, our researchers generated new insights into population exposure to drugs, tobacco, PFAS, plastics and other emerging contaminants; expanded national and international monitoring programs; and translated research findings into evidence that supports public health policy, regulation and environmental management.

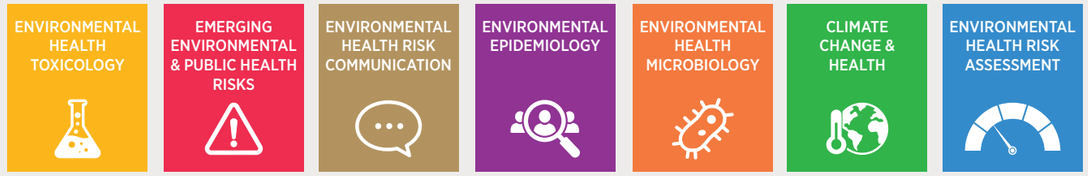
This work is underpinned by nationally unique research infrastructure, including Australia's largest wastewater surveillance network, one of the country's most comprehensive human biomonitoring programs, a plastic-minimised laboratory, and long-term environmental specimen archives that enable the tracking of population exposures over time. Collectively, these capabilities position QAEHS as a national and international leader in environmental health surveillance and exposure science.

Key achievements in 2025-26

- Continued delivery of national wastewater surveillance programs covering more than half of the Australian population, providing objective measures of population exposure to illicit drugs, tobacco and other substances.
- Generated new evidence on illicit tobacco, vaping and emerging drug use patterns, supporting government responses to rapidly changing public health and regulatory challenges.
- Expanded Australia's human biomonitoring capability, producing new insights into population exposure to PFAS, pesticides, food additives, nicotine, cannabinoids and other emerging contaminants.
- Identified previously unrecognised PFAS compounds in Australians and delivered long-term monitoring studies that continue to improve understanding of PFAS exposure and associated health risks.
- Advanced international efforts to measure micro- and nanoplastics in humans and demonstrated that reducing contact with plastics can rapidly lower exposure to selected plastic-associated chemicals.
- Developed next-generation analytical approaches using high-resolution mass spectrometry, passive sampling and machine learning to improve the detection of emerging environmental contaminants and chemical hazards.
- Generated new evidence on climate-related health risks, including heat exposure, air quality, water quality and climate-sensitive infectious diseases, helping inform adaptation and prevention strategies.
- Strengthened wastewater-based surveillance of antimicrobial resistance and secured new funding to investigate environmental drivers of antimicrobial resistance in Australia.

Research themes

The Centre's research program is structured around seven integrated themes that address priority and emerging environmental health challenges through multidisciplinary science, advanced technologies and collaboration with Queensland Health and other stakeholders. Together, these themes support research that informs risk assessment, policy and practice, translating scientific evidence into improved environmental and public health outcomes.



Research projects and activities

110 Active projects

19 Projects completed this year

117 Projects completed 2016-26

The following pages provide an overview of QAEHS research achievements in 2025–2026, highlighting our research themes, people, funding portfolio and the impact of Queensland Health investment. Further information about specific projects can be found at **https://qaehs.centre.uq.edu.au/projects**.



Wastewater surveillance for environmental hazards and exposures

ENVIRONMENTAL HEALTH MICROBIOLOGY

EMERGING ENVIRONMENTAL & PUBLIC HEALTH RISKS

ENVIRONMENTAL HEALTH TOXICOLOGY

ENVIRONMENTAL HEALTH RISK ASSESSMENT

Staff and students

7 Research Fellows

8 PhD students

Wastewater surveillance is a cornerstone of QAEHS's approach to understand population-level exposures to environmental hazards. By analysing wastewater, our researchers generate insights into the presence, distribution, and trends of chemicals, pathogens, and other contaminants affecting human health across communities. These data provide a critical foundation for understanding population exposures, informing policy, assessing the success of intervention programs and new legislation, and strengthening environmental health responses.

KEY RESEARCH ACTIVITIES

SewAus Census Program

The SewAus Census Program is QAEHS's flagship wastewater surveillance program, linking the chemical analysis of wastewater with Australian Census data to understand how population exposures vary across demographic, socioeconomic and geographic groups. Operating across 156 sites in all Australian states and territories and covering more than 50% of the Australian population, SewAus is internationally distinctive in its integration of wastewater and census-linked data and, following the 2026 Australian Census, will have data covering four Australian Census periods.

In 2025-26, SewAus celebrated its 10-year anniversary, marking a decade of data collection, methodological innovation and national collaboration. The program now underpins a broad portfolio of wastewater research, including the Australian Criminal Intelligence Commission (ACIC) National Wastewater Drug Monitoring Program (NWDMP), and supports competitive research funding, student training and international collaborations. During the year, preparations commenced for integration with the 2026 Australian Census and a new partnership with the Australian Urban Research Infrastructure Network (AURIN) to improve population estimation and enhance interpretation of wastewater data.

National Wastewater Drug Monitoring Program (NWDMP)

QAEHS continued to deliver the Australian Criminal Intelligence Commission's National Wastewater Drug Monitoring Program (NWDMP), with Reports 24 and 25 released during the reporting period. The program provides nationally consistent measures of drug consumption that inform health, policy, and law enforcement responses.

Report 25 showed continued increases in methylamphetamine and cocaine consumption nationally since 2021, with particularly strong growth observed in Queensland. These findings highlight the value of wastewater surveillance as an early indicator of emerging public health risks.

Research arising from the program continues to demonstrate the broader utility of wastewater-based epidemiology. During the reporting period:

- A study examining the impact of alcohol restrictions in Alice Springs found community alcohol consumption fell by approximately 26% following policy implementation, with reductions maintained over 12 months.
- Research into ketamine use identified increased levels of consumption across Australia between 2022 and 2025, with higher levels observed in major cities and areas of higher socioeconomic status.
- Research examining cannabis use found higher consumption in more disadvantaged and remote communities, consistent with population survey findings.

Expanding wastewater in priority settings

QAEHS continued to expand wastewater monitoring into regions where traditional information on drug use is limited. International projects funded by the ACIC commenced in Fiji and Tonga, assessing the feasibility of wastewater surveillance in these regions.

Domestically, a 2-year project in regional New South Wales improved understanding of illicit drug and pharmaceutical use in regional communities and directly informed expansion of the national monitoring network, with two study sites incorporated into the NWDMP.

Nicotine and tobacco surveillance

Research led by A/Prof Phong Thai continues to provide nationally significant evidence on tobacco, nicotine and vaping use. Analysis of wastewater data indicates that while overall tobacco consumption has declined, illicit tobacco and vaping have increased substantially, with the proportion of illicit tobacco rising from 9% to 33% of total tobacco consumption between 2017 and 2023. This work has been delivered through an ARC-funded Industry Fellowship in partnership with the Australian Taxation Office (ATO) and Queensland Health, as well as funding from the ACIC, and has directly informed government understanding of illicit tobacco supply and demand. Wastewater-derived estimates have been used by the ATO and the Illicit Tobacco and E-cigarette Commissioner to support policy development, and have also contributed to national statistical reporting, including Australian Bureau of Statistics estimates. Ongoing work with Queensland Health is comparing wastewater indicators with enforcement and regulatory data to assess the impact of policy and compliance activities on illicit tobacco markets.

Wastewater surveillance of emerging drugs

Dr Richard Bade's research applies wastewater-based epidemiology to detect and monitor emerging psychoactive substances (NPS) and other drug trends across Australia and internationally. Over the reporting period, this work has expanded through new collaborations in India and Nepal, supporting the analysis of illicit drugs, NPS, and related compounds in regions of growing importance for both consumption and manufacturing. In parallel, his team has advanced the integration of wastewater data with other surveillance systems, including toxicology, drug seizure, and clinical datasets, to better understand the strengths and gaps across data sources. This includes collaborations with Australian networks such as the Emerging Drugs Network of Australia (EDNA), the Emerging Drugs Network of Australia – Victoria (EDNAV) and NSW Health to compare wastewater signals with hospital presentations and drug checking data. Internationally, wastewater-derived insights are contributing to global monitoring efforts, including collaboration with the United Nations Office on Drugs and Crime, where QAEHS data and visualisation tools are informing the development of enhanced NPS surveillance platforms. Additional work this year has explored targeted monitoring in mass gathering settings, such as major sporting events, and methodological development, including approaches to detect polydrug use. Together, these activities strengthen the role of wastewater analysis as a complementary tool within broader drug surveillance systems.

Community health surveillance in Springfield

During the reporting period, QAEHS was awarded a UQ Springfield Seed Grant to establish a prototype wastewater-based health surveillance system for the Springfield community. Led by Dr Ben Tscharke, the project will pilot the use of wastewater analysis to generate population-level insights into substance use, mental health treatment, chronic disease management and lifestyle behaviours. By benchmarking results against other Brisbane communities and developing accessible reporting tools, the project aims to support evidence-based decision-making for both policymakers and the community, while demonstrating the potential of wastewater surveillance as a scalable approach to localised population health monitoring.

PUBLICATION HIGHLIGHTS

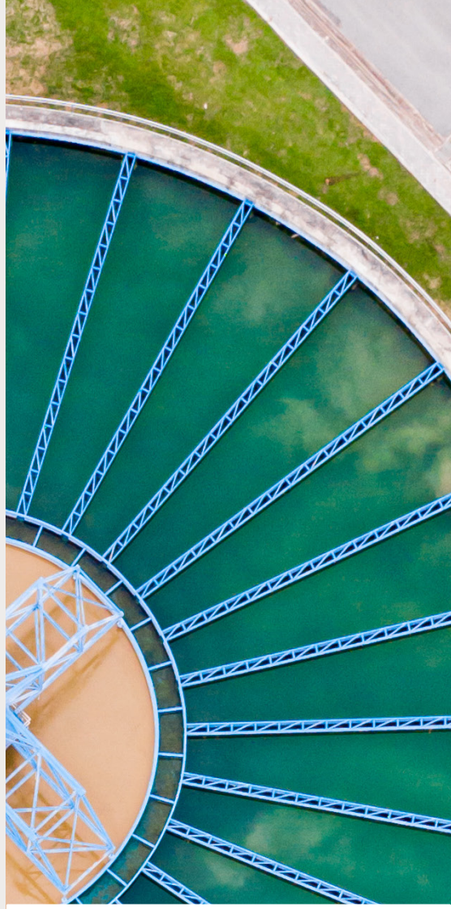
Wang et al. (2026) used wastewater from across Australia to track illicit tobacco and vaping use, showing that wastewater-based surveillance can provide a national picture of population trends and changes in the consumption of these products over time.

Nadarajan et al. (2026) demonstrated that wastewater analysis can act as a global early-warning system for new psychoactive substances, providing near real-time insights into emerging drug use patterns and helping public health authorities detect and respond to new drug threats more rapidly.

Ren et al. (2025) systematically evaluated 18 deuterium-labelled pharmaceutical compounds as in-sample chemical tracers for environmental monitoring and identified combinations of stable and unstable tracers that can be added to wastewater samples to verify preservation, storage, and transport conditions, providing a novel quality-control tool for assessing sample integrity throughout large-scale sampling campaigns.

Thai et al. (2026) found that tetrahydrocannabinol (THC) use in a Japanese population remained very low by international standards but increased steadily between 2020 and 2023, while cannabidiol (CBD) use was comparatively common, demonstrating the value of wastewater monitoring for tracking population-level drug use trends and informing public health policy.

Zhao et al. (2026) developed and validated a high-throughput, cost-effective liquid chromatography tandem mass spectrometry (LC-MS/MS) method for measuring 30 psychoactive pharmaceuticals in wastewater, demonstrating reliable detection, improved sample stability through acidification, and substantial savings in processing time and cost, supporting more efficient wastewater surveillance of population-level medicine use and potential public health risks.



KEY FUNDING AND PLANNED SUBMISSIONS

24 Current Projects

21 Submitted Applications

10 Planned Submissions



RESEARCH SPOTLIGHT

Identifying sources of contaminants of concern entering Australian sewers

2025-2028

Every day, chemicals from medications, personal care products, industrial processes, and household activities wash into our sewers. Many of these substances pass through wastewater treatment plants largely unchanged and end up in our waterways and environment. The scale of the problem is significant, but until now, a major piece of the puzzle has been missing: we have not had a reliable way to work out where these chemicals are actually coming from.

This project tackles that gap head on. Working alongside Australian water utilities, environmental regulators, and health authorities, our team at The University of Queensland is building the foundation for a national program that systematically tracks these chemicals back to their sources, whether that is households or specific industries discharging trade waste into the sewer network. Understanding where these substances enter the system is the first and most critical step toward being able to do something about it.

The project has three main goals. First, we are establishing baseline chemical profiles for residential wastewater by monitoring sewer networks that serve purely residential areas. Second, we are creating Australia's first Trade-waste library, a curated collection of industrial wastewater samples from a range of trade waste premises, which will allow us to build detailed chemical fingerprints for different industry types. Third, we are developing a digital database that links these chemical profiles to their industry sources and captures their potential impacts on the sewer system and environment.

Generating data which has direct impacts on policy is what makes this project genuinely exciting. Bringing together researchers, water utilities, and regulators means we are not just producing academic findings; we are building tools and systems that can be picked up and used by the people who manage our water environment every day. The database and specimen bank being developed here will be world-first resources, and the monitoring approaches we establish will be scalable across the country. The longer-term hope is that this work leads to smarter, more targeted regulation of chemical discharges, better protection of our waterways, and ultimately less exposure risk for communities and ecosystems across Australia.

Understanding third hand exposure of Australians to methamphetamine

2022-2025

The high prevalence of methamphetamine (MA) use in Australia means that many residential properties are being contaminated with MA smoke residues, causing considerable concern among tenants and property owners. To protect public health, Queensland Health supported QAEHS researchers, with colleagues from the University of South Australia (UniSA) and Massey University (New Zealand), to conduct a project to investigate the level of contamination and risks associated with third hand exposure to methamphetamine smoke residues in residential properties. In addition to the support from Queensland Health (Environmental Hazards Unit), the project received support from Forensic Science Queensland, MTK Group and two community-based partners, Churches of Christ Housing Services Limited, and Community Housing Limited.

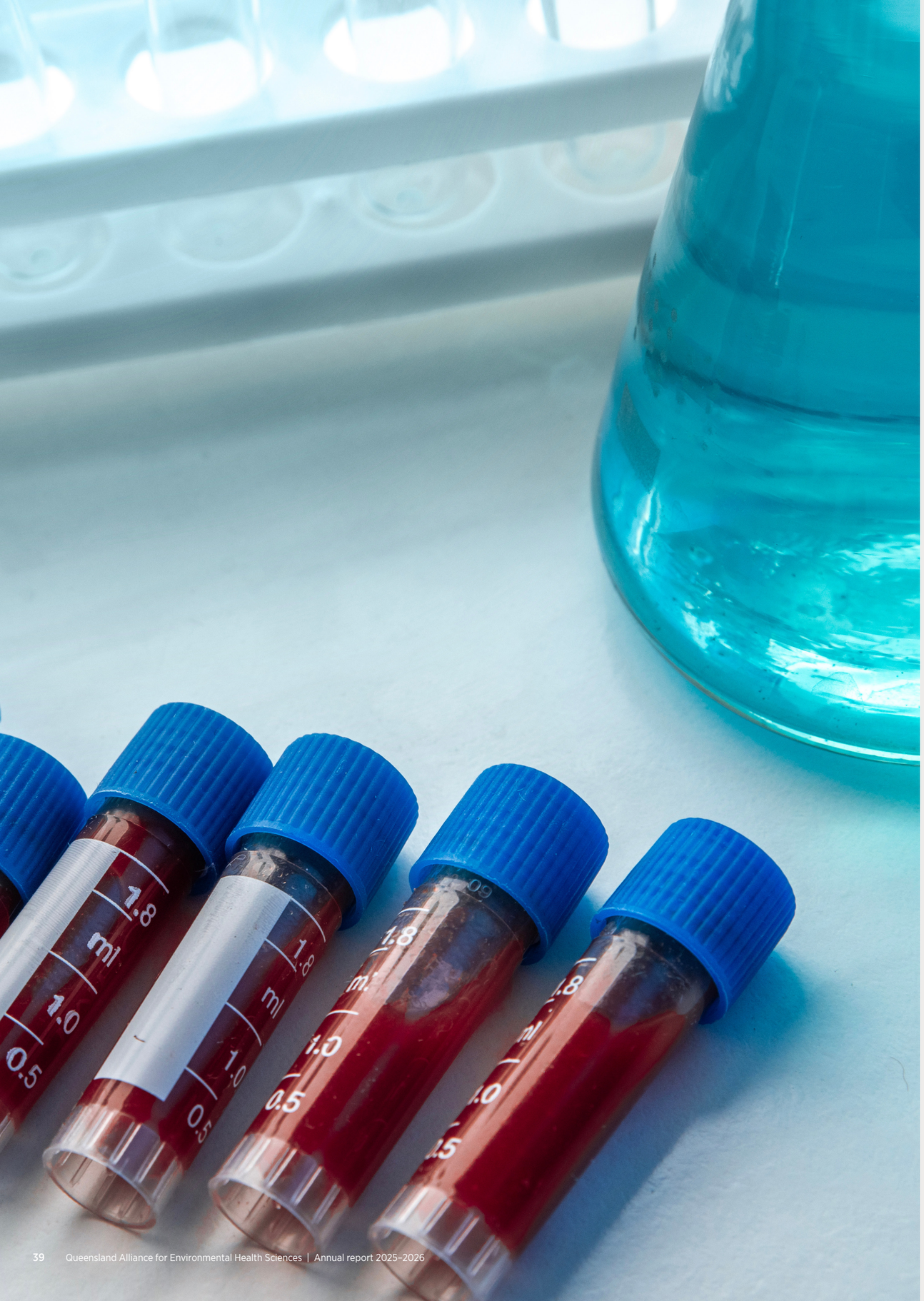
The research team has worked closely with industry partners to address issues that are of most concern to the regulators and communities. At completion, the project has successfully assessed exposure pathways (via air, dust, surfaces) that could influence the level of exposure to methamphetamine by humans in residential settings. Our project has delivered the baseline of methamphetamine contamination by smoking in Australia and demonstrated the importance of air exposure as a pathway for third hand exposure. Realistic assessment of methamphetamine penetration through human skin was also conducted and show a low percentage of methamphetamine penetration through skin. These findings have enabled a better and more comprehensive assessment of risks posed by third hand exposure to methamphetamine in residential settings. Through the connection of the Queensland Health network, the research team has supported the preparation of a new Guidance Statement on public health risks of residues from smoking methylamphetamine in homes for enHealth and supports the *Guidelines for Testing and Remediation of methamphetamine smoke residues in residential properties* by the Western Australia Department of Health. Such documents will ensure better management of risks from third hand exposure to methamphetamine and help protect public health, particularly for vulnerable populations like children and young people.

Using multiple data sources to understand the opioid crisis in Australia

2024-2027

The opioid crisis in North America has raised a growing concern about the misuse of opioids in Australia as Australians are among the highest consumers of opioids in the world. The risk is even higher for fentanyl, which could be illegally trafficked and distributed to users without any limitation. To understand the actual situation in Queensland, Queensland Health has supported QAEHS researchers to investigate the use of major opioids in the communities through wastewater analysis, a relatively new surveillance approach to monitor substance use in the population. Along with Queensland Health (Monitored Medicines and Compliance Unit), the Forensic Scientific Services and the Australian Criminal Intelligence Commission supported the project, providing different sources of data for triangulation purposes.

The project has delivered positive news for Australia and Queenslanders, our analysis indicated that opioid consumption in Australia responded positively to more stringent regulation. A 45% reduction in oxycodone consumption in Australia from 2019 to 2020 coincided with national policy changes that aimed to reduce consumption of prescription opioids. Fentanyl consumption measured by both wastewater and dispensing data also shows a stable declining trend, suggesting that illicit fentanyl does not play a significant role in the overall fentanyl consumption in Australia. Such critical information will help public health and law enforcement agencies to formulate their future policies to better manage and prevent any opioid crisis in Australia.



Human biomonitoring for environmental exposures

EMERGING ENVIRONMENTAL & PUBLIC HEALTH RISKS

ENVIRONMENTAL HEALTH TOXICOLOGY

ENVIRONMENTAL HEALTH RISK ASSESSMENT

Staff and students

10 Research Fellows

8 PhD students

QAEHS continues to expand Australia's national human biomonitoring capability, providing critical evidence on population exposure to environmental contaminants, consumer project chemicals and lifestyle-related exposures. Drawing on more than two decades of biomonitoring data and the Australian Environmental Specimen Bank, QAEHS researchers are tracking exposure trends across the Australian population and identifying emerging contaminants of public health interest. During 2025-26, research focused on nicotine and cannabinoids, dietary biomarkers, pesticides, UV filters and other consumer product chemicals, and environmental exposure modelling.

KEY RESEARCH ACTIVITIES

Nicotine, tobacco and cannabinoid exposure

Dr Qiuda Zheng continued to advance QAEHS's capability to assess population exposure to tobacco, nicotine and cannabinoid products through the development of new biomonitoring methods and collaborative research. During the reporting period, QAEHS researchers contributed to studies that improved the interpretation of tobacco and nicotine exposure data by examining biomarkers of tobacco use. One study, published in the journal Nicotine and Tobacco Research, provided a preliminary estimate of the urinary excretion of anabasine, a tobacco-specific alkaloid that can be used to distinguish tobacco use from other nicotine sources such as vaping products. The findings will improve the accuracy of population-level tobacco consumption estimates derived from biomonitoring and wastewater surveillance approaches.

Dr Zheng also led the development and validation of a new analytical method for measuring THC, CBD and their major metabolites in urine. The method is already being applied to collaborative studies and will support future investigations of long-term cannabinoid exposure trends in the Australian population.

Occupational and environmental chemical exposures

A/Prof Sarit Kaserzon completed an ARC Linkage Project investigating occupational exposure to glyphosate in collaboration with Queensland Health and other partners. The research identified factors influencing exposure during chemical application and demonstrated that both application methods and personal protective equipment can significantly affect exposure levels. Findings are being translated into practical recommendations to support safer occupational practices.

PhD candidate Kara Fry commenced research aimed at improving understanding of environmental chemical exposure pathways, including PFAS. Using 25 years of human biomonitoring data collected by QAEHS, the project is developing toxicokinetic models to estimate population environmental chemical intake and identify the relative contribution of different exposure sources. The work will provide new insights into the drivers of environmental chemical exposure in Australia.

Emerging consumer product chemicals

Dr Reena Danielle Que completed her PhD and commenced a postdoctoral position focused on emerging consumer product chemicals. Her research produced the first assessment of benzotriazole ultraviolet stabiliser (BUVS) exposure in Australians, detecting several compounds in archived serum samples from more than 2,300 individuals and providing important baseline exposure data.

Building on this work, new projects are investigating exposure to ultraviolet filter 4-methylbenzlidene camphor (4-MBC) and neonicotinoid insecticides, addressing knowledge gaps around chemicals currently receiving increasing regulatory attention internationally.

Dietary exposures and ultra-processed foods

Using archived urine samples from the Australian Environmental Specimen Bank, PhD candidate Nicole Schröter is examining biomarkers associated with ultra-processed food consumption across the Australian population. She published the first Australian population-level assessment of low- and no-calorie sweeteners, identifying widespread exposure to several artificial sweeteners and higher saccharin exposure among young children compared with adults. These findings demonstrate the value of biomonitoring for understanding dietary exposures and identifying population groups with elevated exposure.

PUBLICATION HIGHLIGHTS

Wang et al.'s (2026) analysis of pooled urine samples representing nearly 14,000 Australians found that while exposure to bisphenol A (BPA), triclosan (TCS) and triclocarban (TCC) declined between 2012 and 2021, exposure to the bisphenol A substitute bisphenol S (BPS) increased and paraben exposure remained elevated in children, with several chemicals exceeding health-based reference values and indicating ongoing population-level exposure concerns.

Liu et al. (2025) analysed 4,800 pooled Australian urine samples collected in 2012–2013 and 2022–2023 and found widespread exposure to melamine, cyanuric acid (CYA), and ammelide, with particularly high cyanuric acid exposure among children and adolescents and no significant differences by sex or time period, highlighting ongoing population exposure and potential health concerns for some Australians.

Zammit et al. (2026) evaluated the use of deconjugation enzymes in human biomonitoring and showed that enzyme impurities and contamination can introduce significant measurement errors for bisphenols, phthalates, and oxidative stress markers, providing practical recommendations to improve the accuracy and reliability of exposure assessments.

RESEARCH SPOTLIGHT

Reducing glyphosate exposure from high use practices

2023-2026

This ARC Linkage project addresses a critical gap in understanding how occupational exposure to glyphosate, the most commonly used herbicide in Australia and globally, occurs in real-world settings, and how risks can be effectively reduced. Glyphosate is extensively used across agriculture, transport, and urban land management, yet there remains limited high-quality evidence on exposure pathways and the effectiveness of current safety practices. This creates uncertainty for regulators, workers, and health services seeking to protect those most at risk. Earlier work published by QAEHS investigating human exposure to glyphosate in the general population and occupational settings has identified significantly elevated exposure risks for occupational users.

Led by A/Prof Sarit Kaserzon in partnership with Queensland Health, the Queensland Department of Transport and Main Roads, Massey University, and industry partner 3M, the ARC Linkage project aimed to bring together expertise in environmental science, occupational hygiene, epidemiology, and public health. Industry partners have played a key role in shaping the research to ensure it reflects real-world application practices and delivers findings that are directly relevant to frontline workers and policy needs.

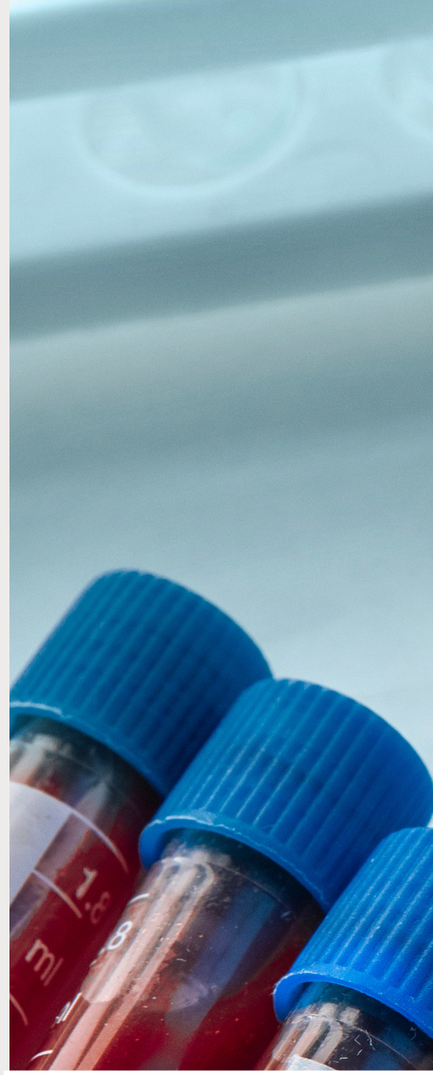
The project has made significant progress in measuring and understanding how glyphosate exposure occurs during routine use. Using advanced biomonitoring and environmental sampling approaches, the team has collected data from occupational users in Australia, linking exposure levels to specific behaviours and product application methods. Early findings demonstrate that both the type of personal protective equipment (PPE) used and the way glyphosate is applied can substantially influence exposure levels and importantly, exposure can be substantially reduced by adhering to safety practices.

The project has generated new tools and methods for assessing chemical exposure, alongside emerging datasets that are among the first of their kind in Australia. These insights are already informing the development of evidence-based recommendations on PPE and safer application practices, with guidance currently being prepared for publication.

This issue is important to Queensland Health because glyphosate is widely used across key sectors in Queensland including agriculture, transport, and urban land management, meaning a large number of workers may be regularly exposed. Despite this widespread use, there is still limited real-world evidence on how exposure occurs and whether current safety practices are sufficient, creating uncertainty for health agencies responsible for protecting worker and community wellbeing. For Queensland Health, understanding these exposure pathways is essential to support evidence-based guidance, workplace safety standards, and regulatory decisions. Occupational groups such as farmers, council workers, and roadside maintenance crews may face higher exposure risks, and without clear, practical guidance, there is potential for preventable health impacts over time. Improving knowledge in this area also has broader community benefits. Reducing occupational exposure helps minimise the likelihood of environmental contamination and secondary exposure pathways (e.g. through drift or residues), supporting safer living environments. Ultimately, this research enables Queensland Health to better protect high-risk workers, inform policy, and ensure that commonly used chemicals are managed in a way that safeguards both public health and essential industries.

The potential impact for Queensland Health is substantial. The findings will support clearer, evidence-based guidelines for occupational safety, inform regulatory decisions, and help target interventions to reduce exposure among high-risk worker groups such as farmers and council staff. In the longer term, the project provides a framework that can be applied to other widely used chemicals, strengthening chemical risk management more broadly to strengthen health protection.

What excites us most about this project is its strong translational focus, moving beyond measuring exposure to delivering practical, implementable solutions that can directly improve worker safety and public health outcomes across Queensland and beyond.



KEY FUNDING AND PLANNED SUBMISSIONS

20 Current Projects

20 Submitted Applications

8 Planned Submissions



Per- and poly-fluoroalkyl substances (PFAS)

ENVIRONMENTAL HEALTH MICROBIOLOGY

ENVIRONMENTAL HEALTH RISK COMMUNICATION

EMERGING ENVIRONMENTAL & PUBLIC HEALTH RISKS

ENVIRONMENTAL HEALTH TOXICOLOGY

ENVIRONMENTAL HEALTH RISK ASSESSMENT

Staff and students

2 Research Fellows

4 PhD students

Per- and poly-fluoroalkyl substances (PFAS) remain a major focus of QAEHS research, spanning human exposure assessment, environmental monitoring, risk communication and analytical innovation. Through collaborations with government, industry, and international partners, QAEHS is generating evidence to better understand PFAS sources, exposure pathways and potential health and environmental risks, while supporting regulatory and environmental management decisions.

KEY RESEARCH ACTIVITIES

Understanding PFAS exposure in Australians

During the reporting period, QAEHS researchers expanded understanding of PFAS exposure in the Australian population using advanced high-resolution mass spectrometry and non-target screening approaches. A recent study identified 14 PFAS compounds in pooled Australian human serum samples, including two compounds (2:1 H-PFESA and HFPrD) not previously reported in humans. These findings demonstrate that population exposures extend beyond those routinely measured through targeted monitoring programs and highlight the value of advanced analytical approaches for identifying emerging PFAS.

QAEHS also contributed to the first Australian study of trifluoroacetic acid (TFA), an ultra-short-chain PFAS of growing international concern. Analysis of more than 6,000 archived urine samples found TFA was present in all pooled samples analysed, providing important baseline evidence of widespread exposure across Australia and demonstrating the value of long-term biomonitoring archives for investigating emerging contaminants.

Monitoring exposure in high-risk populations

Dr Sandra Nilsson continued to lead longitudinal studies examining PFAS exposure in firefighters and emergency services personnel. The Airservices III project (2024-2027) builds on more than a decade of previous monitoring and is assessing long-term trends in PFAS exposure and associated health outcomes. Earlier studies demonstrated that, although PFAS concentrations in firefighters have declined following the replacement of PFAS-containing firefighting foams, many current and former firefighters continue to have higher PFAS concentrations than the general Australian population.

QAEHS also commenced follow-up monitoring of Norfolk Island firefighters, providing an opportunity to assess changes in PFAS exposure over time within this cohort and generate evidence on the persistence of occupational exposures.

PFAS risk communication

Research led by Prof Kelly Fielding continued to examine how PFAS risks are understood by the community and how environmental health information can be communicated more effectively. Studies published during the reporting period showed that audience characteristics, rather than message framing alone, strongly influence PFAS risk perceptions and that many publicly available PFAS factsheets are written above the reading level of the general public. Ongoing work is examining differences in public trust, knowledge and information needs to support more targeted risk communication approaches.

Emerging PFAS sources and pathways

A/Prof Sarit Kaserzon and Dr Fisher Wang continued an ARC Linkage Project investigating PFAS and other chemicals across food packaging, recycled and compost reuse streams. Conducted with government and industry partners, including Queensland Health, the project is generating evidence on how PFAS-containing materials move through resource recovery pathways and is helping inform future waste management, circular economy and regulatory initiatives.

Understanding PFAS risks and impacts

To strengthen understanding of PFAS health impacts, PhD candidate Angus Bagley commenced research investigating the biological effects of PFAS exposure using advanced omics approaches. The project aims to develop both targeted and non-targeted analytical methods at QAEHS to measure omics (e.g., metabolites and lipids) in archived serum samples collected from Airservices Australia firefighters over the past decade. By combining these data with previously measured PFAS concentrations and clinical information, the research aims to identify biological markers associated with long-term PFAS exposure and determine whether exposed firefighters exhibit distinct metabolic profiles compared with less-exposed populations.

QAEHS researchers also published a study led by Dr Suzanne Vardy, DETSI, evaluating whether existing perfluorooctanesulfonic acid (PFOS) water quality guidelines adequately protect freshwater wildlife. The research found that PFOS bioaccumulation within aquatic food webs can occur even where water concentrations meet current guideline values, suggesting ecological risks may be underestimated when assessments rely solely on water concentrations. The findings support consideration of bioaccumulation-based approaches in future risk assessment frameworks.

Building national and international monitoring capability

QAEHS continued to strengthen international PFAS monitoring through deployment of passive sampling technologies developed by A/Prof Sarit Kaserzon and colleagues. During the reporting period, QAEHS researchers supported a United Nations Environment Programme monitoring campaign in Africa by providing technical training and analytical support, helping build environmental monitoring capability in participating countries.

QAEHS are leading the AQUA-GAPS international monitoring network, which now supports monitoring activities across approximately 45 countries and generates one of the world's largest datasets on PFAS occurrence in aquatic environments. During the reporting period, the project was further strengthened through the addition of Marie Curie Fellow Dr Pavla Cetl, who is using the extensive AQUA-GAPS archive to investigate emerging non-polar contaminants and identify previously unrecognised chemicals of potential concern in aquatic environments globally. This work broadens the scope of AQUA-GAPS beyond PFAS and reinforces QAEHS's contribution to international environmental monitoring and chemical risk assessment.

PUBLICATION HIGHLIGHT

Thai et al. (2025) conducted a field-scale rainfall simulation study which showed that per- and polyfluoroalkyl substances (PFAS) retained in concrete contaminated by historical aqueous film-forming foam (AFFF) use can act as a long-term secondary pollution source, with compounds such as perfluorooctane sulfonate (PFOS), 6:2 fluorotelomer sulfonate (6:2 FTS), and perfluorohexane sulfonate (PFHxS) leaching into runoff water during rainfall events, although less than 0.1% of the PFAS stored in the concrete surface was released per event.

RESEARCH SPOTLIGHT

Chemicals in compostable food contact paper packaging materials

2024-2027

This ARC Linkage Project addresses a growing challenge in the transition to a circular economy: ensuring that "sustainable" food packaging materials are genuinely safe for human health and the environment. As single-use plastics are phased out, compostable and recyclable paper-based food contact materials are increasingly used across Australia. However, these products can still contain persistent and potentially harmful chemicals such as PFAS and plastic additives, raising concerns that they may contaminate recycling and composting systems, environments and re-enter the food chain.

Led by A/Prof Sarit Kaserzon and Dr Fisher Wang, the project brings together Queensland Health, the Department of Environment, Tourism, Science and Innovation (DETSI), New South Wales Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW), and the Australian Packaging Covenant Organisation, alongside experts in analytical chemistry, agriculture, waste management, and regulatory policy. This partnership ensures the research is closely aligned with regulatory priorities and real-world industry practices, helping to bridge the gap between scientific evidence and practical decision-making.

Since commencing in 2024, the project has made strong early progress in identifying and characterising chemicals present in compostable food packaging products used in Australia. Using advanced targeted and non-targeted analytical techniques, the team is beginning to map the PFAS chemical profiles of these materials. Initial findings suggest PFAS are commonly applied to compostable materials, whether intentionally or unintentionally added. Using a series of advanced analytical methods the project further highlights that the current limited screening methods used to assess PFAS are not fit for purpose as additional unidentified organic fluorine chemicals are present in formulations – which have not yet been characterised. Furthermore, experiments and data being generated to date are improving our understanding of how these chemicals behave during composting processes, including whether they persist, degrade, or transfer into plant materials and other environmental compartments.

Importantly, the project is generating new methodologies and national capability to systematically assess chemical risks across the full lifecycle of consumer packaging from production and use through to waste recovery. These emerging datasets and methods are expected to be among the first in Australia to directly link food packaging with downstream environmental and exposure risks.

This issue is important to Queensland Health because compostable and recyclable food packaging, while designed to reduce environmental harm, may unintentionally introduce persistent and potentially toxic chemicals into the food system, environment, and waste streams. Chemicals such as PFAS are known for their persistence, ability to bioaccumulate, and links to adverse health outcomes, meaning even low-level, long-term exposure could pose risks to communities. This creates a dual challenge: supporting the transition to more sustainable materials while ensuring these alternatives do not compromise public health. Contamination of compost, soil, and potentially food products could have downstream impacts on agriculture, water quality, and human exposure, particularly for vulnerable populations. Addressing this issue helps ensure that circular economy initiatives are safe, evidence-based, and protective of community health - reducing future regulatory, environmental, and healthcare burdens across Queensland.

The findings from the project will support the development of evidence-based guidelines for safer packaging materials, inform regulatory frameworks, and help ensure that circular economy initiatives do not inadvertently introduce new public health risks. In addition, the project will provide practical methods and protocols to support decision-making frameworks to help industry and regulators identify and phase out problematic chemicals, reducing long-term environmental contamination and remediation costs.



KEY FUNDING AND PLANNED SUBMISSIONS

14 Current Projects

3 Submitted Applications

2 Planned Submissions



Plastics and plastic-related chemicals

EMERGING ENVIRONMENTAL & PUBLIC HEALTH RISKS

ENVIRONMENTAL HEALTH TOXICOLOGY

Staff and students

10 Research Fellows

14 PhD students

QAEHS is at the forefront of research investigating the presence and impacts of plastics and plastic-associated chemicals in the environment and the human body. By combining analytical innovation, human biomonitoring, exposure assessment and translational health research, QAEHS is helping to address critical knowledge gaps and support evidence-based decision-making.

KEY RESEARCH ACTIVITIES

Establishing global standards for measuring plastics in humans

The Minderoo Centre – Plastics and Human Health continued to play a leading international role in advancing the measurement of micro- and nano-plastics (MNPs) in human tissues. Led by Prof Kevin Thomas, one of the team's major research focuses has been on addressing one of the most significant challenges facing the field: how to confidently identify and quantify plastic particles in complex biological samples.

A major outcome during the reporting period was the publication of a paper in the journal *Environment & Health* entitled "Communicating Confidence in the Reliability of Micro- and Nanoplastic Identification in Human Health Studies", developed in collaboration with the international Plastic Measurement Brains Trust (PMBT). The paper, authored by 22 international researchers, utilises well-established frameworks from forensic science to propose the first structured framework for communicating confidence in reporting measurements of MNPs in human tissues, recognising that current analytical approaches often cannot provide the same level of certainty routinely expected for trace chemical contaminants such as PFAS. The framework establishes a pathway for moving the field from presumptive (less certainty) identification of particles towards increasingly indicative and ultimately unequivocal (high certainty) evidence of human exposure, providing a foundation for future health and risk assessment studies. Importantly, the framework can also be applied to environmental matrices beyond human samples, including drinking water.

The work is closely linked to the Centre's Horizon Scanning Project, led by postdoctoral researcher Dr Grace Davies, which is evaluating emerging analytical techniques for the identification and characterisation of nanoplastics in human tissues. Through extensive engagement with instrument manufacturers and international researchers, the project has assessed the capabilities and limitations of next-generation imaging and chemical characterisation technologies. These activities have informed the acquisition of new analytical instrumentation, which will substantially enhance QAEHS's ability to visualise, size and chemically characterise MNPs. Over the coming year, these systems will be integrated into new analytical workflows, positioning QAEHS as a global leader in the measurement of plastics in human tissues.

To support international harmonisation efforts, Dr Davies organised and convened a specialist workshop on North Stradbroke Island that brought together five leading research groups from around the world to identify practical solutions for improving the analysis and reporting of MNPs in human biomonitoring studies. The workshop established several new international collaborations and is expected to result in a publication outlining priorities for advancing the field. Additionally, members of the PMBT met in Brisbane ahead of the Plastics2026 Conference, hosted by QAEHS, to further develop a proposed international reporting checklist that will provide researchers, reviewers and journal editors with a framework for assessing the reliability and quality of studies reporting plastics in human tissues.

A complementary review led by PhD candidate Lily Pan highlighted the importance of considering biological plausibility when interpreting reports of plastic particles in humans and identified priorities for improving future research.

Understanding and reducing human exposure to plastics

QAEHS researchers contributed to the landmark PERTH (Plastic Exposure Reduction Transforms Health) Trial, the first randomised controlled trial to examine whether reducing contact with plastics can lower human exposure to plastic-associated chemicals. The study demonstrated that replacing commonly used plastic-packaged foods, kitchenware and personal care products with low-plastic alternatives for seven days substantially reduced exposure to selected phthalates and bisphenols, providing some of the strongest evidence to date that everyday consumer choices can influence chemical exposure.

Research led by Dr Elvis Okoffo is investigating another important exposure pathway: drinking water. The team published one of the first comprehensive assessments of microplastics and nanoplastics in Australian drinking water and Dr Okoffo commenced an ARC DECRA Fellowship examining the sources, occurrence and removal of absorbable plastic particles in drinking water systems. The findings will support future water quality assessment and management.

Dr Okoffo and colleagues also reported that common consumer products, including polypropylene kettles, can release microplastics and nanoplastics during normal use. This work is helping to identify potential sources of everyday exposure and informing future studies of exposure reduction strategies.

Plastics exposure in healthcare settings

Dr Cassandra Rauert and Dr Fisher Wang established a new research program examining human exposure to plastics and plastic-associated chemicals arising from medical devices and healthcare environments. Working with clinical partners across multiple Queensland hospitals, the program aims to better understand patient exposure during medical care and investigate implications for health outcomes and recovery.

PUBLICATION HIGHLIGHTS

De-La-Torre et al. (2026) developed a method to detect and measure particles from antifouling boat paints in marine sediments, providing a new way to track this often-overlooked source of pollution in coastal environments.

Nur Eraslan et al. (2026) found microplastics in snow collected from a remote high-mountain national park in Türkiye, showing that plastic pollution can be transported through the atmosphere and deposited even in relatively pristine environments.

Jeffries et al. (2026) measured nanoplastic and microplastic contamination in Australian carbonated beverages using pyrolysis–GC–MS. A key finding was that PET oligomers present in beverages can interfere with PET measurements, highlighting an important analytical challenge and the need for careful method validation when quantifying plastic particles in food and drink.



KEY FUNDING AND PLANNED SUBMISSIONS

16 Current Projects

15 Submitted Applications

1 Planned Submission



Advanced monitoring and analytical techniques

ENVIRONMENTAL HEALTH MICROBIOLOGY

EMERGING ENVIRONMENTAL & PUBLIC HEALTH RISKS

ENVIRONMENTAL HEALTH TOXICOLOGY

ENVIRONMENTAL HEALTH RISK ASSESSMENT

Staff and students

14 Research Fellows

9 PhD students

QAEHS continues to develop the advanced analytical and monitoring capabilities needed to identify, quantify and understand emerging environmental health risks. Through innovations in high-resolution mass spectrometry, passive sampling, machine learning and exposure assessment, QAEHS researchers are improving the detection of environmental contaminants, strengthening surveillance systems and providing evidence to support public health protection.

KEY RESEARCH ACTIVITIES

Expanding next-generation chemical surveillance

QAEHS researchers continued to advance the application of high-resolution mass spectrometry (HRMS) for environmental monitoring and chemical surveillance. Supported through the Australian Research Council (ARC), National Health and Medical Research Council (NHMRC), and international funding programs, the team has developed and applied sophisticated screening approaches capable of detecting a far broader range of chemicals than traditional targeted monitoring methods. During the reporting period, collaborations with Seqwater and the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) identified emerging PFAS, pesticides, pharmaceuticals and other contaminants not routinely included in conventional monitoring programs, helping agencies better understand environmental chemical risks.

During the year, QAEHS also secured a new ARC Linkage Project, that incorporates HRMS and machine learning to improve early detection of chemical hazards in drinking water. Co-designed with water utilities, regulatory agencies and international partners, the project aims to develop an innovative data-driven framework for identifying unusual or emerging contaminants before they become significant public health concerns.

Complementing these initiatives, QAEHS secured a National Environmental Science Program project evaluating innovative approaches for the rapid screening of chemicals of concern in consumer products and articles. The project aims to assess a range of emerging analytical and sample preparation technologies capable of providing faster, more cost-effective alternatives to traditional laboratory-based chemical analysis. The project will compare the performance of these rapid screening approaches against conventional targeted chemical analyses and develop a practical framework to guide the selection of appropriate methods for different chemicals and product types.

Monitoring environmental and human exposure pathways

Dr Fisher Wang's ARC Discovery Early Career Researcher Award reached its final stages, establishing the foundations of Australia's first national indoor chemical exposure monitoring cohort. Using passive samplers and advanced chemical screening approaches, the project has generated one of the country's most comprehensive datasets on indoor chemical exposure and created an important platform for future studies linking indoor environments, chemical exposure and health outcomes.

QAEHS researchers also continued work with the Australian Plague Locust Commission to evaluate passive sampling approaches for pesticide monitoring used during aerial spray operations. Findings demonstrated that passive samplers can effectively measure pesticide concentrations and distribution during spray events and may provide a practical tool for improving exposure assessment and environmental risk management.

Applying advanced methods to emerging environmental questions

Advanced analytical techniques developed at QAEHS are increasingly being applied to investigate emerging environmental exposure questions across both human and ecological systems.

A/Prof Sarit Kaserzon and collaborators are analysing 25 years of archived samples from endangered little penguin populations in NSW to examine long-term exposure trends for emerging contaminants and support future conservation and risk assessment efforts.

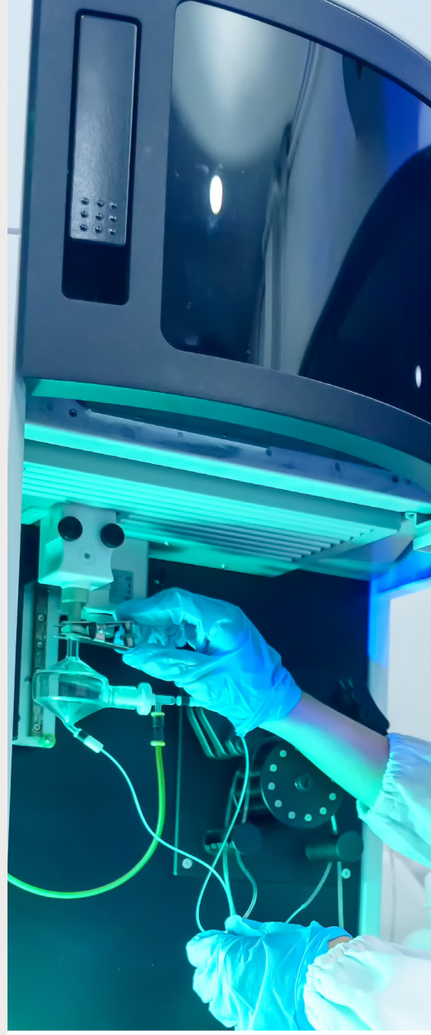
In a separate project, glyphosate and its primary metabolite aminomethylphosphonic acid were measured in urine from more than 70 domestic dogs in Queensland. The study provided the first evidence of widespread glyphosate exposure in Australian pet dogs and highlighted the need for further research into exposure pathways and potential health implications.

PUBLICATION HIGHLIGHTS

Weir et al. (2026) compared laboratory and field measurements of how quickly organic chemicals break down in a subtropical river and found that biodegradation rates can differ substantially between laboratory tests and real-world conditions, highlighting the importance of field-based data for improving environmental fate and risk assessments.

He et al. (2025) analysed archived Australian butter samples from 1944 to 1999 and found that concentrations of organochlorine pesticides (OCPs), including dichlorodiphenyltrichloroethane (DDT) and hexachlorocyclohexane (HCH), as well as polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs), and polychlorinated alkanes (PCAs), generally peaked in the 1950s and 1960s and then declined markedly following regulatory restrictions and bans, demonstrating the effectiveness of environmental regulations in reducing persistent organic pollutant contamination in the food chain over time.

Nam et al. (2026) found that airborne methamphetamine can contribute to exposure in contaminated residential properties and may persist at low levels after remediation. The study indicated that air sampling could serve as a sensitive additional tool for identifying significant contamination and informing evidence-based public health guidance and remediation standards.



KEY FUNDING AND PLANNED SUBMISSIONS

36
Current Projects

19
Submitted Applications

5
Planned Submissions



Environmental epidemiology

CLIMATE CHANGE & HEALTH

EMERGING ENVIRONMENTAL & PUBLIC HEALTH RISKS

ENVIRONMENTAL HEALTH TOXICOLOGY

ENVIRONMENTAL EPIDEMIOLOGY

Staff and students

12 Research Fellows
23 PhD students

Led by A/Prof Nicholas Osborne, QAEHS environmental epidemiology research investigates how environmental exposures contribute to disease and influence health across the lifespan. Through studies spanning air and water quality, indoor environments, climate-related exposures and the built environment, researchers generate evidence to better understand environmental health risks and support evidence-based policy and public health practice.

KEY RESEARCH ACTIVITIES

Understanding environmental drivers of disease

QAEHS researchers continued to investigate how environmental factors contribute to chronic disease and adverse health outcomes.

A longitudinal study of more than 16,000 Australian males found that asthma was associated with significantly increased risk of anxiety and depression, particularly among younger adults. Complementary research examined environmental contributors to allergic disease, including indoor mould exposure, pollen and climate-related influences on respiratory health.

A/Prof Nicholas Osborne published a review in *Nature Reviews Nephrology* examining chronic kidney disease of unknown aetiology. The review concluded that no single environmental exposure is likely to explain disease occurrence and highlighted the need for improved longitudinal studies and more consistent approaches to exposure assessment.

Water quality and health

The NHMRC Partnership Project led by Prof Abdullah Mamun, in collaboration with QAEHS and Queensland Health, concluded in September 2025 after delivering a coordinated program of research examining exposure to trihalomethanes (THMs) in drinking water and potential impacts on birth outcomes in Queensland. A key output this year, a study published in the *International Journal of Hygiene and Environmental Health*, used linked water quality, environmental and spatial data to characterise long-term trends in THM concentrations across the state, identifying increasing levels over time and higher concentrations and exceedances in regional and socioeconomically disadvantaged areas as well as seasonal variations. These findings highlight inequalities in exposure and provide an evidence base to support improved monitoring, infrastructure investment, and risk management strategies.

Indoor and household environmental exposures

QAEHS continued their participation in the Horizon Europe-funded INQUIRE (Identification of chemical and biological determinants, their sources, and strategies to promote healthier homes in Europe), an international study investigating indoor environmental exposures and their impacts on health, particularly in young children. During 2025-26, the Australian component progressed to active recruitment, with Queensland families participating in home-based sampling and data collection. This work will contribute Australian data to a large international dataset spanning multiple countries, strengthening understanding of indoor exposures and supporting the development of evidence-based strategies and policy recommendations to improve indoor air quality and protect health.

Emerging environmental health risks

QAEHS researchers continued to contribute to a nationally significant NHMRC project investigating the health impacts of bushfire smoke exposure. The study combines environmental monitoring, indoor exposure assessment, and human biomonitoring to better understand exposure pathways and biological responses associated with smoke events. Findings from this work will support the development of evidence-based public health advice and risk management strategies.

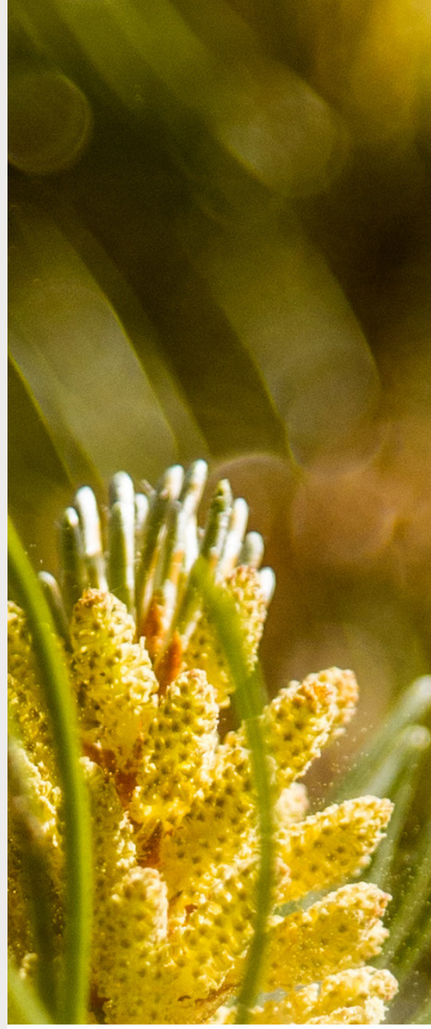
Building environmental epidemiology capability

Two PhD students within the environmental epidemiology theme completed their doctoral studies during the reporting period.

Dr Diana García examined the relationships between early-life allergic disease and subsequent risk of asthma, improving understanding of disease development across the life course. Dr Chinonso Odebeatu investigated the health benefits of greenspace, with a focus on understanding the mechanisms through which natural environments influence physical and mental health outcomes in urban populations.

PUBLICATION HIGHLIGHT

Odebeatu et al.'s (2025) analysis of more than 221,000 United Kingdom Biobank participants found that greater residential greenness, measured using the Normalized Difference Vegetation Index (NDVI), was associated with lower odds of metabolic syndrome, with benefits partly explained by increased physical activity, better sleep, reduced air pollution exposure, lower loneliness and improved vitamin D status.



KEY FUNDING AND PLANNED SUBMISSIONS

15 Current Projects

10 Submitted Applications

3 Planned Submissions



Climate change

ENVIRONMENTAL HEALTH RISK ASSESSMENT

CLIMATE CHANGE & HEALTH

ENVIRONMENTAL HEALTH RISK COMMUNICATION

ENVIRONMENTAL HEALTH MICROBIOLOGY

ENVIRONMENTAL EPIDEMIOLOGY

Staff and students

4 Research Fellows
12 PhD students

Led by A/Prof Dung Phung, QAEHS research on climate change and health focuses on understanding how environmental change is shaping population health risks and identifying effective strategies to predict, communicate and mitigate those risks. The program spans climate-sensitive infectious diseases, extreme weather, environmental exposures, health risk communication and climate adaptation, generating knowledge that supports resilient communities and informed public health decision-making.

KEY RESEARCH ACTIVITIES

Predicting and preventing climate-sensitive disease

A/Prof Phung continued to lead the Wellcome Trust-funded E-DENGUE project, which has developed a forecasting platform capable of predicting dengue outbreaks up to 3 months in advance at district level in Vietnam. During the reporting period, the project progressed to implementation and evaluation phases, with a cluster-randomised trial commencing to assess its effectiveness in supporting public health responses.

QAEHS researchers also advanced understanding of climate-sensitive disease dynamics in Pacific Island communities. Studies conducted in Fiji identified strong seasonal and geographic patterns in acute watery diarrhoea and highlighted the importance of local water and sanitation conditions in shaping disease burden. The findings provide evidence to support more targeted and proactive public health interventions.

Understanding climate-related health impacts

Research led by UQ-IITD PhD candidate Vineetha Vincent found that extreme heat exposure during pregnancy was associated with adverse birth outcomes in India, including increased risks of low birth weight. Complementing this work, research led by PhD candidate Dr Yohani Dalugoda demonstrated associations between higher temperatures during pregnancy and increased risks of preterm birth, low birth weight, congenital anomalies and neonatal death in Queensland populations.

Additional research is examining the combined impacts of heat stress and air pollution on cardiovascular health using datasets from both Australia and India. During the reporting period, ethics approvals and data preparation activities have progressed, including development of analytical pipelines and initial characterisation of baseline health patterns across regions. Supported by a DST-INSPIRE Fellowship and a UQ-IITD Scholarship, this work is expected to generate cross-country insights to improve understanding of climate-sensitive cardiovascular risks and support evidence-based public health responses.

A/Prof Osborne's team also continues to investigate how climate-driven environmental changes influence respiratory health, particularly allergic asthma, helping improve understanding of how changing environments contribute to disease risk.

Climate risk communication and public engagement

Prof Kelly Fielding's research focuses on improving how climate risks are communicated, with a particular emphasis on identifying effective messengers and communication strategies for diverse audiences. Recent work has examined who is trusted to communicate climate change information and how trust varies across populations. A multi-country study involving over 6,000 participants found that while scientists are highly trusted among those who accept climate change, the most widely trusted sources overall are informal and identity-based, including "friends and family" and "people like me". This highlights the importance of tailoring communication strategies to different audiences and leveraging trusted social networks to improve engagement and uptake of climate information.

Complementary research from an ARC Discovery Project has investigated how support for climate policy can be built within groups typically disengaged from or opposed to climate action. This work shows that in-group advocates (individuals communicated from within these communities) can be particularly effective, especially when messages are aligned with shared values and group identity. Alongside this, ongoing research is exploring the use of narratives and storytelling to communicate climate risks, with two PhD projects and two publications in progress and an ARC Discovery Project application submitted. Together, this program of work provides practical insights into how climate communication can be designed to increase trust, engagement, and support for climate action across different communities.

ARC Training Centre for Climate-Resilient Water

QAEHS researchers Prof Kelly Fielding, A/Prof Gilda Carvalho and Dr Rory Verhagen are Chief Investigators in the newly established ARC Training Centre for Climate-Resilient Water, a major national initiative designed to build the workforce, knowledge and partnerships needed to strengthen Australia's water security in the face of climate change. Prof Fielding leads the Centre's Collaborative Governance theme, which is investigating approaches to stakeholder engagement, community participation and social licence for climate-resilient water solutions, while A/Prof Carvalho leads the Reliable Water theme, focused on advanced monitoring, water quality assessment, adaptive management and resilient water treatment systems. Dr Verhagen contributes expertise in environmental microbiology and water quality monitoring.

The Centre convened its Starting Up Workshop in Brisbane, bringing together researchers and partners from across Australia to co-design research priorities, training activities and industry partnerships. The workshop refined a program of more than 27 proposed PhD projects and highlighted the importance of interdisciplinary approaches that integrate engineering, environmental science, governance, policy and community engagement. The workshop also established strong momentum for industry-embedded training and the development of future water sector leaders capable of addressing increasingly complex climate and water security challenges.

PUBLICATION HIGHLIGHTS

A review by **Fielding and Hornsey** (2026) found that climate-friendly intentions often do not translate into action because of intrapersonal, social and structural barriers, and identifies evidence-based interventions that can help policymakers and practitioners increase uptake of climate-positive behaviours and support more effective climate action.

A qualitative study by **Amoatey et al.** (2025) found that Australian heatwave-health management professionals view the Heatwave-Health Vulnerability Index (HVI) as a valuable tool for heatwave planning, public communication and urban design, but identified barriers to wider adoption including limited awareness, methodological inconsistencies, resource constraints and low policymaker confidence, highlighting opportunities to strengthen heat-related health adaptation across Australia.



KEY FUNDING AND PLANNED SUBMISSIONS

7 Current Projects

2 Submitted Applications

1 Planned Submission



Microbiology and anti-microbial resistance

ENVIRONMENTAL HEALTH MICROBIOLOGY

ENVIRONMENTAL HEALTH TOXICOLOGY

Staff and students

3 Research Fellows

3 PhD students

QAEHS researchers are advancing understanding of the environmental factors that influence microbial health and antimicrobial resistance (AMR), one of the most significant emerging threats to global public health. Through research spanning wastewater surveillance, environmental microbiology and One Health approaches, QAEHS is generating evidence to improve detection of AMR, identify environmental drivers of resistance, and support strategies to reduce its spread across human, animal and environmental systems.

KEY RESEARCH ACTIVITIES

Building national surveillance capability

Dr Jake O'Brien continued to lead his NHMRC Investigator Grant, now in its final year, which is developing wastewater-based approaches for monitoring antimicrobial use and antimicrobial resistance (AMR) in the Australian population. By complementing traditional clinical surveillance, the program provides insights into resistance circulating within the broader community and is helping establish the foundations for national wastewater-based AMR surveillance.

A major research output from this work was publication of a study in *Nature Water* demonstrating the antibiotic transformation products can contribute to antimicrobial resistance selection at levels comparable to, and in some cases greater than, the original antibiotics. The findings highlight the need for environmental monitoring and risk assessments to consider both antibiotics and their transformation products.

Understanding environmental drivers of antimicrobial resistance

A newly awarded ARC Discovery Project, led by Prof Kevin Thomas, will investigate how environmental chemical pollution contributes to antimicrobial resistance (AMR). Project agreements have been finalised, with work commencing on 1 July 2026. Using wastewater and other environmental samples from across Australia, the research will identify and characterise both known and previously unrecognised chemicals that promote AMR, with a focus on complex chemical mixtures. The outcomes are expected to inform more effective risk assessment and regulatory approaches, supporting Australia's National AMR Strategy and contributing to improved public health and environmental protection.

Complementing this work, Prof Jianhua Guo continued internationally recognised research examining the environmental factors that drive the emergence and spread of AMR. A landmark paper in *Nature Water* identified hydrogen sulfide, a naturally occurring microbial metabolite commonly found in wastewater systems, as a previously unrecognised driver of antibiotic resistance gene transfer between bacteria.

Prof Guo also contributed to an international perspective paper in *Nature Sustainability* examining how climate change, environmental pollution, biodiversity loss, water security and other global challenges interact to influence AMR. The paper highlights the critical role of environmental surveillance, wastewater monitoring and integrated One Health approaches in reducing the spread of AMR across human, animal and environmental systems. It also outlines a framework for translating scientific evidence into practical actions and policy responses to address one of the world's most significant public health threats.

Strengthening international collaboration

Building on QAEHS's expertise in environmental AMR surveillance, Dr Jake O'Brien and collaborators secured a UQ-Exeter Institute Joint PhD Scholarship to investigate whether antimicrobial residues in agricultural environments contribute to the evolution and transmission of antimicrobial resistance. The project addresses an important evidence gap and strengthens international collaboration on environmental AMR research.

PUBLICATION HIGHLIGHTS

A review article by **Zhai et al.** (2025) highlights antimicrobial resistance (AMR) as a growing global health and environmental crisis driven by the overuse of antibiotics in humans, agriculture, and industry, and concludes that coordinated One Health strategies are essential to prevent a post-antibiotic era.

Li et al. (2025) found that many antibiotics and their metabolites undergo significant transformation or degradation while traveling through sewer systems, demonstrating that sewer stability must be considered when interpreting wastewater-based epidemiology data and assessing the environmental sustainability of antibiotic use.



KEY FUNDING AND PLANNED SUBMISSIONS

15
Current Projects

10
Submitted Applications

3
Planned Submissions

PARTNERSHIPS & COLLABORATIONS

Queensland Health is QAEHS's foundational partner, supporting the Centre's mission to improve human health through environmental health science.

Through this strategic Alliance, QAEHS connects world-leading research capability with public health priorities, translating scientific evidence into meaningful outcomes for Queensland communities and beyond while leveraging an extensive network of collaborators to extend the reach and impact of this investment.

Alongside this partnership, QAEHS collaborates with a diverse network of government, industry, academic and community organisations to address complex environmental health science challenges and maximise research impact. By bringing together complementary expertise, knowledge and resources, these collaborations enable solutions to challenges that no single organisation could solve alone.

During 2025-26, the Centre worked with more than 80 partner organisations, reflecting the multidisciplinary collaborations that drive its research excellence, translation and real-world impact. The full list of QAEHS partners and collaborators for 2025–26 is provided in Appendix C.

Research Visitors

Research visitors provide valuable opportunities to establish and strengthen collaborations with researchers, students and institutions worldwide, facilitating knowledge exchange, skills development and new research connections. In 2025–26, QAEHS hosted eight visiting academics and five visiting research students who contributed to our collaborative research environment and enhanced opportunities for international engagement.

Visitor numbers have been impacted by increasing challenges associated with securing visas, including longer processing times and changes to visa eligibility requirements. Despite these challenges, we continue to support research exchanges that promote collaboration, build research capacity and strengthen our national and international networks.

Uli Kluemper	Academic	European Centre for Environment & Human Health
Faina Tskhay	Student	European Centre for Environment & Human Health
Detlef Knappe	Academic	North Carolina State University
Derek Muir	Academic	Environment & Climate Change Canada
Holger Koch	Academic	Institute for Prevention and Occupational Medicine - Institute of the University Bochum
Paula Gscheidel	Student	University of Tubingen
Luna Van Marle	Student	Utrecht University
Daria Clemm	Student	University of Hamburg
Elisa Toth	Student	Sorbonne University
Chris Higgins	Academic	Colorado School of Mines
Elisabeth Marianne Fries	Academic	Colorado School of Mines
Jiale Li	Academic	Shanghai Ocean University
Zhiyan Wang	Academic	Shanghai Ocean University

17 Australian Government Bodies

15 Australian Universities

14 Research Institutes & Centres

18 Water Utilities & Industry Organisations

28 International Universities & Organisations

Research Networks and Appointments

QAEHS's honorary, adjunct and visiting appointments are an important part of our collaborative research ecosystem, connecting our researchers with expertise and networks across Australia and internationally. Through honorary appointments, adjunct researchers, and visiting academics and research students, we build enduring partnerships that support research excellence, knowledge exchange, mentorship and innovation. These appointments enhance collaboration across disciplines and institutions, strengthen research capacity, and contribute to our shared mission of improving human health through environmental health science.

Honorary and Adjunct Researchers

Honorary and adjunct researchers bring diverse expertise, international connections and valuable research perspectives to our Alliance. These appointments foster collaboration across disciplines and institutions, support knowledge exchange and mentorship, and strengthen our ability to address complex environmental health challenges. Our network of 27 honorary appointees and 24 adjunct researchers extends our research capability beyond our core team, creating opportunities for joint research initiatives, capacity building and global engagement.

Q&A with Derek Muir, Honorary Professor

Tell us about your current role and professional background?

I was a Senior Research Scientist with Canada's Environment ministry (Environment and Climate Change Canada) until 2022 and, following retirement, became Emeritus Scientist. As an Emeritus my main role has been to mentor scientists and prepare scientific papers on trends of organic contaminants. I am also an Adjunct Professor in the School of Environmental Sciences at the University of Guelph and the Department of Chemistry at the University of Toronto, where I give lectures in graduate student courses in Environmental chemistry and serve on student advisory committees. I currently co-chair the Arctic Monitoring and Assessment Programme's Expert Group on Persistent Organic Pollutants (POPs), leading international assessments of contaminant trends and sources in the Arctic. The latter role has taken up much of my time recently as we are finalizing an assessment comparing local versus long range transport as sources for POPs in the Arctic and have started a new assessment on long term trends of POPs in air and biota in the Arctic. From 2022 to 2026, I also served on the Australian Department of Climate Change, Energy, the Environment and Water, Advisory Committee on the Environmental Management of Industrial Chemicals, (IChEMS) which provides advice to the Minister for the Environment and Water on management of priority chemicals.

What are your key areas of expertise or focus related to your QAEHS collaboration?

My research has focused on the bioaccumulation, environmental distribution and trends of perfluoro-alkyl substances (PFAS) since the early 2000's. This expertise aligns closely with several ongoing projects at QAEHS.

How did your collaboration with the Centre begin?

My collaboration with QAEHS began when Professor Jochen Mueller invited me to give a lecture at QAEHS during a visit to Australia for an IChEMS meeting in February 2023. Following that visit, I have kept coming back to QAEHS each year since then.

What does your collaboration with the Centre involve?

My involvement includes contributing to scientific manuscripts related to PFAS, serving on a graduate student committee, and I have been included in an advisory role for several research proposals led by QAEHS scientists.

What kind of projects, initiatives, or activities have you worked on together?

Our collaborations have included research on trends of trifluoroacetic acid in human urine and extractable organic fluorine in human serum as well as projects including screening of articles and products for priority chemicals and a research proposal on screening of chlorpyrifos in children.

What value does the centre bring to your work or your organisation?

QAEHS is a centre of excellence for research in the environmental chemistry and human biomonitoring of emerging contaminants. Being involved helps me stay abreast of developments in this broad field, exchange knowledge, and contribute to research.

"The most rewarding aspect of working with QAEHS is learning more about human biomonitoring of emerging contaminants and contributing to student papers and to research proposals."

- Professor Derek Muir

EDUCATION & TRAINING

Building capability is central to our mission. Through postgraduate research, specialised education, professional development, industry placements and strong partnerships with government and industry, we are developing the next generation of researchers while strengthening the environmental health science workforce. These initiatives ensure our knowledge and expertise translate into lasting impact for Queensland and beyond.

Postgraduate Research

Developing the next generation of environmental health scientists is a key priority for the Centre. Our Higher Degree by Research (HDR) program attracts outstanding students and provides the research training, mentorship, and opportunities needed to build future leaders in environmental health science.

QAEHS-Queensland Health PhD Scholarships

Supporting the Queensland Alliance for Environmental Health Sciences partnership with Queensland Health, the UQ Graduate School has committed three dedicated domestic PhD scholarships for the 2023-2028 funding period. These scholarships are competitively awarded to PhD projects that align with Queensland Health research priorities.

One scholarship was awarded in 2024 to Max Tyler, supervised by Professor Nicholas Osborne. A second scholarship was awarded to Nairan Zhang, supervised by Professor Jianhua Guo, who will commence their PhD in October 2026.

Current PhD student Max Tyler and alumna Dr Eryn Wright, both recipients of QAEHS–Queensland Health scholarships, share insights into their PhD journeys on the following pages.

Seven PhD projects were advertised during the year for the remaining scholarship, with applications closing on 14 June 2026. Two applications were received and are currently under review.

Further information on our Higher Degree by Research students, including research topics and QAEHS scholarship recipients, is provided in Appendix A.

HDR 3 Minute Thesis Competition

The Three Minute Thesis (3MT®) competition challenges PhD students to communicate the significance of their research in just three minutes to a non-specialist audience. The competition develops students' research communication skills and celebrates the innovative work being undertaken by emerging researchers.

The 2026 School of Pharmacy and Pharmaceutical Sciences/ QAEHS 3MT competition was held at the Dutton Park Campus, with seven QAEHS HDR students presenting their research to an engaged audience: Marina Suzuki, Hieu Ngo, Lin Chen, Pooja Lakhey, Lily Pan, Haitao Lin and Yuya Cheng.

Congratulations to Pooja Lakhey and Lily Pan, who were selected as finalists and progressed to the HMBS Faculty Final, to be held on 13 August 2026.

"Each student presented with confidence and excellence, resulting in an exceptionally strong field and a difficult decision for the judging panel."
- Professor Kevin Thomas, QAEHS Director

Thesis Submissions

Seven HDR students have submitted or completed in 2025-26.



Coral Jeffries

Assessing dietary exposure to nanoplastics and microplastics.



Grechel Taucare

Optimizing sample size for trend detection in human and environmental monitoring using simulation-based power analysis.



Ma. Katreena Que

Human exposure to plastic-associated chemicals: exposure trends in an Australian population.



Tania Toapanta

Evaluating degradation levels and their potential impact on the quantification of microplastics in the environment.



Garth Campbell

Human exposure to glyphosate-based herbicides and methods to reduce.

Lily Weir

Biodegradation of organic chemicals in aquatic environments.



Simran Kaur

The fate of plastics in soils.

Research Student Spotlight



Max Tyler
Current QAEHS PhD Candidate

PhD Title:
Pollen in Environmental Context: Understanding and Forecasting Allergic Respiratory Disease Burden

What is your PhD about?

My PhD research explores how environmental factors contribute to allergic respiratory disease. Specifically, I investigate how pollen interacts with environmental conditions to shape symptom occurrence, timing, and severity. The aim of this work is to develop better-informed models for forecasting allergic disease burden.

What has been the most rewarding aspect of your PhD journey so far?

One of the most rewarding aspects of my PhD journey so far has been the opportunity to conduct research in Germany as part of a joint research collaboration. Working in this international setting has helped me develop my research skills, expand my professional network, and strengthen my confidence as a researcher.

How has the scholarship supported your studies and professional development?

The QAEHS scholarship has given me the opportunity to work within a network of passionate, like-minded researchers at the forefront of environmental health science. I have always been able to find experts willing to generously share their time and knowledge. This strong sense of community and support has had a truly positive impact on my studies.

Where do you hope your research will have the greatest impact?

I hope my research will have its greatest impact in helping people better prevent and manage allergic respiratory diseases. While allergic rhinitis and asthma are often considered in relation to individual allergens or triggers, such as pollen, these allergens do not act in isolation. Their effects are shaped by broader environmental conditions that influence exposure, airway vulnerability, immune response, and symptom burden. My research aims to provide a more comprehensive understanding of allergy risk, and more practical guidance for people living with allergic disease.

What motivates you to continue pursuing research in this area?

We live in a rapidly changing world. As climate change and urbanisation continue to transform our environments, their effects on allergic disease remain uncertain and underexplored. Environmental epidemiology sits at the intersection of theory, exposure, and population health, offering a means to understand how environmental change manifests in real-world disease patterns. Rather than waiting for hazards to become established, proactive environmental epidemiology can help identify early signals of risk, test plausible mechanisms, and examine how emerging environmental changes may influence human health before their impacts become widespread. Ultimately, the work that we do has the potential to improve lives, contributing to a healthier future.

Industry Placements

Industry placements provide valuable opportunities for Higher Degree by Research (HDR) talent to apply their research skills in real-world settings. These placements foster knowledge exchange, expose students to industry challenges, and enable partner organisations to benefit from emerging research expertise. Placements also provide industry professionals with opportunities to mentor and support the development of the next generation of environmental health researchers, while creating pathways for future collaboration and research translation.

During the reporting period, three QAEHS PhD students completed industry placements, and a further two students are currently undertaking their placements.

- **Jianan Ren** - Forensic Science Queensland, Department of Justice
- **Lily Weir** - Microba
- **Ruvini Weerasinghe** - Coronial and Public Health Sciences, Queensland Health
- **Hieu Ngo** - Monitored Medicines and Compliance Unit, Queensland Health
- **Tobias Hulleman** - SCIEX

2.8 tonnes of marine debris removed during Far North Queensland field expedition

Lily Pan | Tangaroa Blue

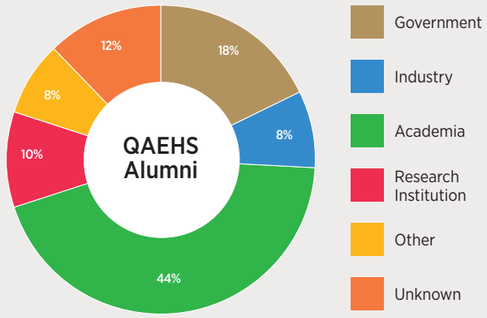
PhD candidate Lily Pan completed her industry placement with Tangaroa Blue, contributing to projects focused on marine debris and plastics pollution. Through her placement, Lily supported data management, research activities, and field-based monitoring, including beach clean-ups and the collection and categorisation of marine debris data.

A highlight of Lily's placement was a week-long expedition to Chili Beach in Far North Queensland, where she worked alongside volunteers, rangers, and local school students to remove and sort 2.8 tonnes of marine debris from the coastline. While the team did not encounter any crocodiles, they did spot fresh croc tracks along the beach!

Alumni

Since 2016, QAEHS has graduated 50 PhD candidates, including a record 13 completions during the 2025-26 reporting period. Our Alumni are now contributing their expertise across academia, government, industry, and research organisations.

While many have progressed into postdoctoral research, others are making an impact across the environmental health science sector both in Australia and internationally.



Alumni Spotlight



Dr Eryn Wright

Research Fellow, School of Public Health, UQ; Principle Research Officer, West Moreton Health

PhD Title:
Understanding the dynamics of bat exposures among members of the general public in Queensland

What was your PhD about?

When humans and wildlife interact, there is the potential for infectious diseases to be passed from those wild animals to humans, we call these zoonotic diseases. In Australia, we have a virus that is really close to Rabies, called Australian bat lyssavirus, that can be passed from the saliva of infected bats to humans, usually through a bite or scratch. The disease is deadly once symptoms appear, so anyone bitten or scratched by a bat in Australia needs to go to hospital immediately for treatment.

Between 2010 and 2019, Queensland Health noticed that the number of people coming into hospital for treatment after exposure to a bat (i.e., bite or scratch) was increasing, and this caused significant public health concerns. My PhD research used available data and input from experts to build a computer-based model that could broadly simulate how (1) human behaviour, (2) changes to the environment and (3) the movement of bat populations in Queensland, all intersect. We then used the model to help understand why those reported exposure numbers were rising and where we might be able to intervene.

What was the most rewarding aspect of your PhD journey?

The most rewarding aspect of my PhD journey was being able to see all of the work come together. My PhD was quite unique in that each component was building towards the development of a simulation model. So, each chapter served as different a piece of a puzzle that I was then able to assemble into a functioning model that appears to do a pretty good job of helping to answer some of the key questions that we have.

In one sentence, how would you describe your PhD experience?

It was a deeply fulfilling experience – it connected so many important parts of who I am, from my childhood love of wildlife and the environment, to my first ever research job in climate change, to my passion for public health and my enthusiasm for solving problems.

What impact do you hope your research will have in the future?

First and foremost, I hope that my research will be useful – that it will help to answer questions and solve problems that have real-world applications for improving public health. What I love most about being in research is having the opportunity to uncover new information and I feel so fortunate to be in a position where I can be part of that, but I also know that our work is never finished. So, secondly, I hope that whatever I do acts as a stepping stone for future researchers to build on.

What does your current career involve?

I currently have a dual appointment between West Moreton Health and the University of Queensland. A big part of my day-to-day work involves translating data on mental health epidemiology, service needs and workforce requirements into numbers and guidelines that are useful for planning, funding and/or commissioning mental health and suicide prevention services across Australia. I also supervise students, contribute to service evaluation projects, provide training workshops to people in health and government, and guest lecture at the university on occasion.

What does your current research look like?

All of the research that I currently conduct is on mental health and suicide prevention. Two of the larger ongoing projects that I am currently involved with include the National Mental Health Service Planning Framework and the Australian Suicide Prevention Planning Model. While my PhD was focused on preventing zoonotic disease transmission (and therefore obviously not mental health-related), I still get the odd opportunity to use the modelling skills that I acquired doing that work in the mental health space – including recently building a model to showcase the impacts of climate change on the mental health and wellbeing of agricultural communities in Queensland.

Professional Development and Workforce Capability

Through the QAEHS - Queensland Health partnership, QAEHS facilitates professional development opportunities through The University of Queensland that support a skilled and responsive environmental health workforce. These programs enable professionals to build capability, expand their knowledge, and apply evidence-based approaches to emerging environmental health challenges.

Master of Environmental Health Sciences

The Master of Environmental Health Sciences (MEHSc), established in 2019 and developed in partnership with Queensland Health, continues to strengthen environmental health science capability by providing flexible postgraduate training for professionals working across the sector.

The program provides flexible postgraduate education across environmental health science, equipping graduates with the knowledge and practical skills to assess risks, inform policy and practice, and develop evidence-based solutions.

During 2025–26, 17 students graduated from the MEHSc program, with 30 students currently enrolled across the Master, Graduate Diploma, and Graduate Certificate pathways (27 Master, 2 Graduate Diploma, and 1 Graduate Certificate students). The program continues to attract a global cohort, with 81% of enrolled students identifying as international students.

Across the individual courses offered within the program, there were 1,153 enrolments during the year. Introduction to Epidemiology attracted the highest number of enrolments, accounting for 23% of total course enrolments.

QAEHS researchers continue to contribute to the delivery of the program, with four core courses taught by Theme Leaders and researchers:

- Risk Communication (Core, Semester 2 2025) — Professor Kelly Fielding
- Chemical Hazards (Core, Semester 2 2025) — Dr Jake O'Brien
- Preventing Disease through Healthy Environments (Core, Semester 2 2025) — Associate Professor Dung Phung
- Biological Hazards (Core, Semester 1 2026) — Dr Ji Lu

View the course online

Wastewater Surveillance: basics and applications in public health

QAEHS Theme Leaders A/Prof Nick Osborne and A/Prof Phong Thai developed this course in 2025 to support workforce capability in an emerging area of environmental health and public health surveillance, providing professionals with the knowledge required to interpret and apply wastewater-based approaches in practice.

The intensive five-day course was delivered in December 2025 and attracted 26 participants, with representation from both Australia (9 domestic) and international communities (17 international).

The course provided participants with a comprehensive understanding of wastewater surveillance principles, applications, and its role in complementing traditional public health surveillance approaches. Through lectures, case studies, debates, and practical activities, participants explored wastewater sampling and analysis methods, interpretation of surveillance data, and the application of wastewater-based approaches for monitoring chemical and biological indicators.

Participants also examined the technical, ethical, and logistical considerations associated with implementing wastewater surveillance systems, gaining insights into how these approaches can support evidence-informed public health responses. The course drew on the expertise of QAEHS researchers and staff across environmental health, epidemiology, risk communication, and analytical science.

Contributors included Theme Leaders Professor Kevin Thomas, Associate Professor Phong Thai, Associate Professor Nick Osborne, Professor Kelly Fielding; and researchers Dr Rory Verhagen, Dr Ben Tscharke, Mr Josh Tynan, Dr Richard Bade, Dr Qiuda Zheng, Dr Jake O'Brien.

Following strong interest in the inaugural offering, the course will run again in December 2026, providing Queensland Health and other environmental health professionals with an opportunity to develop capability in this emerging area of public health surveillance.

View the course online

QAEHS expertise across UQ education

During 2025–26, QAEHS researcher Dr Richard Bade contributed to teaching across multiple UQ programs, sharing expertise in environmental health, chemical risk, and analytical science.

Courses supported:

- Drug Design and Formulation (PHIP7121)
- Pre-clinical Drug Development (PHIP7122)
- CSI UQ: Introduction to Forensic Science (SCIE2020)

Undergraduate Research Training

Our researchers contribute to developing the next generation of environmental health scientists through supervision of undergraduate research projects, including Honours and Masters by Coursework programs. Students gain hands-on experience in research design, methodology, data analysis, and scientific communication while working alongside experienced researchers on projects addressing contemporary environmental health challenges.

During 2025-26, QAEHS researchers supervised the following undergraduate and coursework research students:

- Theres Thomas, Honours student (A/Prof Sarit Kaserzon)
- Priyanshi Roshan, Masters by Coursework (Dr Richard Bade)
- Richard Ross, 4th Year Major undergraduate student (A/Prof Phong Thai)
- Ruosu An, Masters by Coursework (A/Prof Phong Thai & Dr Qiuda Zheng)



Knowledge Sharing Through Guest Lectures

Our researchers contribute to knowledge exchange and education by delivering guest lectures to university, industry, and professional audiences. These presentations extend the reach of QAEHS expertise, sharing research findings, technical approaches, and emerging environmental health science knowledge with diverse communities.

Guest lectures delivered in 2025–26

Universities

- Dr Jinglong Li, *Environmental Health Research at QAEHS,* Fudan University (January 2026).
- Dr Richard Bade, *Wastewater-based epidemiology,* Griffith University (May 2026).
- Dr Jake O'Brien, *Grant Writing Experience,* University of Tasmania (November 2025).
- Dr Jake O'Brien, *Antimicrobials in Australian Wastewater Influent, Effluent and Biosolids - a national study*, Shanghai Ocean University (June 2026).
- Dr Elvis Okoffo, *Environmental and human exposures to plastics: From source to sink,* Eastern New Mexico University (April 2026).

Industry and professional organisations

- Dr Cassandra Rauert, *Micro & Nanoplastics - Implications in Food Safety*, Australian Institute for Food Science and Technology (March 2026).
- Dr Richard Bade, *New Psychoactive Substances (NPS) and pathways to the environment*, Seqwater Workshop (April 2026).
- Dr Elvis Okoffo, *Advances and challenges in nano and microplastic analysis: evidence, gaps, and lessons learned*, Standards Australia's NT-001 Nanotechnologies Committee, Standards Australia (May 2026).
- Prof Kevin Thomas, *Signals from the Sewer: Current Status of Wastewater Testing*, Australian Criminal Intelligence Commission (ACIC) Chemical Diversion Conference, Brisbane (July 2025)

Research and international networks

- Dr Jake O'Brien, *Chemical Residue Methods*, CRC SAAFE Roadshow (October 2025).
- Dr Richard Bade, *Wastewater Analysis for New Psychoactive Substances*, The International Association of Forensic Toxicologists (March 2026).
- Dr Richard Bade, *Analytical Tools for NPS Detection in Wastewater*, Center for Forensic Science Research & Education (January 2026).
- Prof Kevin Thomas, *Challenges in Micro-and Nanoplastic analysis Using Pyrolysis*, GC/MS Plastics Trace (EU Project) closing conference, Oslo, Norway (September 2025).
- Prof Kevin Thomas, *Plastic Particles and Human Health: Addressing Analytical Challenges in Exposure Assessment*, Solving Plastic Waste CRC Seminar, Griffith University (December 2025).
- Prof Kevin Thomas, *Plastic Particles and Human Health: Addressing Analytical Challenges in Exposure Assessment*, International Society for Exposure Science, Microplastic Working Group Seminar (April 2026).
- Prof Kevin Thomas and Dr Cassandra Rauert, *Advancing Microplastic Detection: Pyrolysis-GC/MS for Environmental Sample Analysis*, Regional seminar on Microplastic Pollution and Analytical Techniques, Bangkok, Thailand (July 2025)

Summer and Winter Research Programs

The University of Queensland's Summer and Winter Research Programs provide undergraduate students with the opportunity to gain hands-on research experience through dedicated projects supervised by leading academics and researchers.

These programs support the development of research skills, expose students to environmental health science, and provide a pathway for attracting future Honours and Higher Degree by Research students.

During 2025-26, we have hosted 20 undergraduate research students across a diverse range of projects spanning emerging contaminants, wastewater surveillance, plastics and microplastics, environmental monitoring, and public health.

Student	Project
Yixi Chu	Investigating substance use in major populations over time
Hiral Chandel	Hidden contaminants in cosmetics and personal care products
Theres Thomas	Hidden contaminants in cosmetics and personal care products
Rozálie Slavíčková	Investigating pets health. Are domestic dogs and cats exposed to harmful environmental contaminants?
Rizkia Apriani	Investigating Micro and Nanoplastics in Australian Bottled Water
Enoch Chow	Hidden in Plain Plastic
Ian Zhong	Cannabis and cannabinoid use in Australia: what we can know from wastewater?
Tzu-Hsuan Fang	Development of an Interactive Dashboard for Visualising International Trends in Emerging Drug Use
Aaron Liu	Designing 3D-printed passive samplers for environmental monitoring
Thaaranniyah Vickneswaran	Plastics, Tire Wear Particles, and Additives in Stormwater samples
Angeleena Thomas	Evaluating human exposure to bisphenols and phthalates using urinary biomarker analysis
Yazhini Muthulakshmi	Hidden contaminants in cosmetics and personal care products
Sher Tan	Modelling the Economic Value of Early NPS Detection via Wastewater Surveillance
Sabria Putri	The impact of microplastics on the biodegradation of pollutants in aquatic environments
Stuthi Shetty	What's Inside Compostable Packaging? Chemicals, Persistence & Circular Solutions
Muhammad Qoudry	Microplastic contamination in anaesthetic solutions
Kukuh Mahendra	Investigating antifouing paint particle pollution in the marine environment
Bhuvana Thota	Characterisation of nanoparticles in environmental samples
Jiaqi Dou	Can Medicines Predict the Next Pandemic?
Keira Mamahit	Determining antimicrobial resistance (AMR) selection concentrations of environmentally relevant chemicals using the SELection End points in Communities of bacTeria' (SELECT) assay

GOVERNANCE & OVERSIGHT

QAEHS is governed through a collaborative partnership model between The University of Queensland and Queensland Health, ensuring strategic alignment, research excellence, and continued delivery of outcomes that address environmental health priorities.

Governance structures provide oversight of the Centre's strategy, operations, research direction, and engagement activities.

The Alliance Management Committee (AMC) provides strategic governance and oversight, while the Scientific Planning Committee (SPC) supports research coordination, collaboration, and alignment across QAEHS research themes. Together, these committees ensure QAEHS remains responsive to stakeholder needs and continues to deliver impactful environmental health science research, education, and innovation.

The Centre's operations are led by the Director and supported by a dedicated professional team, with operational support provided through The University of Queensland.

Alliance Management Committee

The Alliance Management Committee (AMC) provides strategic oversight, governance, and advice on the Centre's direction, activities, and partnership priorities. Through representation from QAEHS, The University of Queensland, Queensland Health, and an independent Chair, the AMC ensures diverse perspectives inform strategic decision-making and supports QAEHS to achieve its vision as a leading environmental health sciences research centre.

2025-26 Meetings

18 November 2025

22 June 2026

AMC Members



Professor Jennifer Stauber, FAA FTSE SETAC Fellow
Chair



John Piispanen
Executive Director,
Health Protection Branch,
Queensland Health



Professor Danny Liew
Executive Dean, UQ Faculty of Health, Medicine and Behavioural Sciences



Dr Mark Jacobs
Deputy Director-General, Science and Technology Division, Queensland Department of Environment, Tourism, Science and Innovation



Professor Karen Moritz
Associate Dean (Research), UQ Faculty of Health, Medicine and Behavioural Sciences (2025)

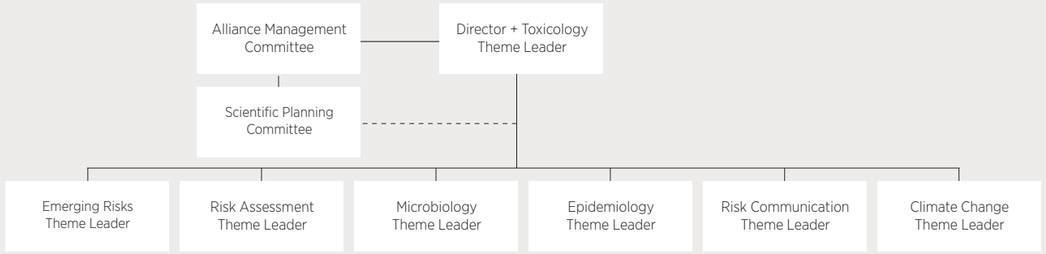


A/Professor Aideen McInerney-Leo
Associate Dean (Research), UQ Faculty of Health, Medicine and Behavioural Sciences (2026)



Professor Kevin Thomas
Director, Queensland Alliance for Environmental Health Sciences

Governance Structure



Scientific Planning Committee

The Scientific Planning Committee (SPC) provides scientific leadership and coordination across QAEHS research themes. The SPC brings together QAEHS Theme Leaders and key Queensland Health and UQ stakeholders to ensure research activities are complementary, strategically aligned, and responsive to emerging environmental health priorities.

The SPC facilitates cross-theme collaboration, supports research planning, identifies opportunities for partnership and innovation, and ensures QAEHS research continues to maximise scientific impact and stakeholder relevance.

2025-26 Meetings

8 September 2025

24 November 2025

21 April 2026

Members

Prof Kevin Thomas
Director, Queensland Alliance for Environmental Health Sciences

Dr Greg Jackson
Director, Water Unit, Health Protection and Regulation Branch, Queensland Health

Prof Karen Moritz
Associate Dean (Research), Faculty of Health, Medicine and Behavioural Sciences, University of Queensland

Uma Rajappa
Director, Environmental Hazards Program, Queensland Health

Dr Amy Jennison
A/Executive Director, Coronial and Public Health Sciences, Queensland Health

Stewart Carswell
Chief Chemist Organic Chemistry, Coronial and Public Health Sciences, Queensland Health

Dr Ujang Tinggi
Supervising Scientist, Inorganic Chemistry, Coronial and Public Health Sciences, Queensland Health

A/Prof Gilda Carvalho
Theme Leader, University of Queensland

Prof Jianhua Guo
Theme Leader, University of Queensland

Prof Kelly Fielding
Theme Leader, University of Queensland

A/Prof Nicholas Osborne
Theme Leader, University of Queensland

Prof Jochen Mueller
Theme Leader, University of Queensland

A/Prof Sarit Kaserzon
Theme Leader, University of Queensland

A/Prof Phong Thai
Theme Leader, University of Queensland

A/Prof Dung Phung
Theme Leader, University of Queensland


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Appendices

Appendix A - QAEHS Staff and Students

Academic staff

Staff Member	FTE
Ben Tscharke	1
Cassandra Rauert	1
Dung Phung	0.2
Elvis Okoffo	1
Emily Stevenson	0.8
Ester Lopez Garcia	1
Fisher Wang	1
Gemma Kerry	1
Gilda Carvalho	0.1
Grace Davies	1
Giuseppina Zuri	1
Ian Zammit	1
Jake O'Brien	1
Jianhua Guo	0.1
Jinglong Li	1
Jochen Mueller	0.4
Kelly Fielding	0.2
Ken Tang	1
Kevin Thomas	1
Nicholas Osborne	0.2
Phong Thai	1
Pradeep Dewapriya	1
Qiuda Zheng	1
Reena Que	1
Richard Bade	1
Rory Verhagen	1
Run Tian	1
Sandra Nilsson	1
Sara Ghorbani Gorji	1
Sarit Kaserzon	1
Zhe Wang	1

Professional staff

Staff Member	Appointment
Angus Bagley	Senior Research Assistant/Analyst (to March 2026)
Ayomi Jayarathne	Senior Research Assistant (to February 2026)
Chris Paxman	Research Assistant (to June 2026)
Christina Carswell	Senior Research Technician
Daniel Barry	Senior Research Technician (to May 2026)
Elizabeth Sadowy	Executive Assistant (to April 2026)
Emerson Aldridge	Senior Research Assistant/Analyst (to February 2026)
Gabriele Elisei	Scientific Research Team Leader
Geoff Eaglesham	Senior Analytical Chemist
Gregory Medley	Senior Research Assistant/Analyst (from April 2026)
Joseph Clokey	Senior Research Analyst
Josh Tynan	Senior Project Officer
Joyce Tang	Senior Research Assistant/Analyst (from April 2026)
Kirsten Marano	Senior Research Technician
Kristie Thompson	Research Assistant
Lachlan Jekimovs	Research Analyst
Lauren Gubbin	Centre Manager
Melissa Murray	Research Manager (Operations)
Michael Gallen	Analytical Chemist
Nathan Charlton	Research Assistant
Pritesh Prasad	Analytical Chemist
Rebecca Gordon	Senior Research Analyst (from February 2026)
Ryan Shiels	Research Analyst
Sadanan Boochakiat	Senior Research Technician (from June 2026)
Stephanie Hall	Senior Administration Officer
Steve Li	Senior Research Technician [Leave cover from March 2025]
Summer Xia	Senior Research Technician
Tim Reeks	Analytical Chemist (to October 2025)
Tony Wang	Research Manager (Operations) [Leave cover to March 2026]
Xuan Qu	Senior Research Technician
Yan Li	Senior Research Assistant
Yuyu Guo	Senior Research Technician (from June 2026)

Honorary and Adjunct staff

Staff Member	Affiliation	Appointment
Amy Heffernan	Eurofins	Honorary
Andreas Sjödin	Centers for Disease Control and Prevention	Honorary
Andrew Banks	Queensland Racing Integrity Commission	Adjunct
Andrew O'Neill	Healthy Land & Water	Adjunct
Bastian Schulze	Landeskriminalamt (Lower Saxony State Criminal Police)	Adjunct
Beate Escher	Eberhard Karls University Tubingen	Honorary
Cameron Veal	Seqwater	Adjunct
Carly Beggs	Queensland Health	Adjunct
Chang He	Guangdong University of Technology	Honorary
Christine Baduel	French Research Institute for Sustainable Development	Honorary
Christopher Higgins	Colorado School of Mines	Honorary
Christos Symeonides	Minderoo Foundation	Adjunct
Daniel Drage	University of Birmingham	Honorary
Daniel Francis	Queensland Health	Adjunct
Darryl Hawker	Griffith University (Emeritus)	Honorary
David Beale	CSIRO	Honorary
Derek Muir	Environment & Climate Change Canada	Honorary
Emma Knight	Norwegian Institute for Water Research	Adjunct
Foon Yin Lai	Swedish University of Agricultural Sciences	Honorary
Greg Jackson	Queensland Health	Adjunct
Holger Koch	Institute of the Ruhr-University Bochum	Honorary
Ian Hosegood	QANTAS	Adjunct
Ian Zammit	The University of Queensland	Honorary
Jack Ng	The University of Queensland	Emeritus Professor
Jennifer Bräunig	NSW Department of Planning, Industry and Environment	Adjunct
Jeremy Prichard	University of Tasmania	Honorary
Jiaying Li	The University of Sydney	Honorary
John Corfield	Brisbane Airport Corporation	Adjunct
John Piispanen	Queensland Health	Adjunct
Karl Bowles	Jacobs	Adjunct
Katja Shimko	Eurofins PSS Insourcing Solutions	Adjunct
Leisa-Maree Toms	QUT	Honorary
Linda Birnbaum	National Institute of Environmental Health Sciences	Honorary
Louise Reeves	Queensland Water Directorate	Adjunct
Maria Jose Gomez Ramos	Universidad de Almeria	Honorary
Matthew Taylor	NSW Department of Primary Industries Fisheries	Honorary
Michael Bartkow	Seqwater	Honorary
Michaela Lerch	Griffith University	Honorary
Michelle Engelsman	Fire & Rescue New South Wales	Adjunct
Munro Mortimer	Prior - Queensland Department of Environment and Resource Management (DERM)	Adjunct
Peter Hobson	Sullivan Nicolaides Pathology	Adjunct
Phil Choi	Queensland Health	Adjunct
Phong Vo	University of Technology Sydney	Honorary
Pradeep Dewapriya	ALS Environmental Brisbane	Adjunct
Rizalyn Albarracin	Queensland Health	Adjunct
Saer Samanipour	University of Amsterdam	Honorary
Sarah Dunlop	Minderoo Foundation	Honorary
Siobhan Rigby	Department of Environment and Science	Honorary
Sophie Dwyer	Prior - Queensland Health	Adjunct
Suzanne Huxley	Queensland Health	Adjunct
Thi Minh Hong Nguyen	Ramboll	Adjunct
Walter Vetter	University of Hohenheim	Honorary

Students – Higher Degrees by Research submitted or completed in 2025-26

Student	Supervisor/s	Topic	Degree
Alexander Wang	Gilda Carvalho, External	Methodology for assessing polyphosphate accumulating organisms in wastewater via fluorescence-activated cell sorting	Masters
Chinonso Odebeatu	Nicholas Osborne, External	Examining how greenspace works in adult health: observational analyses of greenspace types, mediators, and biomarker pathways	PhD
Coral Jeffries	Kevin Thomas, Cassie Rauert	Assessing dietary exposure to nanoplastics and microplastics	PhD
Garth Campbell	Sarit Kaserzon, Fisher Wang, Kevin Thomas, External	Human exposure to glyphosate-based herbicides and methods to reduce exposure	PhD
Giang Vu	Phong Thai, External	Social norms toward cigarette smoking and other nicotine product use: trends and influences across populations and regulatory contexts	PhD
Grechel Taucare	Jochen Mueller, Ben Tscharke, External	Optimizing sample size for trend detection in human and environmental monitoring using simulation-based power analysis	PhD
Hongmin Wang	Gilda Carvalho, External	The role of the sidestream tank and temperature on sidestream enhanced biological phosphorus removal performance and microbial community	PhD
Jen Pett	Nicholas Osborne	Chronic kidney disease of unknown origin in Sri Lanka	PhD
Lily Weir	Jochen Mueller, Sarit Kaserzon, Run Tian	Biodegradation of organic chemicals in aquatic environments	PhD
Ma. Katreena Que	Jochen Mueller, Fisher Wang, Ian Zammit, Sandra Nilsson	Human exposure to plastic-associated chemicals: exposure trends in an Australian population	PhD
Nate George	Nicholas Osborne	Climate change in the Pacific and Australian Defence Force planning	PhD
Ni Made Sri Suliartini	Gilda Carvalho, External	Development of a new electro-chemical technology to remove nitrate and heavy metals from groundwater	PhD
Patrick Amoatey	Dung Phung, Nick Osborne, External	Spatiotemporal evaluation of human heat-health vulnerability in Australia	PhD
Shu Chen	Kelly Fielding, External	Communicating our way to successful private land conservation	PhD
Simran Kaur	Cassie Rauert, Kevin Thomas	The fate of plastics in soils	PhD
Tania Toapanta	Sarit Kaserzon, Kevin Thomas, Elvis Okoffo, External	Evaluating degradation levels and their potential impact on the quantification of microplastics in the environment	PhD
Thudawe Yohani Shavindi Dalugoda	Dung Phung, External	The effects of maternal exposure to heatwaves on adverse pregnancy and birth outcomes in Queensland	PhD
Yicheng Ma	Jianhua Guo, External	Bioconversion of methane-based gases into valuable products	PhD
Zuo Meng Gan	Gilda Carvalho, External	Developing strategies to optimise return sludge sidestream enhanced biological phosphorus removal	PhD

Students – Higher Degrees by Research continuing in 2026

Student	Advisory team	Topic	Degree
Ami Sharma	Kevin Thomas, Cassie Rauert, External	PM2.5 and plastics pollution in Delhi: Sources, characterisation and atmospheric transport modelling	PhD
Angus Bagley	Jochen Mueller, Sandra Nilsson, External	Identifying serum biomarkers correlated with longitudinal and cross-sectional trends in PFAS serum concentrations using metabolomics	PhD
Arzoo Dhankhar	Nicholas Osborne, External	Pollen and its contribution to respiratory outcomes in subtropical regions	PhD
Ava Disney	Kelly Fielding, External	Call me anything, just don't call me an Environmentalist	PhD
Belinda Moore	Ben Tscharke, Fisher Wang, Ian Zammit, External	An exploration of contaminants of emerging concern (CECs) in QLD wastewater	PhD
Chantal Keane	Rory Verhagen, Jochen Mueller, External	Identifying and understanding sources of contaminants of emerging concern in Australia wastewater	PhD
Christine Howland	Sarit Kaserzon, Fisher Wang, Kevin Thomas	Emerging contaminants in Food Contact Materials, analysis policy and regulation	PhD
Chunrong Yu	Jianhua Guo, External	Integrated polymer membranes for PFAS removal	PhD
Dang Khanh Linh Vien	Dung Phung, External	Exploring the association between Dengue and both obesity and various risk factors: A matched case-control study in the Mekong Delta Region, Vietnam	MPhil
David Sellars	Kylie Morphett, Coral Gartner, External	Regulating the design and construction of nicotine and tobacco products	PhD
Delfina Chrisyandra	Kelly Fielding, External	Bridging the scientist-practitioner gap in climate change storytelling in Indonesia	PhD
Dhaya Nadarajan	Richard Bade, Jochen Mueller, External	Facilitating the detection of new psychoactive substances in wastewater	PhD
Emily McLeod	Kelly Fielding, External	Ethical wildlife tourism: creating positive experiences for people and wildlife	PhD
Estabraq Al-Gertan	Gilda Carvalho, Jianhua Guo, External	Catchment and treatment impacts on microbial resistance in direct and indirect potable water reuse	PhD
Gabriel De la Torre Picho	Kevin Thomas, Cassie Rauert, Elvis Okoffo	Assessing microplastic inputs from ships	PhD
Gur Benesh	Gilda Carvalho, Sarit Kaserzon, External	Biofilm-based pre-treatment for drinking water treatment	PhD
Haitao Lin	Cassie Rauert, Jake O'Brien, Kevin Thomas, Elvis Okoffo	Characterisation and quantification of nanoplastics in the environment using pyrolysis gas chromatography tandem mass spectrometry	PhD
Hieu Ngo	Ben Tscharke, Phong Thai, External	Using multiple data sources to understand the opioid crisis in Australia	PhD
Honglin Chen	Cassie Rauert, Kevin Thomas	Human exposure and accumulation of plastics	PhD
Hongbin Yan	Jianhua Guo, External	Microbial gas fermentation to generate value-added chemicals from biogas	PhD
Hung Trinh	Dung Phung, External	The cost-effectiveness of the E-Dengue, a decision support tool, in the Mekong Delta Region	PhD
Janquel Acevedo	Kelly Fielding, External	The psychology of gridlock: Compromise, coalitions and radicalisation	PhD
Jiahui Li	Jianhua Guo, External	A unique and overlooked microbial process for scavenging two greenhouse gases	PhD
Jianhui Zhang	Jianhua Guo, External	Developing novel polymer sorbents for efficient PFAS capture	PhD
Jianan Ren	Phong Thai, Jochen Mueller, External	Assessing and modelling spatiotemporal trends in drug consumptions in the community by wastewater-based epidemiology	PhD
Jianglu Zhao	Phong Thai, Ben Tscharke, Qiuda Zheng	Evaluating tobacco and nicotine consumption through wastewater analysis in Pacific Rim countries	PhD
Jinghan Zhou	Jianhua Guo, External	Microbial ecology and control of opportunistic pathogens in drinking water systems	PhD
John Pearce	Kelly Fielding, External	Turning climate change into a success story	PhD
Joong Nam	Phong Thai, External	Understanding the vaping epidemic through novel integrative monitoring tool	PhD
Julia Orr	Jochen Mueller, Sandra Nilsson	Establishing the representativeness of human biomonitoring programs based on pooling of deidentified surplus pathology samples	PhD
Jun Hui Yap	Jianhua Guo, External	Enrichment and understanding novel microorganisms enabling complete ammonification and ammonia oxidation	PhD
Junqi Liao	Jianhua Guo, External	Efficient control the spread of antibiotic resistance in urban water ways	PhD
Kara Fry	Jochen Mueller, Sandra Nilsson, External	Understanding persistent chemical exposure across the Australian population	PhD
Kavya Bhutt	Nicholas Osborne, External	Combined impact of heat stress and air pollution on non-communicable disease burden of India in the global warming era	PhD
Kien Quoc Do	Dung Phung, External	Effectiveness of digital Dengue early warning system (E-DENGUE) for Dengue control in the Mekong Delta Region	PhD
Laura Puente	Cassie Rauert, Kevin Thomas	Determination of micro and nanoplastics in breast milk, blood and meconium samples from mothers-infants in Australia	PhD
Le Gao	Jianhua Guo, External	Emerging pollutants in spreading antimicrobial resistance in urban water ecosystems	PhD

Student	Advisory team	Topic	Degree
Lijalem Tesfaw	Nicholas Osborne, External	Geographical distribution and environmental determinants of end-stage kidney disease patients receiving kidney replacement therapy in Australia	PhD
Linh Vien	Dung Phung, External	Risk factors associated with Dengue infection in a province of Southern Vietnam: A district-matched case-control study	PhD
Liuyi Chen	Nick Osborne, Dung Phung, External	Climate change, biodiversity and respiratory health	PhD
Lu Zheng	Jianhua Guo, External	Development of sequencing-based surveillance monitoring of antimicrobial resistance in the environment	PhD
Madison McLatchie	Kevin Thomas, Sarit Kaserzon, Fisher Wang	Understanding emerging contaminants and metabolomic responses in Australian seabird species	PhD
Marina Suzuki	Jochen Mueller, Fisher Wang, Sandra Nilsson, External	Chemicals contaminants in the brain (broadly) and links to neurological disease	PhD
Marta Lopez	Fisher Wang, Jochen Mueller, Ian Zammit, External	Towards better understanding the properties of pollutants that can cross the blood brain barrier using assays and/or animal studies	PhD
Max Tyler *	Nicholas Osborne, External	Combining environmental epidemiology and ensemble learning techniques to measure the influence of pollen and fungi on respiratory health outcomes	PhD
Mehrnaz Safarniya Zidehi	Jianhua Guo, External	Sequestration of micropollutants in modified biochars by coupling adsorption and advanced oxidation/reduction processes	PhD
Min-Tz Weng	Qiuda Zheng, External	Exploring the nicotine metabolite ratio during pregnancy: A cohort study with Australian First Nations families	PhD
Mingyue Hu	Gilda Carvalho, External	Cost-effective and low-maintenance treatment of groundwater for safe drinking water production	PhD
Mst Noorunnahar	Dung Phung	Developing spatiotemporal methods for investigating dengue cases in Bangladesh	PhD
Naixiang Zhai	Jake O'Brien, Kevin Thomas, Jianhua Guo	Investigation of the inflammatory response of human cells to silica dust exposure	PhD
Nicole Schroeter	Jochen Mueller, Jake O'Brien, Richard Bade	Understanding use and fate of ingredients in consumer products	PhD
Nur Sharikul Huda	Jianhua Guo, External	Development of magnesium oxide products as a novel disinfectant agent	PhD
Pengju Chen	Jianhua Guo, External	Using membrane aerated bioreactors to remove emerging contaminants and mitigate greenhouse gas emissions	PhD
Pooja Lakhey	Jake O'Brien, Kevin Thomas, External	The suitability of wastewater-based epidemiology for AMR surveillance	PhD
Prachi Patel	Nicholas Osborne	Impact of heat exposure on cognitive ability among adolescents and adults	PhD
Ran Li	Jianhua Guo, External	Simultaneous removal of emerging chemical and biological contaminants through novel catalytic membrane reactors	PhD
Rifat Shanta	Jake O'Brien, Kevin Thomas, Rory Verhagen, External	AMR in food producing environments	PhD
Ruiqi Wan	Jianhua Guo, External	Investigating the bacterial responses to complex mixtures of environmental pollutants	PhD
Ruochen Chao	Jianhua Guo, External	Characterisation of metabolic potentials and pathways for the Feammox reaction	PhD
Ruvini Weerasinghe	Cassie Rauert, Jake O'Brien, Kevin Thomas, Elvis Okoffo	Development of specialised hyphenated methodologies for quantifying new halogenated plastic materials	PhD
Shivani Sivakumar	Jianhua Guo, External	Evaluation of biofilm dispersal of Nontuberculous mycobacteria and Legionella in contaminated water environments	PhD
Sriram Vasudevan	Kevin Thomas, External	Cross regional comparison of emerging contaminants in urban catchments	PhD
Suliasi Batikawai	Nicholas Osborne, External	Meteorological factors, drinking water and sanitation services: An analysis of the association with acute watery diarrhea in Fiji	PhD
Temesgen Fiseha	Nicholas Osborne, External	Novel approaches to kidney disease: are modifiable risk factors potential intervention routes?	PhD
Thi Thanh Thao Nguyen	Dung Phung, External	Spatial analysis for dengue hotspot prediction advancing early warning systems in a hyperendemic region, Vietnam	PhD

Student	Advisory team	Topic	Degree
Tobias Hulleman	Jake O'Brien, Kevin Thomas, Elvis Okoffo, Cassie Rauert, External	Non-targeted high-resolution mass spectrometric characterisation of highly mobile and highly persistent chemicals	PhD
Vineetha Vincent	Nicholas Osborne, External	Heat events and health burden in the tropics under the global warning	PhD
Xi Xue	Jianhua Guo, External	Identifying the drivers of environmental dissemination of antimicrobial resistance in urban water ecosystems	PhD
Xinyu Shi	Gilda Carvalho, External	The impact of operational and disturbance factors on side stream enhanced biological phosphorus removal process stability	PhD
Yaolin Liang	Gilda Carvalho, External	Developing a novel taste and odour removal process for drinking water	PhD
Yimeng Li	Jianhua Guo, External	Simultaneous dissolved methane and nitrogen removal from municipal wastewater by using membrane-aerated bioreactors	PhD
Yuanyuan Kang	Jianhua Guo, External	The emergence and spread of antimicrobial resistance between bacteria and environments	PhD
Yufei Pan	Cassie Rauert, Kevin Thomas, External	Human exposure and fate of micro/nanoplastics	PhD
Yujie Li	Jianhua Guo, Gilda Carvalho, External	Understanding roles of disinfection agents on the emergence and spread of antibiotic resistance	PhD
Yuxin Hu	Jianhua Guo, External	Bioremediation of oxidized contaminants using natural gas in membrane biofilm reactors	PhD
Yuya Cheng	Fisher Wang, Jochen Mueller, Ian Zammit	Human exposure pathways for plastic additives	PhD
Zeyang Zhao	Phong Thai, Jake O'Brien, Qiuda Zheng	Assessment of biomarker transformation in the wastewater system	PhD
Zhenyu Mei	Kelly Fielding, External	From nonparticipatory environmentalism to global climate ambitions: actors, media and global discourse in China's environmental governance	PhD
Zubaria Ishaq	Fisher Wang, Jochen Mueller, Phong Thai, Sandra Nilsson	Human exposure pathways for per- and polyfluoroalkyl substances (PFAS)	PhD

* QAEHS Scholarship holders

Students – Higher Degrees by Research withdrawn in 2025-2026

Student	Supervisor/s	Topic	Degree
Ellen Sursara	Kelly Fielding, External	How does social advantage or disadvantage influence capacity for environmental concern?	Masters
Hannah Van Dijken	Nick Osborne, Dung Phung, External	Biodiversity and immune health	PhD
Lachlan Chadwick	Sarit Kaserzon, Sara Ghorbani Gorji, Kevin Thomas	Emerging contaminants in Food Organics and Garden Organic (FOGO) materials	PhD
Liam O'Brien	Jake O'Brien, Kevin Thomas, External	Developing the framework for a national wastewater antimicrobial resistance and antimicrobial use surveillance method	PhD

Appendix B - Professional Leadership & Service 2025-26

Advisory Roles

Theme Leader	Role and organisation
Kevin Thomas	Co-Chair of the Scientific Advisory Board of the UK Centre of Excellence in Water-Based Early-Warning Systems for Health Protection
Kevin Thomas	Member of the Australian Research Council (ARC) College of Experts
Kevin Thomas	Contributes to international advisory panels: United Nations Environment Programme and other European scientific initiatives
Kelly Fielding	Member of the Advisory Board for Australian Centre for Water and Environmental Bioengineering

Editorial Leadership

Theme Leader	Role and organisation
Sarit Kaserzon	Member of the Editorial Board of Environmental Science & Technology (ES&T)
Sarit Kaserzon	Member of the Editorial Board of Environmental Toxicology & Chemistry
Nicholas Osborne	Editor for International Journal of Epidemiology
Nicholas Osborne	Member of the Editorial Board of Pediatric Allergy, Immunology and Pulmonology
Nicholas Osborne	Associate Editor for Archives of Environmental and Occupational Health
Kelly Fielding	Member of the Editorial Board of Journal of Environmental Psychology
Dung Phung	Associate Editor for Agromedicine Journal
Dung Phung	Guest Editor for BMC Medicine
Jochen Mueller	Member of the Editorial Board of Enviromental Science & Technology (ES&T)
Jochen Mueller	Member of the Editorial Board of Enviromental Pollution
Jochen Mueller	Member of the Editorial Board of Emerging Contaminants
Jochen Mueller	Member of the Editorial Board of Chemosphere
Jochen Mueller	Member of the Editorial Board of Environmental Science and Pollution Research
Phong Thai	Associate Editor for Global Environment Science
Kevin Thomas	Member of the Editorial Board of the American Chemical Society Environmental Science & Technology Letters
Kevin Thomas	Member of the Editorial Board of the npj Emerging Contaminants

Peer Review & Research Assessment

Theme Leader	Role and organisation
Sarit Kaserzon	Theme Lead of the UQ-Exeter Institute Global Environmental Futures Theme
Sarit Kaserzon	Ongoing Reviewer for Australian Research Council (ARC) and National Health and Medical Research Council (NHMRC) Grant schemes

Professional Society Leadership

Theme Leader	Role and organisation
Kevin Thomas	Co-Chair of the Plastics Mesaurement Brains Trust

Standards and Guideline Development

Theme Leader	Role and organisation
Kevin Thomas	Standards Australia Committee (ME009) Microplastics

Policy and Expert Advice

Theme Leader	Role and organisation
Kevin Thomas	Submission to the The Senate Standing Committee on Community Affairs on Inquiry into the impact of microplastics and other toxins on human health

Conference Leadership

Theme Leader	Role and organisation
Sarit Kaserzon	Member of the Organising Committee for the PFAS National Symposium 2025
Sarit Kaserzon	Invited Speaker at the Great Barrier Reef Marine Monitoring Program Annual Symposium
Sarit Kaserzon	Session Chair at SETAC Wellington, New Zealand on PFAS in products
Sarit Kaserzon	Member of the Organising and Scientific Committees for the International Passive Sampling Workshop (IPSW)
Sarit Kaserzon	Developed QAEHS Training Day on Passives and Micropollutant Monitoring workshop for Water Industry (Seqwater, DETSI, QH), March 2026
Sarit Kaserzon	Developing Rapid Risk Assessment (RRA) Workshop and Tool for Queensland Health Public Health Professionals
Sarit Kaserzon	Member of the Local Organising Committee for the National PFAS Symposium 2026
Dung Phung	Panel Member for the UQ Climate Change Research Network Event on Australia's National Climate and Health Strategy
Jochen Mueller	Co-Chair of the Plastics2026 Conference Organising and Scientific Committees
Jochen Mueller	Member of the Advisory Board for the National PFAS Sympsium 2026
Kevin Thomas	Co-Chair of the Plastics2026 Conference Organising and Scientific Committees
Kevin Thomas	Member of the Advisory Board for the National PFAS Sympsium 2026

Research Leadership and Governance

Theme Leader	Role and organisation
Kevin Thomas	Member of the Scientific Advisory Board for the Horizon 2020 EUROqCHARM Project.
Sarit Kaserzon	Lead on two NORMAN Network Joint Program of Acitivity (JPAs)
Kelly Fielding	Member of the Steering Committee for the Australia New Zealand Environmental Psychology Network

Recognition and Professional Honours

Theme Leader	Role and organisation
Kevin Thomas	2025 Clarivate Highly Cited Researcher
Sarit Kaserzon	Invited as College of Expert member for the Australian Research Council (ARC) National Intelligence Discovery Grants (NIDG)
Jochen Mueller	2025 Clarivate Highly Cited Researcher

Appendix C - Major partners and collaborators

Australian Government agencies

- Airservices Australia
- Australian Criminal Intelligence Commission
- Australian Defence Force
- Australian Department of Climate Change, Energy, the Environment and Water
- Australian Plague Locust Commission
- Australian Tax Office
- Great Barrier Reef Marine Park Authority

State and Territory Government agencies

- Northern Territory Department of Lands, Planning and Environment
- NSW Department of Climate Change, Energy, the Environment and Water
- NSW Ministry of Health
- Queensland Corrective Services
- Queensland Department of Environment, Tourism, Science and Innovation
- Queensland Health
- Queensland Health Coronial and Public Health Sciences
- Victoria Environment Protection Authority

Local Government

- Gold Coast City Council
- Townsville City Council

Universities (Australia)

- Australian National University
- Deakin University
- Griffith University
- James Cook University
- QUT
- RMIT University
- Southern Cross University
- The University of Western Australia
- University of Adelaide
- University of Melbourne
- University of Newcastle
- University of NSW
- University of South Australia
- University of Sydney
- University of Tasmania

Universities (International)

- Boston College
- Colorado School of Mines
- Freie Universitaet Berlin
- Indian Institute of Technology Delhi
- Jaume I University
- Karlstad University
- Karolinska Institutet
- Masaryk University
- Massey University
- Stockholm University
- The University of Auckland
- Umea Universitet
- University of Amsterdam
- University of Antwerp
- University of Bath
- University of Birmingham
- University of Cambridge
- University of Canterbury
- University of Dusseldorf
- University of Exeter
- University of Tartu
- University of the South Pacific
- Vrije Universiteit Amsterdam

Research Institutes and Centres

- CRC SAAFE
- CSIRO
- Healthy Environment and Lives, University of Canberra
- Italian National Institute of Health
- Leibniz Institute
- Minderoo Foundation
- Murdoch Children's Research Institute
- National Institute of Public Health of Mexico
- NeuRA
- NILU (formerly Norwegian Institute for Air Research)
- NORMAN EU Network
- QIMR Berghofer Medical Research Institute
- Solving Plastic Waste CRC
- Wellcome Trust

Health Services and Pathology

- Sullivan Nicolaides Pathology

Water Utilities and Environmental Services

- Hunter Water
- Melbourne Water
- Queensland Urban Utilities
- Seqwater
- South East Water Corporation
- Sydney Water
- Ventia Utility Services
- Veolia

Industry and Commercial Partners

- Aeris Cleantec AG
- AirHealth Pty Ltd
- Arcadis
- Australian Packaging Covenant Organisation Ltd
- Brisbane Airport Corporation
- Eurofins Environment Testing Australia
- Norske Skog Paper Mills Ltd
- Wellington Laboratories

International Government and Public Agencies

- Republic of Estonia Health Board
- Tonga Waste Authority
- United Nations Environment Programme
- United States Department of Defense

Appendix E - Research Publications

Peer Reviewed Journal Articles

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