

CBRN STUDY DAY: Integrations

MAY 1, 2025



10am to 4.30pm

Networking drinks after

Venue: University of Bradford Campus
(registration required)

Exploring connections between theory and practice

Keynote sessions, panels and interactive sessions on:
CBRN research in the UK, academic skills for CBRN
practitioners, the role of learning in the context of CBRN
events, and exploring critical chemical geographies.

Speakers include:

Prof. Brooke Rogers OBE, King's College London
Dr. El Parker, EPC and UK Resilience Academy
Dr. Rhys Kelly, University of Bradford
Dr. Stephen Johnson, Cranfield University and Military
Dr. Julia Pearce, King's College London
Prof. David Crouch, Cranfield University
Elizabeth Benson, West Mids Police and National CBRN Centre
Dr. Angeliki Balayannis, Wageningen University
Dr. Simon Whitby, University of Bradford

Your hosts:

Dr. Becky Alexis Martin
Dr. Louise Elstow



UNIVERSITY of
BRADFORD

EPS CBRN PWG Study Day – Event Report

Integrations

Held at the University of Bradford, and **co-hosted** with the Emergency Planning Society's CBRN Professional Working Group

Organisers: Becky Alexis-Martin (University of Bradford), and Louise Elstow, Dave Crouch and Barry Moss (Emergency Planning Society CBRN Professional Working Group), and Elizabeth Benson (National CBRN Centre)

Financial support was received from the Emergency Planning Society, Bradford University and the National CBRN Centre. Without these contributions the event would not have been possible.

Authors: Louise Elstow and Barry Moss (21 May 2025)

Aim

The aim was to explore connections between academic theory and operational practice at an in-person event bringing together specialist CBRN responders, civil non-specialist responders and planners and academia in at: keynote sessions; panels and interactive sessions on CBRN research in the UK: academic skills for CBRN practitioners: the role of learning in the context of CBRN events: and to explore critical chemical geographies.

Participation

The event was well attended with 25 attendees from relevant sectors and specialisms. It offered a rare opportunity for all organisations to be in one room, in particular it gave a chance for those not involved in academia to understand that space better and for academics to engage with practitioners. Participants came from a range of organisations including academic institutions, public sector (including emergency services and the military), private sector, and the voluntary sector. A full list of attendees is available in the Appendix.

Overarching key themes emerging and reflections

Key themes emerging during the day and reflections:

- CBRN is all about managing risk: everything feeds into or out of that understanding of risk (who or what is impacted negatively and how). Without effective risk identification, analysis, assessment and understanding then everything is a 'guess' or a 'knee-jerk response. We could do better to understand the background behind any instructions or advice given - what are assumptions? What are the risks considered? What do we each individually and collectively understand as 'the risk' (is there even just one, and if managing multiple, how are these prioritised), and the assumptions, mitigations, and desired outcomes (who defines these), and what is the residual risk (and to whom)?
 - Is there a way of connecting evidence-based learning of risk in the NSRA, national resilience best practice, 'doctrine' and narratives being set by the new UK Resilience Academy and government policy makers, risk-specific response interoperability from emergency responders, academic insights and perspectives. How is this linked into a formal process to create the 'big picture of c-CBRN', and what's missing? What are the common assumptions and risks? Should there be end-to-end working group encompassing risk identification > residual risk? And if so, who would lead it?
 - Learning from CBRN events is not easy – many research projects take years to get funded and off the ground, which means that findings and advancements can take decades to emerge.
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Incidents which attract a lot of public attention (as many CBRN events are e.g. Salisbury Novichok), will often involve public enquiries and different legal investigations into the events and their response and these also slow down a transfer of knowledge and experience which could ultimately benefit future responses but gets lost. There is a need for improved knowledge sharing platforms that connect research groups and responders together.

Recommendation: “*Barriers to learning from CBRN events*” or “*CBRN events and their inquiries – what can we learn?*” could be interesting topics to investigate in future study events.

- There is a huge amount of academic research taking place in with a potential relevance to CBRN responses (as highlighted in Dave Crouch’s presentation) – some of this is known to very specialist responders, and there are already existing partnerships between academia and specialist teams (e.g. the KCL and National CBRN Centre), but more generalist teams may be less aware of cutting-edge research.

Recommendation: Is there an opportunity to engage further and on a regular basis with academics – perhaps an online session every 2 months with 2/3 academic speakers – could have 3 sessions with a focus on C/B/RN research?

- Those present had only engaged to a limited extent, with considering how the rapid and ongoing advancement of AI technology and the potential ways these might impact on CBRN incidents and the response.

Recommendation: “*The Impact of Digital Technology on CBRN Events, Planning and Response*” it is topic which we would like to consider in future Co-hosted CBRN PWG events, workshopping in more depth issues around dual use technologies, ethical aspects etc.

- Prof Dave Crouch was keen to confirm that the Defence Academy at Shrivenham just outside Swindon might be a potential location for the next event. The National CBRN Centre reiterated their support for these joint events (they hosted last years’) and offered their site again if needed.

Welcome

Rhys Kelly, Head of Peace Studies and International Development welcomed everyone to the event.

Panel Discussion: “CBRN research overview; what is happening where in the UK/beyond”

The event commenced with a panel discussion chaired by Dr. Steve Johnson who noted:

- We need to do better about looking at academic research on CBRN. For example, there is only one paper on the lived experience of people in Salisbury and the first research evidence of Litvinenko – not done by a British researcher – but done by a US researcher. Civilian and military response and researchers can be uneasy bedfellows.
- Lessons identified are poorly shared, sometimes we need to wait until years later after Public Inquiry e.g. Salisbury. Some of the first research coming out of Salisbury was done by American researchers. Much of what might help future responses is tied up in corporate knowledge.
- Strategies and policies rarely reflect realities, threat analysis, or aim / mission / objectives / required outcomes / success criteria. We should be designing research around what we need for the future – practitioners think they know what they need – we might be missing pieces.
- Diversity and inclusivity is poorly addressed in CBRN response; has a negative effect e.g. PPE design (e.g. Porton Man was not designed to be a female body). However, if you improve seals

on respirators for people who have beards for religious reasons, this also helped make things better for everyone including half the population.

- The development of AI is not always just a potential for bad things to happen. Emergent AI and synthesizing tools could be used to predict or analyse an event but what is it for? Save lives, prevent situation worsening, recover or by those seeking to disrupt the anticipated response? Using tools – to synthesize data. If you look at AI more than a month ago, it is too long because of the speed of development.

Dave Crouch outlined the breadth of CBRN research across the UK, broken down into chemical, biological, radiological, and nuclear domains (see attached slides). However, it was evident that this research is undertaken in a piecemeal fashion, lacking integration under a coherent national strategy or overarching strategic purpose.

Julia Pearce spoke about research KCL has conducted alongside the National CBRN Centre on communicating with diverse populations before, during and after CBRN events. She described the findings of a systematic literature review and highlighted key issues to consider when tailoring CBRN communications. This includes understanding the range of groups who may be disproportionately affected (which includes people who may not consider themselves at high risk and reject labels such as vulnerable), limited knowledge in the wider public about what CBRN events/response involves and the specific functional needs and related concerns of disproportionately affected groups. She also emphasised the importance of understanding levels of trust, drivers of mistrust and preferred information sources. The report is due to be published in late May at:

<https://www.london.gov.uk/programmes-strategies/fire-and-city-resilience/counter-terrorism-preparedness-network/ctpn-reports-and-publications>

Lecture: “*Academic skills for CBRN practitioners*”

Becky Alexis-Martin, delivered an insightful lecture on academic tools and skills, and how practitioners can access them and develop them respectively. This covered: accessing academic literature as a non-academic; practical knowledge and methodologies to use as a practitioner including using new and old technology; keywords, methods, practices, ideas; how to reach out to academics; and how to reach out to practitioners. She focused on the need to develop ‘capacity to do things’ and working more efficiently and effectively; everyone has a 150% job and with a reduction in staffing and increasing demand of higher productivity, the answer can’t just be work harder.

Simon Whitby, advocated for changing the world’s perception of CBRN at the highest diplomatic and policy level so that understanding and requirements cascade.

Panel discussion: “role of learning in the context of CBRN events”

Brooke Rogers discussed the evolution of the shaping of connections, language and learning to better inform response and recovery needs. In the UK, this was now through the Govt Office for Science and a National Security Risk Assessment informed by joint evidence-based learning lessons process to give ‘quality’ to the applied to the risk reduction process.

El Parker gave an update on UK Resilience Academy, and the development of National Occupational Standards, and Maturity Models around risk, planning, Train-the-Trainer, exercising, technical specialisms, development toolkits, and consultancy. These were intended to provide a national **background to resilience competency and currency**.

Elizabeth Benson presented on operational preparedness and in particular the change of public messaging for better effect; in particular youth and child engagement.



Figure 1: Chair Prof. Brooke Rogers (Centre), with speakers Simon Whitby, Liz Benson, Dave Crouch, and El Parker (L to R).

Simon Whitby developed the detail of strategic engagement to include bio-security research and courses to generate global bio security. He also commented on the impact of AI on the future threat identification and resultant solutions

Dave Crouch made the links between education, learning, and industry, specifically between investment in, and adaption from, industry to support capability development. He challenged the perceptions caused by preconceived ideas and suggested that changing the nomenclature away from 'CBRN' could change the ideas around response and recovery.

Interactive Workshop: “Critical chemical geographies”

Dr. Angeliki Balayannis led a workshop exploring epistemic justice and knowledge-making in a hypothetical chemical incident. She provided an overview of knowledges and knowers from a social science perspective and shared the following insights:

- Whilst **recovery and remediation often produce injustices and exclude communities**, communities have expertise and knowledge that is crucial for a just and effective recovery.



Figure 2: Dr Balayannis' very engaging interactive workshop on critical chemical geographies

- **Procedural injustices** can emerge from the extent to which publics participate in and consent to processes that have implications on their health. Centring scientists/responders as the only knowers, can hinder meaningful participation in decision-making.
- **Epistemic injustice** is about the ‘knowers’ of knowledge and expertise. “Marginalised people are often marginalised as knowers as well” (Ottinger 2023a: 2). The experiences of those affected by chemical exposure are predominantly dismissed or excluded.
- **Transdisciplinary approaches** (e.g. involving multiple disciplines and groups to collectively understand what the problem is, determine what priorities are and understand the full range of concerns, and how these might be addressed) can address the injustices of recovery by involving affected communities in knowledge-production and decision-making processes, by foregrounding marginalised responders and communities, as well as decentring dominant knowledges.

Each of the five tables was asked to consider the same incident but from the perspective of a particular group (e.g. Chemical Site response staff, a breast-feeding support group, local GPs and local farmers). This encouraged de-centring of the dominant science and narratives, allowing alternative knowledge systems and expertise to factor into discussions. as communities have greater knowledge to inform and deliver effective recovery; centring scientists and their personal ‘bias’ can hinder meaningful participation and achievement of community delivered recovery.

Interactive Group Work: “Pasts, presents and futures of CBRN”

Dr. Becky Alexis Martin led a creative methods session to explore what CBRN could look like with different kinds of digital innovations (pasts, presents and futures) and the impact this could have on CBRN responses and incidents. In groups we worked together to create a map of connected elements – potential or actual innovations and developments, impacts on CBRN incidents and responses and social and human factors to consider.

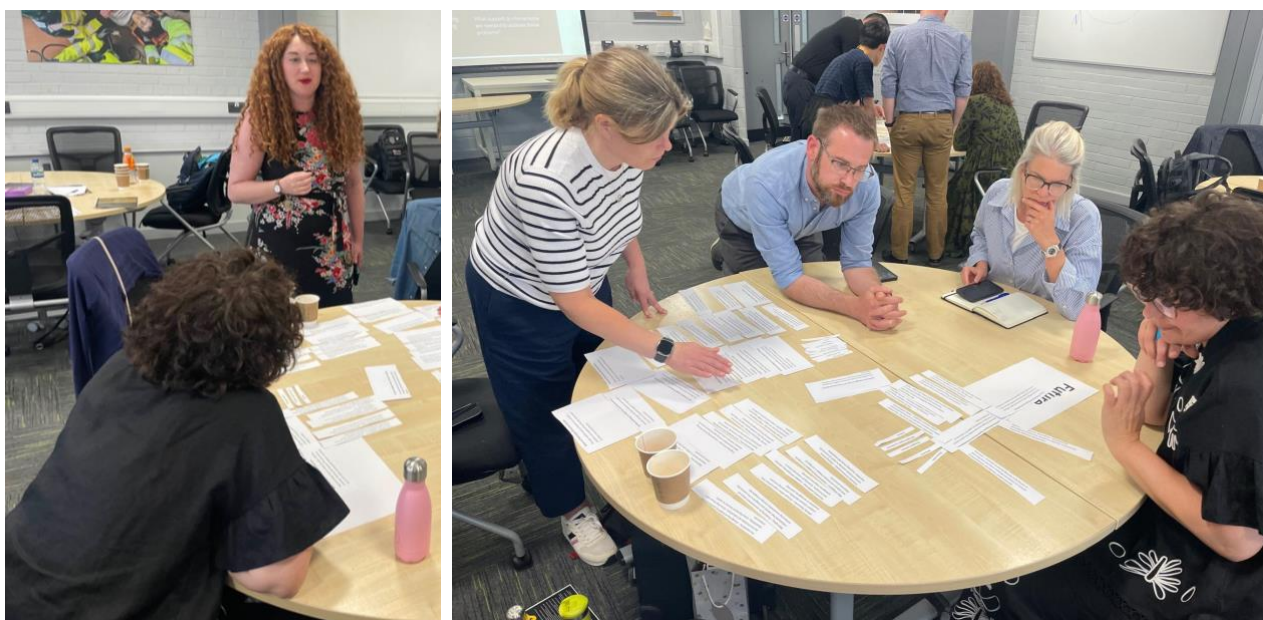


Figure 3: Becky guiding the tables through the mapping activity

Appendix: Participant list

	Name (by surname)	Organisation and Role
1	Dr. Becky ALEXIS-MARTIN	Lecturer: Peace, Science, and Technology - University of Bradford
2	Dr. Angeliki BALAYANNIS	Associate Professor, Knowledge Technology and Innovation, Wageningen University
3	Andrew BATSTONE	HM Forces, CBRN instructor, SMI Operation Interbow
4	Elizabeth BENSON	CBRN Commander - West Midlands Police and National CBRN Centre
5	Peter BOORMAN	NHS England, CBRN lead
6	Diane BOWMAN	NHS (Mental Health Lincoln)
7	Prof. David CROUCH	Head of CBRN & Survivability Group (Defence & Security) at Cranfield University
8	Helen DOYLE	Lancas County Council – Senior EPO
9	Dr. Louise ELSTOW	Co-Chair of EPS CBRN PWG, Cambridge University and Fynbos Consulting Limited
10	Owain EVANS	28 Engineers Regiment – Counter CBRN
11	Insp. Scott HOWARD	Capabilities Manager – National CBRN Centre
12	Artyom JACKSON	28 Engineers Regiment – Counter-CBRN
13	Dr Stephen JOHNSON	Military CBRN specialist - Cranfield University / Army
14	Supt Lee KENDRICK	Head of National CBRN Centre – Counter Terrorism Policing
15	Dr. Rhys KELLY	Head of Dept. Peace Studies and International Development - University of Bradford
16	Fiona MACAULAY	Bradford University Professor, Gender, Peace & Development
17	Barry MOSS	Consultant - BWM Resilience and Co-chair of EPS CBRN PWG
18	Dr. El PARKER	Resilience Capability Lead - Emergency Planning College / UK Resilience Academy
19	Dr. Julia PEARCE	Reader in Social Psychology & Security Studies - Kings College London
20	Prof. Brooke ROGERS	Professor of Behavioural Science and Security - King's College London
21	Adrian SMITH	Director – NEPER – Joint Civil Aid Corps (JCAC)
22	Sean SMITH	Joint Civil Aid Corps (JCAC) - IT and Business Continuity
23	Nigel TOTTIE	Project manager – National CBRN Centre
24	Dr. Simon WHITBY	Associate Professor - School of Social Sciences - University of Bradford
25	Chit Shing WU	Joint Civil Aid Corps (JCAC) and University of Roehampton

CBRN Study Day: Programme

Time	Element	Detail
0930-1000	Registration and networking	
1000-1015	Welcome and introductions	Dr. Rhys Kelly (Bradford) and Dr Louise Elstow (Cambridge)
1015-1115	Talk: CBRN research overview What is happening where in the UK/beyond?	Dr. Steve Johnson - Chair Prof. Dave Crouch - Shrivenham/military focus Dr. Julia Pearce - city-focused and vulnerable people
1115-1130	BREAK	Teas, coffees and biscuits served
1130-1215	Lecture: Academic skills for CBRN practitioners	Dr Becky Alexis-Martin and Dr Simon Whitby Accessing academic literature as a non-academic. Practical knowledge and methodologies that you can use as a practitioner – using new and old tech. How to use them. Keywords, methods, practices, ideas. How to reach out to academics. How to reach out to practitioners!
1215-1315	LUNCH	Bring your own or buy on site at the cafe
1315-1445	Panel discussion: The role of learning in the context of CBRN events	Prof. Brooke Rogers - Chair Dr. El Parker – On practitioner learning at a national scale - UKRA development Elizabeth Benson – On learning in CBRN events and 'remove remove remove' Dr. Simon Whitby – On role of academia and on educating the general public Prof. Dave Crouch – On educational link between learning and industry
1445-1500	BREAK	Teas, coffees and biscuits served
1500-1545	Active workshop: Critical chemical geographies	Interactive session run by Dr. Angeliki Balayannis
1545-1615	What do we want to do next? Pasts, presents and futures of CBRN.	Dr. Becky Alexis Martin leads a group discussion involving creative methods.
1615-1630	Closing of the event	Barry Moss
1630-1800	Networking drinks and nibbles	For those who want to continue the conversation Hosted by the University of Bradford

Our Speakers

- Dr. Rhys Kelly (University of Bradford):** Head of Dept. Peace Studies and International Development. A specialist in resilience and environmental hazards.
- Dr. Louise Elstow (Cambridge University, Co-Chair of EPS CBRN PWG):** Resilience specialist, with academic interests in interdisciplinary collaborations and understandings of science in contamination emergencies.
- Barry Moss (Acute NHS Foundation Trust):** An experienced military CBRN responder and emergency planner specialising in crisis response, resilience planning, and multi-agency coordination during major incidents, particularly in the health sector.
- Dr Stephen Johnson (Cranfield University):** A leading military expert in forensic and environmental chemistry, specialising in CBRN science, hazardous material analysis, and forensic applications for security and defence.
- Dr. Julia Pearce (King's College London):** A specialist in risk perception, crisis communication, and resilience strategies in response to CBRN incidents, with a focus on public engagement and emergency messaging.
- Prof. David Crouch (Cranfield University):** CBRN, civil nuclear safety, and resilience planning expert working in academia, industry, the UK MOD Counter-CBRN, and with ongoing engagement with global organisations, including NATO and WHO.
- Dr. Becky Alexis-Martin (University of Bradford):** A specialist in nuclear cultures, radiation exposure, and the sociopolitical impact of CBRN threats. Her work examines the lived experiences of communities affected by nuclear incidents.
- Dr. Simon Whitby (University of Bradford):** A researcher in biological disarmament, non-proliferation, and CBRN policy. His work focuses on the governance of dual-use technologies and biosecurity threats.
- Prof. Brooke Rogers OBE (King's College London):** A behavioural science expert focusing on security, risk perception, public preparedness, and resilience to CBRN threats. She advises the UK government on public risk communication and emergency planning.
- Dr. El Parker (Emergency Planning College / UK Resilience Academy):** A specialist in risk, resilience and society, she has recently joined the Emergency Planning College where she is leading the transition to the new UK Resilience Academy.
- Elizabeth Benson (West Midlands Police and National CBRN Centre):** A police CBRN commander with extensive operational experience in CBRN response, crisis management, and law enforcement coordination in hazardous environments.
- Dr. Angeliki Balayannis (Wageningen University):** A specialist in environmental governance, toxic geographies, and the politics of chemical contamination. Her research explores the material and geopolitical dimensions of hazardous waste and pollution.