MANCHESTER 1824
The University of Manchester

The Centre for Occupational and Environmental Health

TAI Thomas Ashton Institute

# Annual Lane Lecture 2024

# Delivering Occupational Health Research in Government: an important front-line service?

**Professor Andrew Curran CBE**

**Programme**

Approximate Running Time: 17:30 – 19:00

**Welcome and Introduction**
*Professor Martie van Tongeren*

**Main Lecture**
Delivering Occupational Health Research in Government: an important front-line service?

Professor Andrew Curran CBE

**Q&A**
*(30 mins)*

**Thanks and Close**
*Professor Martie van Tongeren*

**Professor Ronald Lane**
**2 July 1897 - 14 March 1995**

Professor Lane's interest in occupational medicine developed early with his appointment at the age of 30 as medical officer to the Chloride Electrical Storage Company. Like many of the other occupational medicine 'greats' of earlier years, his initial work was in lead. His researches were diligent, painstaking and thorough, and the quality of his work was recognised when he became a member of the Industrial Health Research Board in 1937.

During World War II, Lane became very active in research and research management for the Occupational Health Committee of the MRC. He began part-time training courses for the doctors and nurses that industry called upon to care for war workers during those years.

Ronald Lane, the first Professor of Occupational Medicine at the University of Manchester, was appointed in 1945 and his tenure was the longest of the Professors to date, lasting until 1964.

He established a thriving department at the University of Manchester and an intellectually challenging academic environment. During this time research was undertaken in many diverse areas, ranging from lead poisoning to byssinosis (the dust-related disease in cotton workers).

Ronald believed very strongly in the essential clinical nature of Occupational Medicine and saw patients throughout his career.

The eponymous Lane Lecture and Symposium is an annual event, held in honour of this remarkable man.

**The Thomas Ashton Institute for Risk and Regulatory Research**

**Transforming risk , delivering resilience**

**The Thomas Ashton Institute draws upon the knowledge and experience of the University of Manchester and the Health and Safety Executive (HSE) to deliver research, learning and regulatory insights to enable a better working world.**

By combining research with regulatory insights, as well as through varied learning opportunities, the Institute will inform and improve industry practice and regulatory intervention.

Building upon the established reputation of its founding partner organisations, the Institute aims to deliver safer, happier and healthier workplaces around the world.

Grounded in social responsibility, the Institute will deliver change through:

- **World class research**
- **Outstanding teaching and learning (PhD, postdoctoral, CPD)**
- **Robust data and data analytics**

The complementary capabilities of 2 of the UK's most reputable science organisations makes the Institute a compelling choice for research funding bodies, combining academic prowess with real-world experience across all industrial sectors.

- The lecture will be recorded and will be available to watch via YouTube. It will also be made available via the websites for the Centre for Occupational and Environmental Health (COEH) & Thomas Ashton Institute.

- Slides will be shared after the event.

- The core team will be taking promotional photographs from the back of the lecture theatre (so faces will not be visible). If you don't wish to be included on photographs, please let one of the core team know.

- If a continuous fire alarm sounds, please leave all belongings and make your way out of the lecture theatre to the grassed area between the Samuel Alexander Building and Ellen Wilkinson Building and await further instructions. The team can direct you.

- If you would like to ask a question during the Q&A session, please raise your hand, and a microphone will be made available.

- Toilets can be found outside of the lecture theatre.

- If you experience any issues during the lecture, please bring this to the attention of one of the core team at the front and rear of the theatre.

- For guests staying for the reception, this will take place in the Classics foyer where you registered for the lecture.

# Andrew Curran

Professor Andrew Curran joined HSE in 1991 and has held a number of technical and leadership positions in both HSE and its previous agency, the Health and Safety Laboratory (HSL). He is currently the Director of Science, Chief Scientific Adviser and Head of the Science and Engineering Profession for HSE

As Director of Science for HSE he is responsible for ensuring that HSE has access to the evidence it needs to make informed regulatory and policy decisions. He is the Chair of the Sheffield Group (the global network of national health and safety research organisations) and a member of the Steering Group of PEROSH (Partnership for European Research in Occupational Safety and Health). Andrew is an honorary Professor at the University of Manchester where he is a co-Director of the Thomas Ashton Institute. He was also made an Honorary Doctor of the University by the University of Derby in 2024.

He is a Fellow of the Royal Society of Biology, and the Chartered Management Institute, and an Honorary Fellow of the Faculty of Occupational Medicine (UK). He was significantly involved in providing scientific advice in support of the UK Government's response to the COVID-19 pandemic as an active SAGE participant and through leading one of the national Core Studies looking at transmission of the virus. Andrew was appointed CBE in the King's first New Year's Honours in 2023 for public service.

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# Delivering Occupational Health Research in Government: an important front-line service?

## Lane Lecture 2024

**Professor Andrew Curran CBE**

Director of Science and Chief Scientific Adviser

# Today

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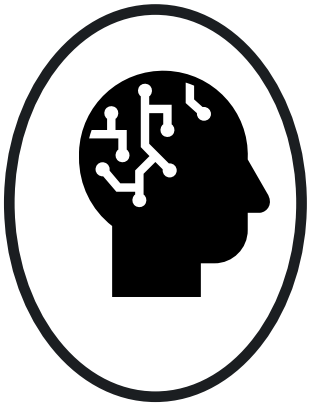
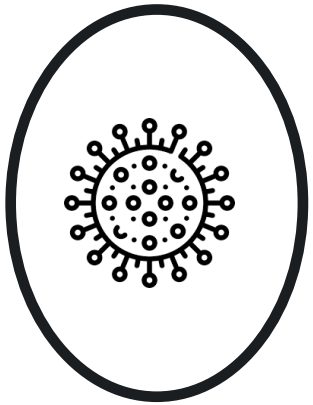
History



Research in government



Examples

# Today



**History**

# A proud history…

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**The Production Engineer**

THE JOURNAL OF THE INSTITUTION OF PRODUCTION ENGINEERS

VOL. 40 No. 1 JANUARY, 1961

# THE DOCTOR IN INDUSTRY

## FACTORY MEDICAL SERVICES

by RONALD E. LANE, C.B.E., M.D. (Lond.), M.Sc. (Manchester), F.R.C.P., F.R.S.H. (Hon.), D.I.H. (Hon.)

*Professor Lane has occupied the Nuffield Chair of Occupational Health in The University of Manchester since 1945, and for many years prior to this appointment was concerned with the study of health in industry. He is also Honorary Physician to Manchester Royal Infirmary, where he has beds and an outpatient clinic for industrial cases.*

*He is Consultant to the Chloride Electrical Storage group of companies, to the Central Electricity Council and to the Central Electricity Generating Board. He serves on various Government Committees and is Chairman of the Occupational Health Committee of the Medical Research Council.*

*This Paper was presented to The Institution of Production Engineers as The 1960 Sir Alfred Herbert Paper, on 10th November.*

INDUSTRIAL medicine is concerned with the care of man in the environment of his work. It is concerned with the accident to the apprentice and with the production manager's nervous breakdown, with the effects of a new chemical and the design of the typist's chair. In industrial medicine we see the same two broad divisions that are recognised in medicine as a whole —treatment and prevention. In an outbreak of dermatitis, for instance, the doctor has two distinct functions: the first is to treat the patients and promote the healing of their skin—this is the traditional medical role. The second is to contribute his knowledge for devising measures to prevent a recurrence of the incident.

This preventive side of his work is particularly important in industry and today it is becoming increasingly complicated. It may need the collaboration of other experts—the health engineer, the chemist, the physicist and the psychologist. It is true that the doctor in industry can make some of his most important contributions through teams composed of various of these specialists. It must not be overlooked, however, that the treatment side in industry is considerable and is larger than is sometimes realised. For the doctor in industry not only has the clinical care of special groups of workers, but also has an important part to play in the final stage of the treatment of many of those who have had a serious illness. It is axiomatic that treatment is not complete until the patient is back at work and earning a wage. Sometimes



services.

1. The establishment of an occupational hygiene service backed by laboratories. This will give a better control of dangerous trades and make available, to all who care to seek it, scientific advice on the control of the physical environment.
2. A review of our A.F.D. Service, with an attempt to bring the statutory duties more into line with modern needs. The A.F.D. when properly trained might be regarded as the local specialist in industrial medical matters and might have statutory duties in all factories of a certain size and, it is to be hoped, voluntary duties in many of the smaller units. In support the Medical Inspector of Factories would act in a consulting capacity on the occupational side, while it should not be too much to ask that in each of our teaching hospitals, and particularly in those situated in industrial areas, one consulting physician should take a special interest in the diseases of occupation.
3. The strengthening of the Inspectorate, both medical and lay, by the addition of nurses who would undertake the supervision of the first treatment service throughout an area.
4. Every encouragement should be given to the establishment of voluntary services staffed by trained personnel. It is necessary to stress the importance of this voluntary expansion. Advice forced on a patient or anyone else is likely to be less effective than advice which is sought. One would like to see advice being asked for. This implies a management that is alive to its needs and with the knowledge of how to secure the help it requires.
5. Research facilities are excellent at present. The identification of problems and the transmission of results would be greatly helped by the occupational hygiene service and by a network of trained factory doctors.
6. The training of the doctors for industry would have to be carried out in our medical schools; already there are three centres in England where this training can be given.

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Coal dust

Foundry Work and SWORD

THOR

SWORD, PROTECT, Data linkage

**HSE working with Manchester on OH Issues**

# A proud history…

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# A proud history…

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## Research

### Digital safety

How the digital revolution impacting society can be harnessed to continuously improve safety and health and be best employed to assure a resilient working world.

### Safe net zero

How to improve the health, wellbeing and safety of the workforce.

### Security and resilience

Understanding and considering the interdependency between various work activities that makes up our complex work environments so they are designed and managed to be safer and more resilient.

### Living and infrastructure

How to continuously improve the safety and increase the resilience of infrastructure of today and tomorrow.

### Leadership and social change

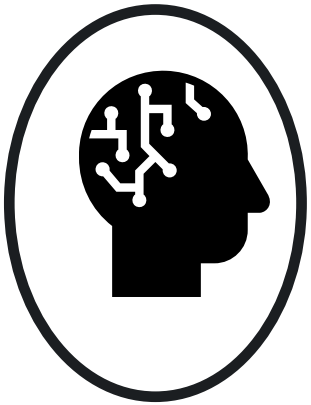
How improvements in health & safety can support societal changes to the way work is undertaken.

### Workplace health and wellbeing

How work and health outcomes are intimately interlinked, and what interventions can improve health outcomes.

# Today





**Research in government**

# What is a frontline service?

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## Have a short route to impact



# A system underpinned by evidence

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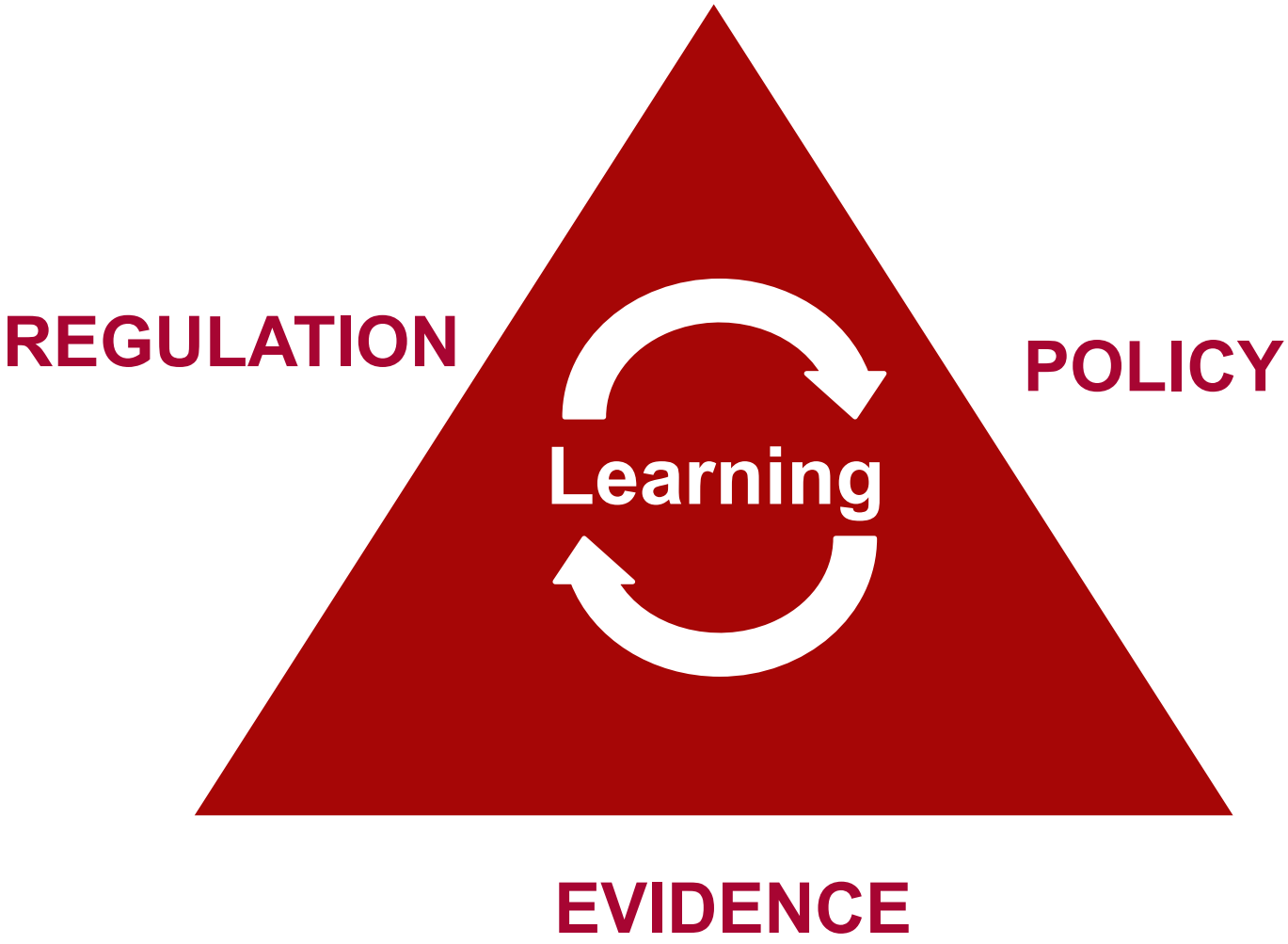

# What the Act says…



… shall make such arrangements as it considers appropriate for the carrying out of research and the publication of the results of research…

# What the Act says…



… shall make such arrangements as it considers appropriate for the carrying out of research and the publication of the results of research…


NO ENTRY

# Benefits to HSE…

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- To anticipate new health and safety challenges through foresight and synthesis of existing evidence
- To provide evidence to ensure risks resulting from work activities are effectively
- controlled
- To provide the evidence base to help HSE underpin operational and policy activities
- To evaluate and learn from our health and safety interventions

# Knowledge

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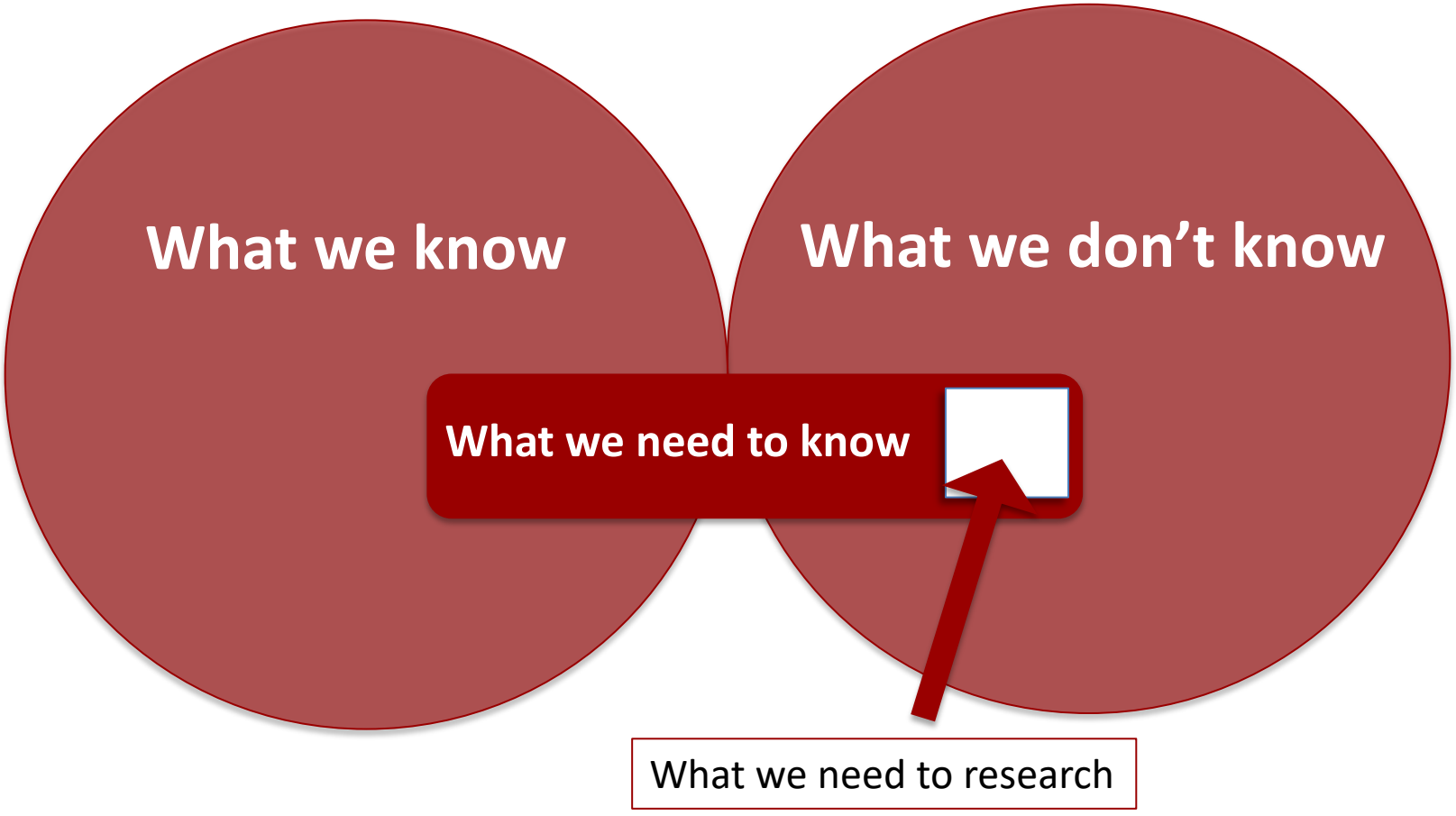

# What we need to know

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- HSE's Strategy, Protecting People and Places, defines HSE's strategic objectives.
- HSE's Areas of Research Interest detail HSE's forward looking research priorities.
- The nature and extent of HSE's knowledge/evidence gaps is such that HSE is not in a position to address all of these on its own.
- A critical step is to understand the broader RD&I landscape, both nationally and internationally – who is doing what, where, how and to what timescales.
- Through an 'HSE lens' we seek to:
  - **Exploit** existing evidence, research and expertise.
  - **Influence** and collaborate, in some cases delivering through others
  - **Commission** focussed research, mainly intramurally, occasionally extramurally

# Our Strategy

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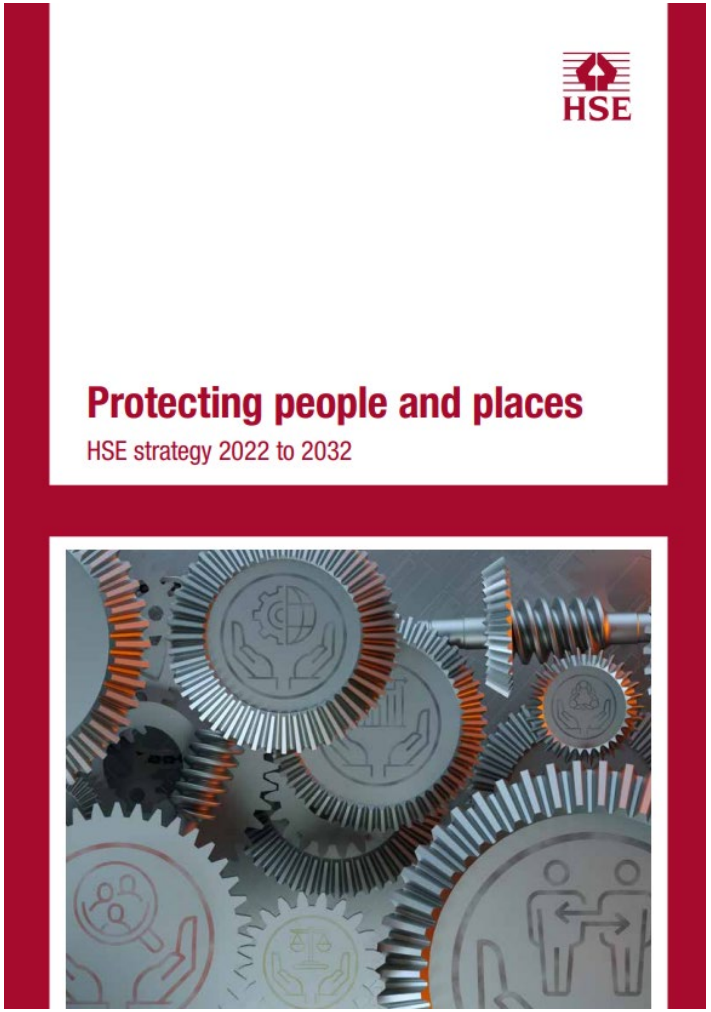

# Our Strategy

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Great Britain has one of the lowest rates of fatal and non-fatal work-related injury across Europe. We have seen real progress in how businesses understand and control workplace safety risk. We have well-established standards for safety, recognised and understood by industry. These have helped to reduce death and major injury, particularly in construction and manufacturing. This isn't the same for work-related ill health, as current trends show this is increasing. The most commonly reported causes in Great Britain are now stress, depression, or anxiety. We will work to reduce this trend. Using our collective resource to focus on this problem, we will deliver interventions that make a real difference. To have a greater impact on workers' health, society, and the economy, wider industry and business will need to help too. Our knowledge and expertise will equip us to deal with any new health challenges that arise from the changing world of work

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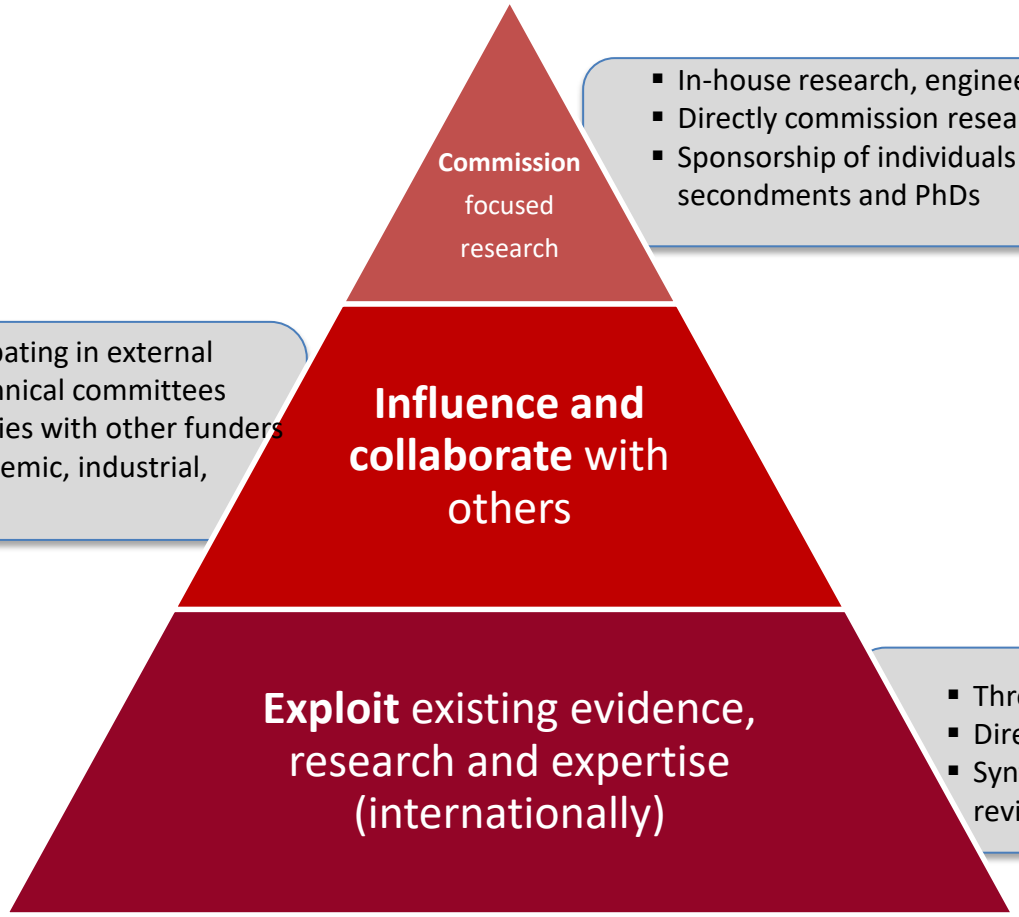
# Addressing the knowledge gaps




- In-house research, engineering and analysis
- Directly commission research extramurally
- Sponsorship of individuals through internships, secondments and PhDs

- Convening and participating in external events, standards, technical committees
- Through shared priorities with other funders
- Engagement with academic, industrial, regulatory consortia

- Through common interest groups
- Direct engagement and calls for evidence
- Synthesising evidence and literature reviews

## Own: Collaborate: Access

# The Big Questions




**There are several key factors that make OH research uniquely challenging.**

1. The multifactorial nature of work-related ill health
2. The diversity of work environments and hazards
3. The complexity of designing effective Interventions
4. The emerging and evolving Risks
5. The need for collaboration

# HSE Areas of Research Interest 2024

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## Reduce work-related ill health, with a specific focus on mental health and stress

| Evidence needs | Priority health topics | Regulatory strategy |
|---|---|---|
| Evidence for **effective regulation and intervention Design**: Evidence on workplace controls and interventions that successfully prevent work-related stress and mental ill-health and understand the factors influencing organizations' ability to control these risks. Evidence on interventions that best promote health equity and equality.<br><br>Evidence for **holistic Prevention**: Evidence on workplace health hazards, exposure, control measures, health outcomes and trends of the health risk. Evidence on the feasibility of enriching the evidence base through linking data sets. Evidence on the effectiveness of using health, work, and exposure data to encourage proactive employer action.<br><br>Evidence for **adapting to emerging risks**: Evidence on the impact of evolving work environments, new technologies, and demographic changes on work-related health, and methods to mitigate these emerging risks. | **Work-related stress and mental health:** Work-related stress, workplace violence and aggression, and how physical ill health contributes to mental health issues.<br><br>**Work-related physical illness:** A holistic approach to preventing and managing work-related physical illness, particularly respiratory conditions caused workplace exposure to Respiratory Crystalline Silica (RCS) and asbestos.<br><br>**Potential work-related ill health impacted from emerging work trends:** Changes in the work environment (e.g., gig economy, demographic shifts) and technologies (AI, Net Zero). | **Reducing exposure to health risks:** by setting protective standards, driving sustainable compliance, developing more effective control measures, and designing effective interventions.<br><br>**Preventive and proactive employer obligations:** by promoting preventive actions by employers supported by engagement and communication using evidence on work-related health risk, exposure trends, and the effectiveness of control measures.<br><br>**Future-proofing regulations:** by anticipating and manage health risks associated with changing work environments and technologies, such as AI and the gig economy, while also addressing environmental shifts, such as decarbonisation impacting asbestos removal policies. |

## What Science, Evidence and Analysis (SEA) capability will be needed to meet health research needs?

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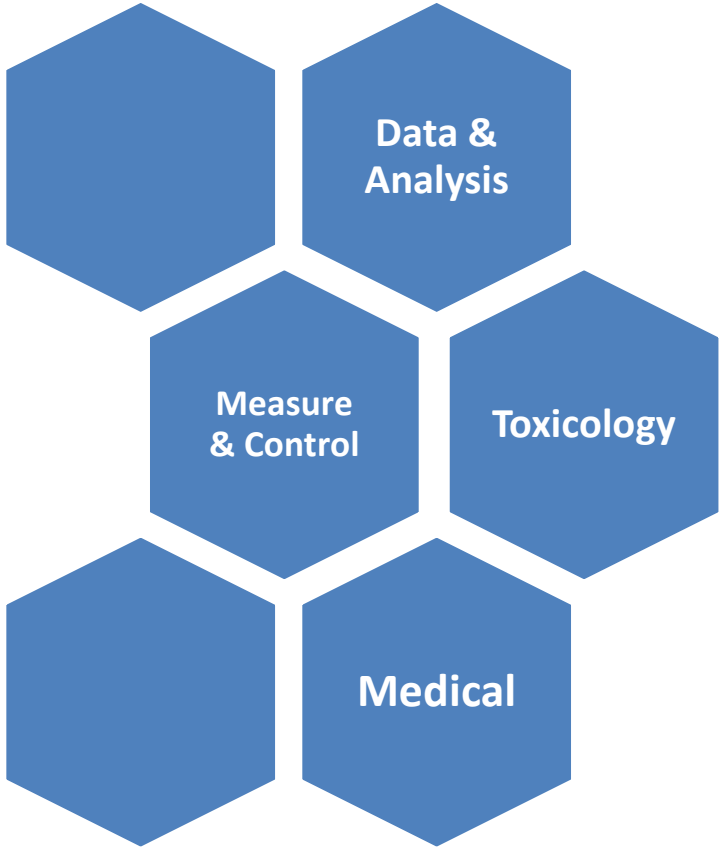
- Capability needs
  - **Data & Analysis:** Artificial Intelligence (AI), data linkages, scalable research, data-driven regulation
  - **Measurement & Control:** This is a priority area for HSE, for example N&V and ventilation etc.
  - **Toxicology:** Growing demand for evidence supporting the review and setting of Workplace Exposure Limits (**WELs**) following the UK's exit from the EU.
  - **Medical and Health Sciences:** This is an important part of holistic intervention from identification of health hazards, control or eliminate risk exposure, to reducing work-related ill health.
- Good capacity available in areas with sufficient capability

Future (5 years)

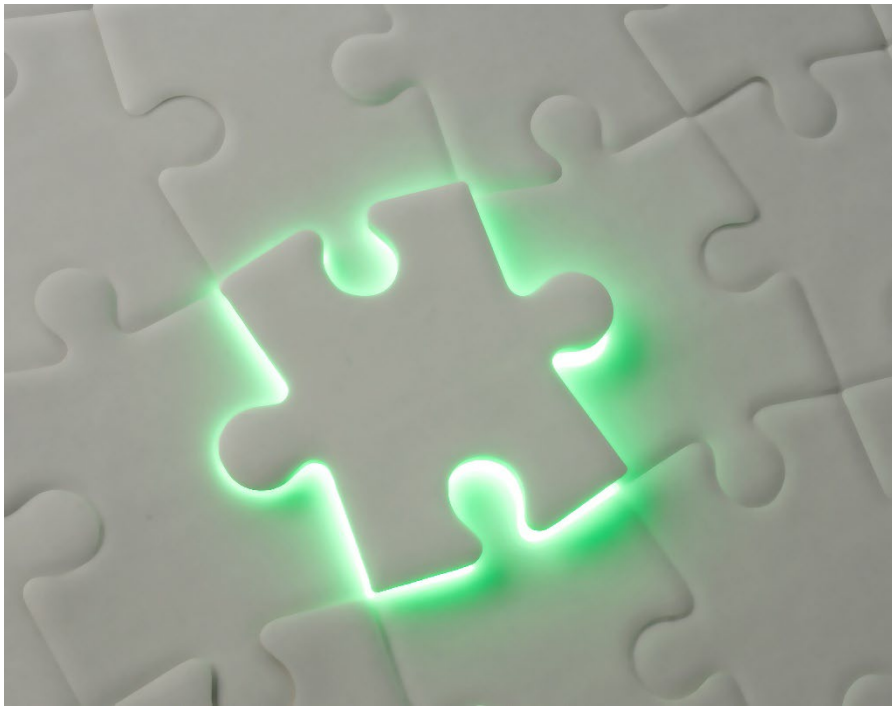
- Difficult to predict



# Accessing expertise



- Universities
- College of Experts (DfT; DCMS)
- Register of Specialists (OPSS)
- National Laboratories Alliance (PSRE)
- Catapult Network
- PEROSH
- NZTC
- International Regulators' Forum
- Cross-Government collaborations (facilitate through CSA network)



# PEROSH

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# PEROSH

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| | Safety and accidents, prevention, safety culture | Chemical, nanoparticles, dust and fibres | Biological | Musculoskeletal disorders, physiological constraints, sedentary work | Psychosocial | Work organization and workplace design | Physical agents (noise, electromagnetic field, light, ...) | Others |
|---|---|---|---|---|---|---|---|---|
| **AUVA (AT)** | √ | √ | √ | √ | √ | √ | √ | |
| **BAuA (DE)** | √ | √ | √ | √ | √ | √ | √ | |
| **CIOP-PIB (PL)** | √ | √ | √ | √ | √ | √ | √ | √ |
| **FIOH (FI)** | √ | √ | √ | √ | √ | √ | | √ |
| **HSE (UK)** | √ | √ | √ | √ | √ | √ | | √ |
| **IFA (DE)** | √ | √ | √ | √ | | √ | √ | √ |
| **INAIL (IT)** | √ | √ | √ | √ | √ | √ | √ | √ |
| **INRS (FR)** | √ | √ | √ | √ | √ | √ | √ | |
| **INSST (ES)** | √ | √ | √ | √ | √ | √ | √ | |
| **NFA (DK)** | √ | √ | √ | √ | √ | √ | | √ |
| **TNO (NL)** | √ | √ | √ | √ | √ | √ | √ | √ |
| **STAMI (NO)** | √ | √ | √ | √ | √ | √ | √ | √ |
| **Unisanté (CH)** | √ | √ | √ | √ | √ | | √ | |

# PEROSH

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NEW

## Futures 2: Updates on Research Priorities Among PEROSH Researchers' Community Following Health, Social, and Economic Changes

Projectleader(s): **Diana Gagliardi, INAIL**

NEW

## ALMA-AI: Exploring OHS Impact of Algorithmic Management & AI

Projectleader(s): **Jorge Martín González (INSST, Spain)**

NEW

## European Platform on Occupational Optical Radiation Safety (EPOS)

Projectleader(s): **Stefan Bauer (BAuA)**

## Harmonization of asbestos workplace exposure assessment

Projectleader(s): **Dr Suzanne Spaan and Max Hennekes**

ONGOING

## Nano training project

Projectleader(s): **Fabio Boccuni, INAIL**

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# Practical Research Issues

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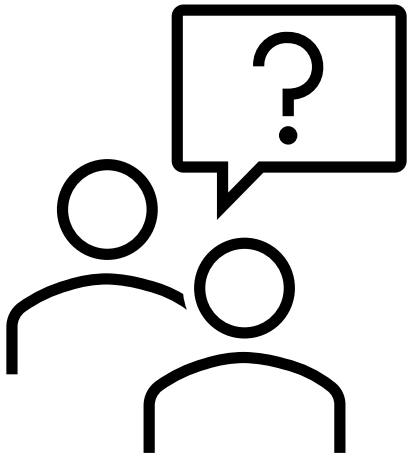
- What is the exam question?
- How does it align to the strategy?
- What are others doing in this area?
- What do we actually need to know?
- What is the specific exam question?
- Who is the end user?
- What is the “risk appetite” of the end user?
- What is the delivery driver?
- What are the routes to impact?



# Focus

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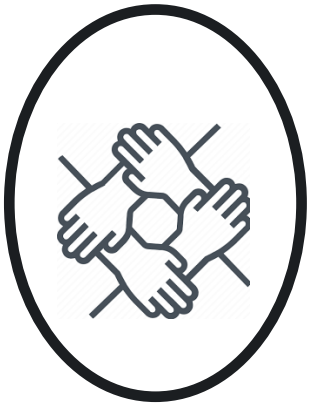
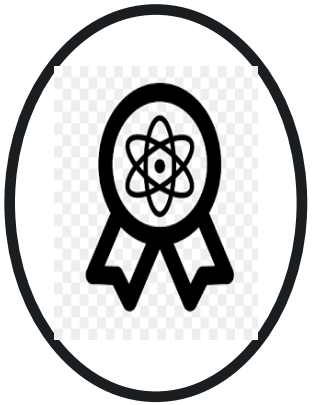
**Quality**

Meets risk appetite of end user



**Alignment**

Work aligns with HSE's strategy



**Impact**

We make a difference

**Quality** - we deliver appropriate quality outputs that stand up to scrutiny by others, including our end-users across HSE, external funders and the wider stakeholder communities we serve - Including the rigour, integrity and proportionality of methodologies and outputs, and based on the risk appetite for the quality of evidence underpinning the work.

**Alignment** – our scientific research and evidence work aligns with 'Protecting People and Places – Including effective senior engagement with stakeholders to agree and prioritise the questions asked, to ensure contribution to HSE's interventions and strategic objectives.

**Impact** - we discuss and understand why our work is needed, the deadline drivers and the context of the question and that the end-user is involved throughout the work– Including a clear agreed understanding and articulation of the benefits of the work and how it will be used achieve impact.

# Delivering Occupational Health Research in Government: an important front-line service?

# What is a frontline service?

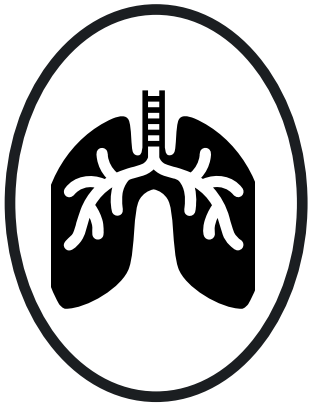
PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

## Have a short route to impact



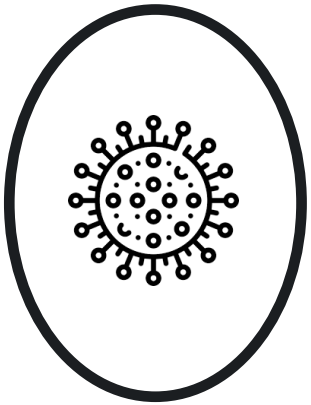
# Examples





**Occupational asthma**

Changing the paradigm?

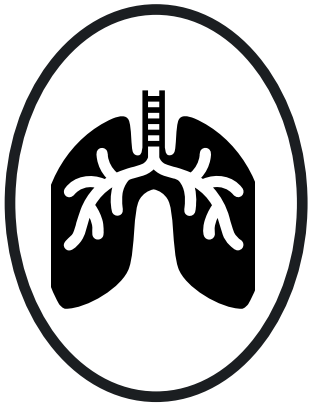


**COVID**
**A National Core Study**

Simple or complex?

# Examples (1)





**Occupational asthma**

Changing the paradigm?

# Changing the focus

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Occup. Med. Vol. 47, No. 6, pp. 361–366, 1997

0962-7480/97

## Screening questionnaires for bakers' asthma — are they worth the effort?

**S. B. Gordon,*† A. D. Curran,† J. Murphy,‡ C. Sillitoe,* G. Lee,* K. Wiley† and A. H. Morice***

**Department of Medicine and Pharmacology, University of Sheffield, Royal Hallamshire Hospital, Sheffield S10 2JF, UK; †Health and Safety Laboratory, Broad Lane, Sheffield S3 7HQ, UK; ‡Occupational Health Service, Gunstones Bakery, Dronfield, Sheffield S18 6PF, UK*

The use of a respiratory screening questionnaire is recommended annually to screen bakery workers in the UK. We compared questionnaire screening with other methods of detecting workers with asthmatic symptoms and then assessed the significance of these symptoms with careful investigation and follow-up. Reasons for questionnaire failures were then explored. A questionnaire was issued to 362 flour-exposed workers in a large bakery. All positive respondents to respiratory symptom questions were interviewed by an occupational nurse. Workers with occupationally related symptoms at this interview were referred to the chest clinic. In addition, workers with negative questionnaires were screened using attendance records, sick notes and direct workplace observations. Workers with frequent absence from work or sick notes with respiratory diagnoses were interviewed in the same manner as those answering the questionnaire positively and then referred to clinic. At clinic, a diagnosis was made for each worker on the basis of clinical assessment, spirometry, serial peak expiratory flow rate (PEFR) analysis and radioallergosorbent testing (RAST) testing for specific IgE. Using the clinic diagnoses, the referral routes were audited to assess the rates of case detection of asthma and occupational asthma. The respiratory screening questionnaire identified 68 workers with respiratory symptoms. Of these, 21 proceeded to full assessment. A diagnosis of asthma was made in five cases, one of which was bakers' asthma. In addition, 11 workers not reporting any symptoms by questionnaire were referred to clinic and five were diagnosed as having asthma. Screening questionnaires may lead to an underestimate of the prevalence of asthmatic symptoms and as such should not be used alone in workplace screening.

*Key words:* Baker; occupational asthma; respiratory symptoms, screening.

Occup. Med. Vol. 47, 361–366, 1997

*Received 4 March 1997; accepted in final form 8 May 1997.*

# Supporting the strategy of the day

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

*Ann. occup. Hyg.*, Vol. 47, No. 6, pp. 433–436, 2003

DOI: 10.1093/annhyg/meg064

## Invited Editorial

# Occupational Asthma: Research, Change and the 30% Target

**ANDREW D. CURRAN* and DAVID FISHWICK**

*Health and Safety Laboratory, Broad Lane, Sheffield S3 7HQ, UK*

Received 9 May 2003; in final form 19 May 2003

### BACKGROUND

In his Colt lecture at the Ninth Inhaled Particles Symposium, Anthony Newman Taylor described asthma as 'the most prevalent cause in the UK, and probably in the Western world, of respiratory ill-health during working life' (Newman Taylor, 2002). Estimates vary of the contribution of working conditions, but probably ~9% of adult asthma can be attributed to the workplace (Blanc and Toren, 1999). In the recent past, there has been debate about the role of exposure limits in control (Heederik and Houba, 2001; Nieuwenhuijsen and Burdorf, 2001), but Newman Taylor points out the relative ineffectiveness of these in small businesses, and the importance of involving stakeholders in a broad approach. This is essential if the target of the UK Health & Safety Commission (HSC), i.e. to reduce the incidence of asthma caused by workplace exposure to substances by 30% by 2010, is to be achieved. The necessary new approach was recognized in a package of measures agreed by HSC in October 2001. As one element, the Health & Safety Executive (HSE) convened a workshop in Manchester in January this year, to discuss information needs on four core topic areas—diagnosis, consequences, behaviour and prevention—and the change of approach that will be required by researchers to provide the solid evidence base on which the target can be achieved.

### DIAGNOSTIC ISSUES

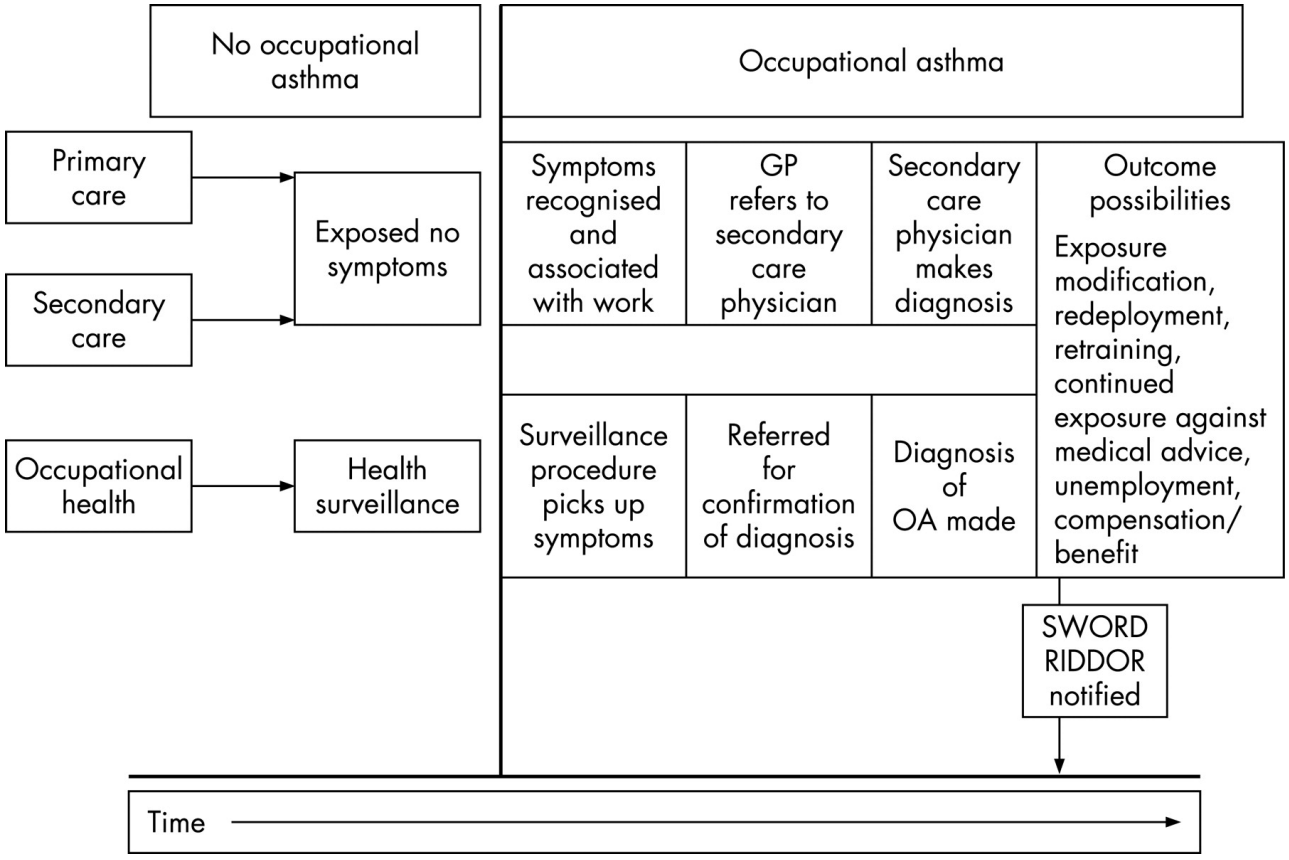
A simple definition of occupational asthma is asthma that is wholly or predominantly due to an agent encountered at work. Clinically, this is associated with variable airflow restriction, and/or airway hyper-responsiveness; often agent-specific immunoglubulin E (IgE) may be detected in serum. This definition is distinct from work-aggravated asthma, where a pre-existing asthma sufferer has their symptoms brought on by workplace exposures. However, in both cases the result for the sufferer is symptoms of wheeze, shortness of breath and chest tightness.

It is often assumed that there is an agreed standard for the diagnosis of the condition; this is not the case. Indeed, the criteria for the diagnosis of the condition remain controversial. Published data from experts show that there is even a wide level of disagreement in the interpretation of some standard tests (Baldwin *et al.*, 2002). The toolkit available to specialist respiratory physicians to investigate the condition includes history, spirometry, bronchial reactivity, specific antibody measurement (skin prick test or IgE by RAST), knowledge of workplaces and potential sensitizers, and specific allergen challenge with workplace agents. At present there is no information on the extent to which specialist centres use these techniques, or the consistency with which these procedures are performed.

From the patient's perspective, their first step is to recognize the relationship between work and symptoms they may be experiencing, and to realize they need to seek further help. Existing data suggest that there are barriers to this process; first, that exposed workers anticipate economic consequences for them if they report any symptoms, even if there is an annual health surveillance programme in place. Second, it appears that there is a reluctance for patients to discuss with any healthcare professional

# Routes of Referral

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE




Fishwick D, Bradshaw L, Davies J, Henson M, Stenton C, Burge S, Niven R, Warburton CJ, Hendrick D, Rogers T, Rawbone R, Curran AD. Are we failing workers with symptoms suggestive of occupational asthma? Prim Care Respir J. 2007 Oct;16(5):304-10

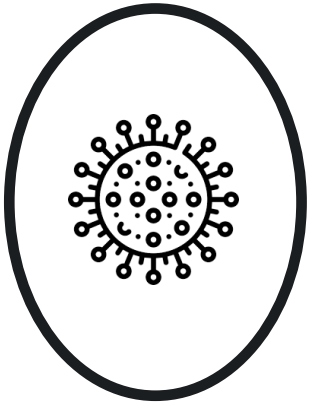
# Frontline service?

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

- Policy interventions
- Standard of care
- New research questions
- GORDS

# Examples





**COVID**
**A National Core Study**

Simple or complex?

# HSE and the Pandemic

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

# PROTECT

A COVID-19 National Core Study

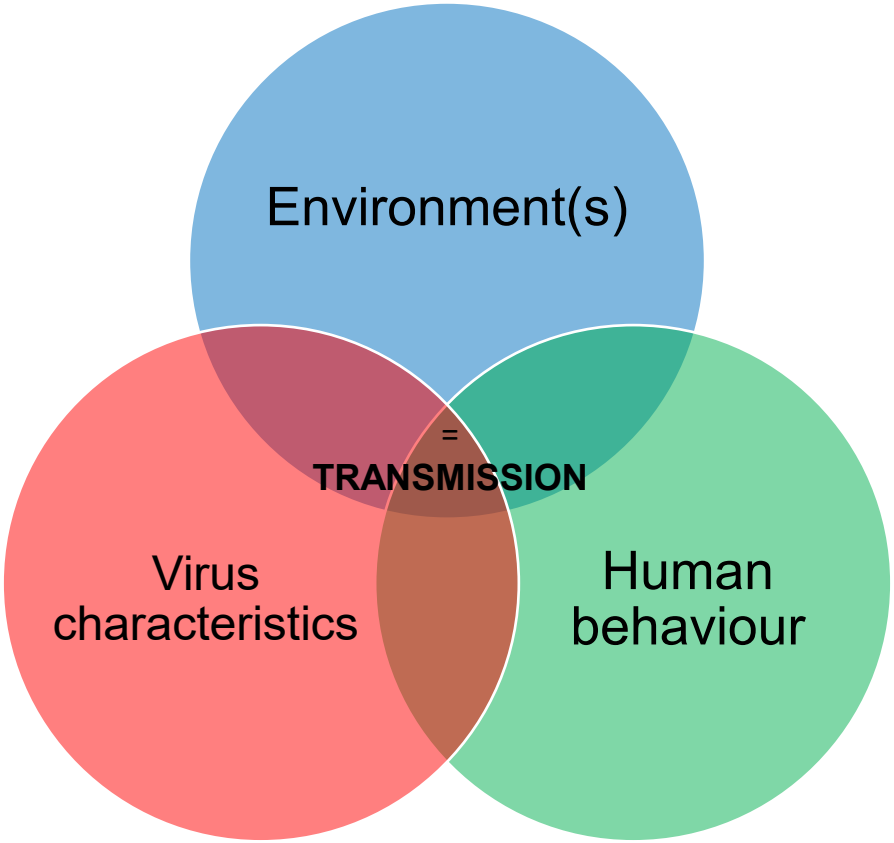
# PROTECT: A national Core Study

## Context

- Part of COVID-19 National Core Studies programme led by Professor Sir Patrick Vallance
- Three routes of COVID-19 virus transmission: surface, airborne, and person-to-person
- Start date: October 2020
- Duration: 29 Months

## Purpose

- To provide an evidence generating capability for senior Government stakeholders (including SAGE) to access new knowledge about the SARS-CoV-2 virus
- Understand ‘real world’ transmission
- Inform policy and practice
- Rapid and responsive (e.g. alpha to omicron)
- Deliver a legacy impact for future pandemics



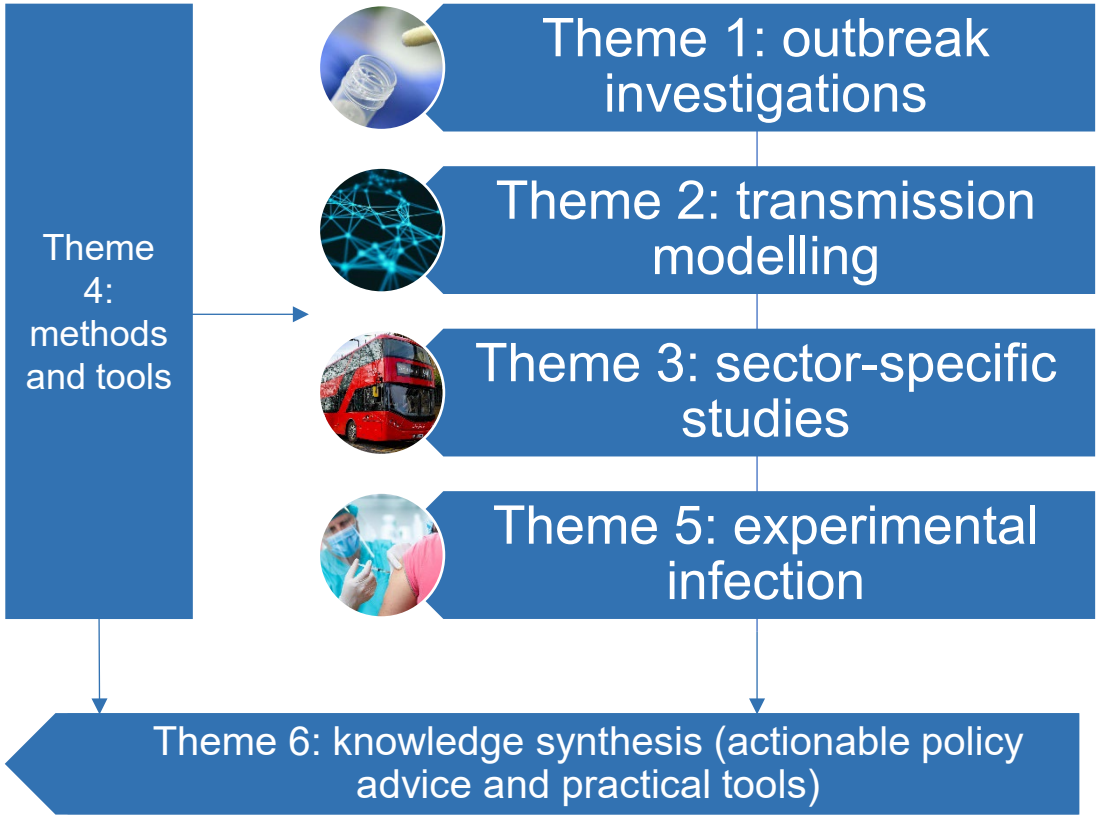
# PROTECT Themes

## Partners and funders

- Part of COVID-19 National Core Studies programme coordinated by GO-Science
- Funding through HM Treasury
- Led by HSE Chief Scientific Adviser Prof Andrew Curran
- Approx. 200 researchers from 20 academic and government institutions across the UK

## Key Stakeholders

- Lord Patrick Vallance, Sir Chris Whitty and NCS Oversight Board
- SAGE
- HSE SoS, Cabinet Office, C-19 taskforce, Departmental Chief Scientific Advisers (particularly BEIS, DfT, DCMS, DHSC, Scotland Wales, Northern Ireland).
- HSE: CEO, FD, COVID Policy Team, SD



# PROTECT in Numbers


## Year One (October 2020-March 2021) £1.7M spend

- Core team established and theme plans agreed
- Develop research network (e.g. NCS, ONS, UKHSA, JBC)

## Year Two (April 2021-March 2022) £13M spend

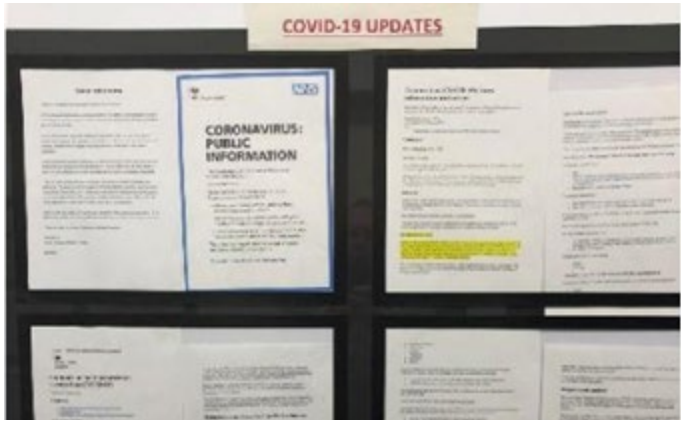
- Delivery of underpinning research
- Open call to address new and emerging issues
- Understand ‘real world’ transmission

## Year Three (April 2022-March 2023) £5M spend

- Conclusion of research activity
- Stakeholder engagement activity; translation of research outputs
- Legacy programme to deliver sustainable national capability.

# The Real World of Work

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

# LEARNING FROM OUTBREAKS

# Outbreak investigations

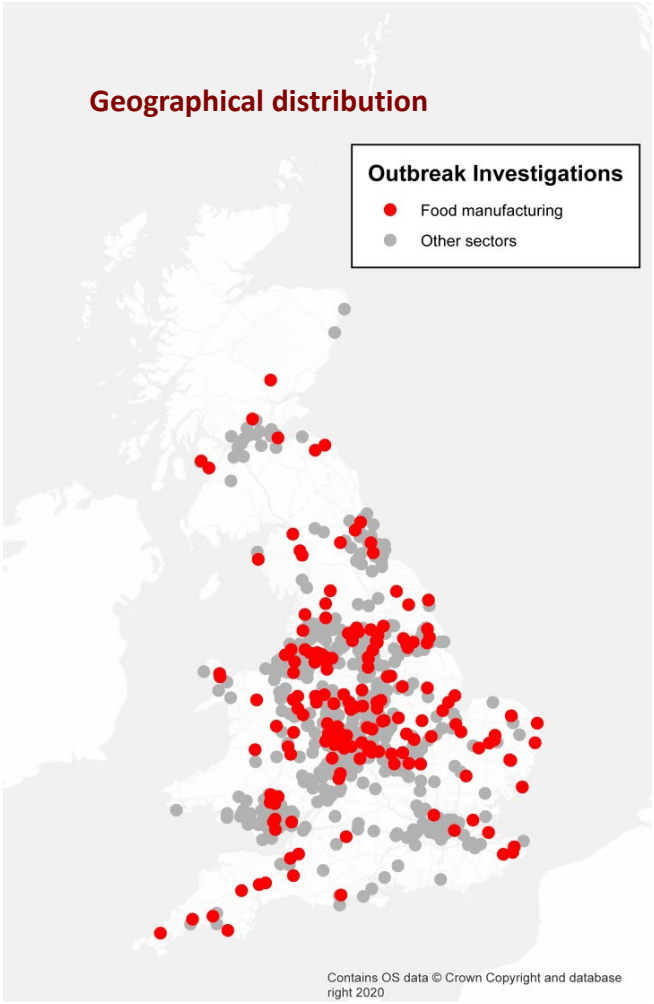
PROTECT
A COVID-19 National Core Study

HSE

**Outbreak data analysis – HSE outbreak investigation records – Apr 2020 – Jan 2022**

- Total of 770 outbreaks investigated

## Geographical distribution




## Number and rate of outbreaks by essential infrastructure sector

| Essential Infrastructure | No. Outbreaks | No. Workplaces | *Outbreak Rate* (per 100,000) |
|---|---|---|---|
| Food Manufacturing | 177 | 8,020 | 2,207 |
| Non-food manufacturing | 264 | 85,814 | 308 |
| Warehouses | 9 | 16,706 | 54 |
| Distributors and transporters | 10 | 26,419 | 38 |
| Construction Sites | 48 | 212,095 | 23 |
| Non-Essential | 244 | 1,593,619 | 15 |
| Primary producers | 16 | 125,146 | 13 |
| Supermarkets | 2 | 35,531 | 6 |

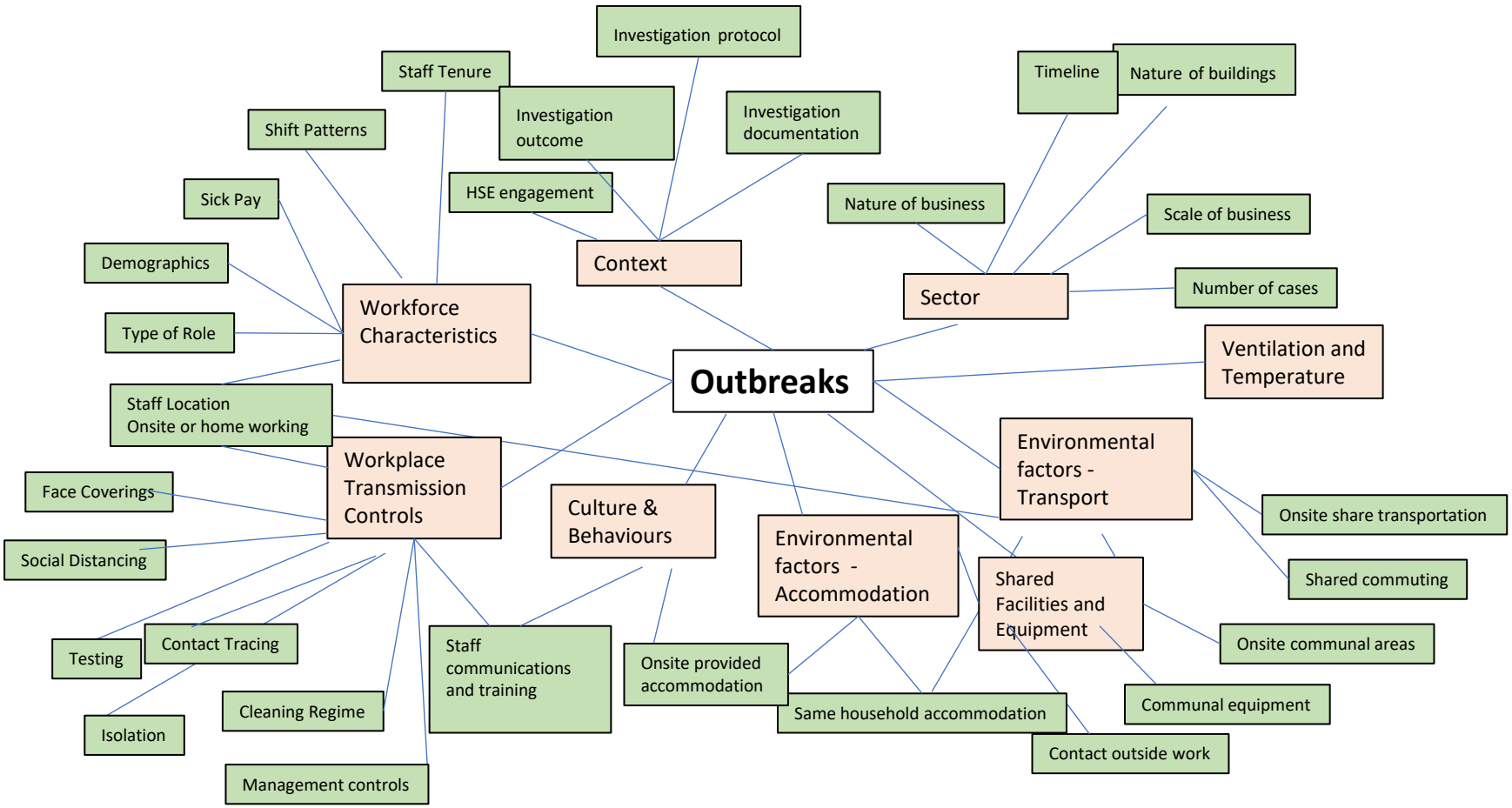
# Outbreak investigations

## Outbreak data analysis – Thematic analysis of HSE outbreak investigation records

**Outbreaks**

# Outbreak investigations

## Outbreak data analysis – Thematic analysis of HSE outbreak investigation records




**Map of risk factors**

# Conclusions

What have we learned?

# Findings

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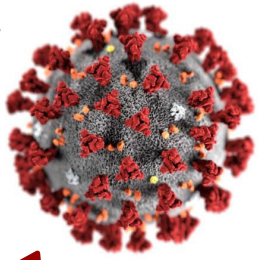
Importance of considering work-ecosystem rather than using a narrow lens of work activity as the key risk determinant

Risk assessments and mitigation measures widely used and introduced quickly



Virus survived on skin and was infectious when physically transferred to nose

Organisational leadership was a critical success factor for effective control

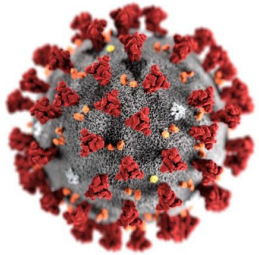
Work was an important determinant of risk

# Findings

Dispersion of aerosols is complex, depending an a range of issues

People don't emit infectious virus until they are lateral flow positive

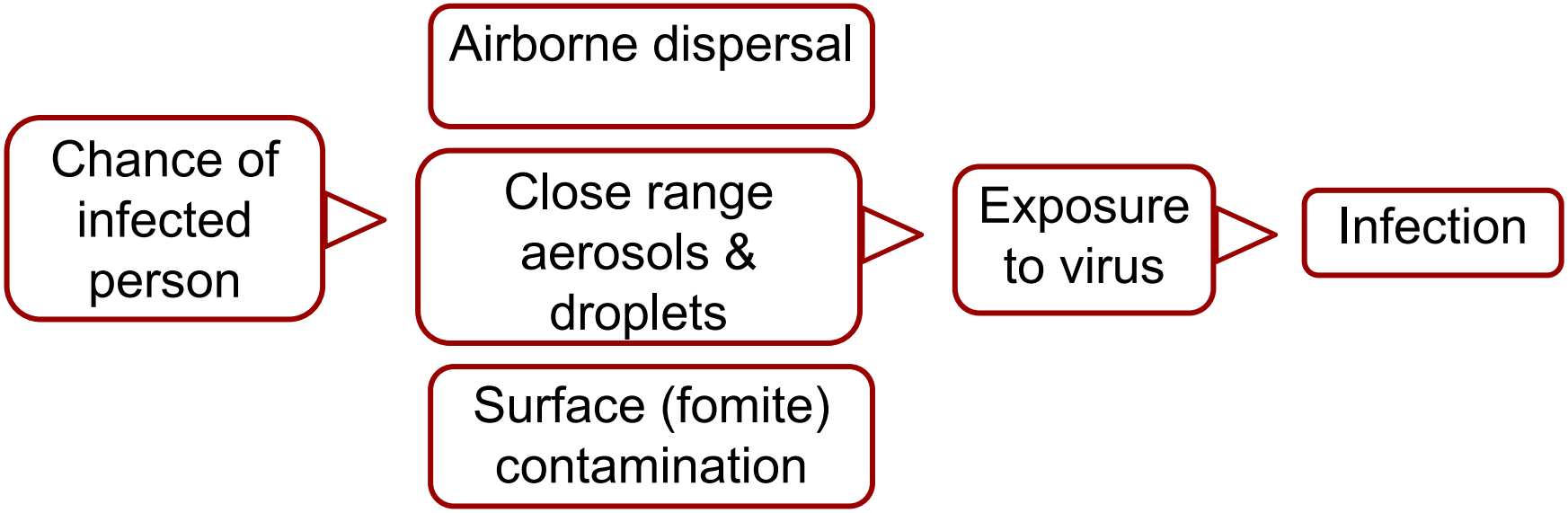
Only 10 infectious units are needed to infect



Individuals vary significantly in their emission of the virus

Ventilation is very complex, variable and poorly understood

# CONCLUSION: Quantifying Interacting Factors




- National/local prevalence
- Frequency of interactions
- Adherence to policies
- Social issues
- Work
- Enduring prevalence

- Viral load
- Activity
- Face coverings
- Hygiene behaviours
- Surface touching

- Duration of time
- Proximity
- Hygiene behaviours
- Face coverings
- Ventilation

- Infectious dose
- Variant
- Vaccines
- Multiple exposures
- Transmission route

# Conclusions

Exposure to SARS-CoV2 is a continuous risk which varies depending on a wide range of risk factors

Covid is here to stay - living with Covid is not ignoring it

Retain sensible protections, recognise the vulnerable, respond to surges

There will be more new variants

There will be a next time

2003 SARS, 2009 Swine Flu, 2012 MERS, 2020 Covid…..

Building resilience is important

Surveillance, improving buildings

Education and training – professionals and public

# Intangible Benefits

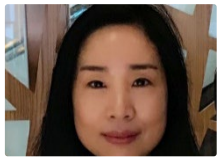
- Globally unique programme
- Value of Mission driven programmes driving interdisciplinary benefits
- Established links across the research ecosystem: PSREs, academic, independent
- Collected real world data
- Take COVID out of the equation
- Occupation isn’t a thing; it is a system

# Acknowledgments

HSE

PROTECT
A COVID-19 National Core Study

## Theme Leaders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Derek Morgan
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Cath Noakes
University of Leeds


Martie Van Tongeren
University of Manchester


David Fishwick
HSE


Allan Bennett
PHE


Wendy Barclay
Imperial College

## Organisations

UNIVERSITY OF LEEDS

MANCHESTER 1824
The University of Manchester

UK Health Security Agency

HSE
Health & Safety Executive

Imperial College London

IOM

UCL

LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

[dstl]
The Science Inside

UNIVERSITY OF LEICESTER

Loughborough University

UNIVERSITY OF CAMBRIDGE

UWS UNIVERSITY OF THE WEST of SCOTLAND

The University Of Sheffield.

University of Hertfordshire UH

University of Strathclyde Glasgow

University of BRISTOL

Animal & Plant Health Agency

Newcastle University

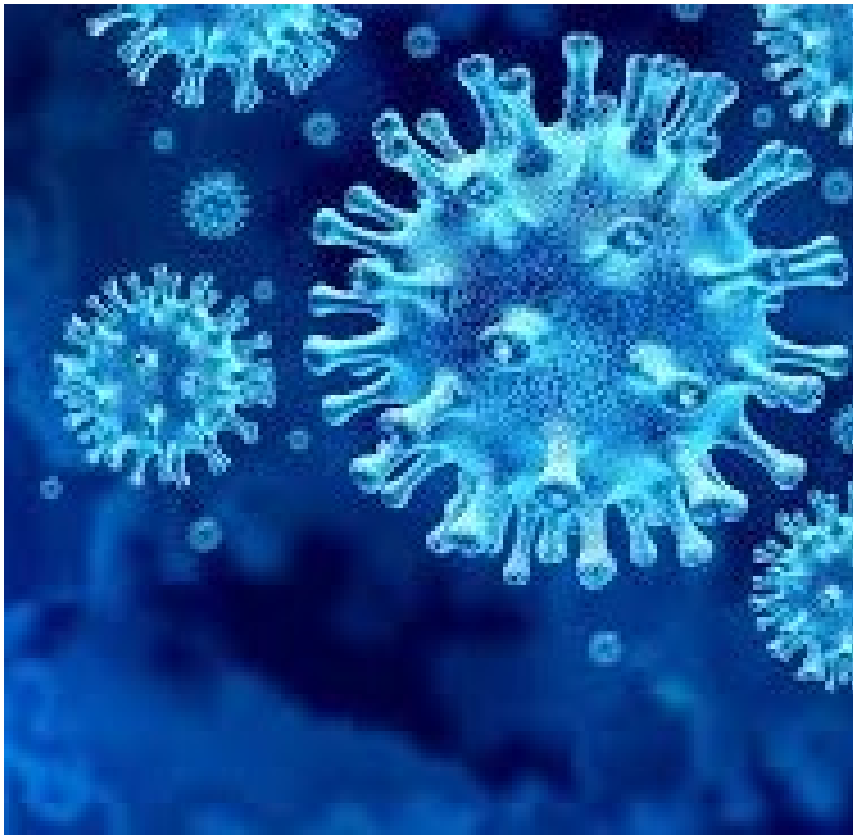
TAI Thomas Ashton Institute

**… and our entire research and portfolio management community**

# Frontline service?

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

- Input to policy in real-time
- Regular meetings with CSAs to update
- Input to SAGE papers and meetings
- Input to Downing Street briefings
- Direct interaction with organisations



# PROTECT under scrutiny

# Is n=2 sufficient?

PROTECTING PEOPLE AND PLACES FOR 50 YEARS HSE

- Asbestos
- PPE in pandemic
- Isocyanates
- Engineered stone
- Work related stress


# Conclusions

- Focus: what we need to know
- Clear end-user
- Understanding of:
  - Quality
  - Alignment
  - Impact

# QUESTIONS?

Health and Safety
Executive

HSE

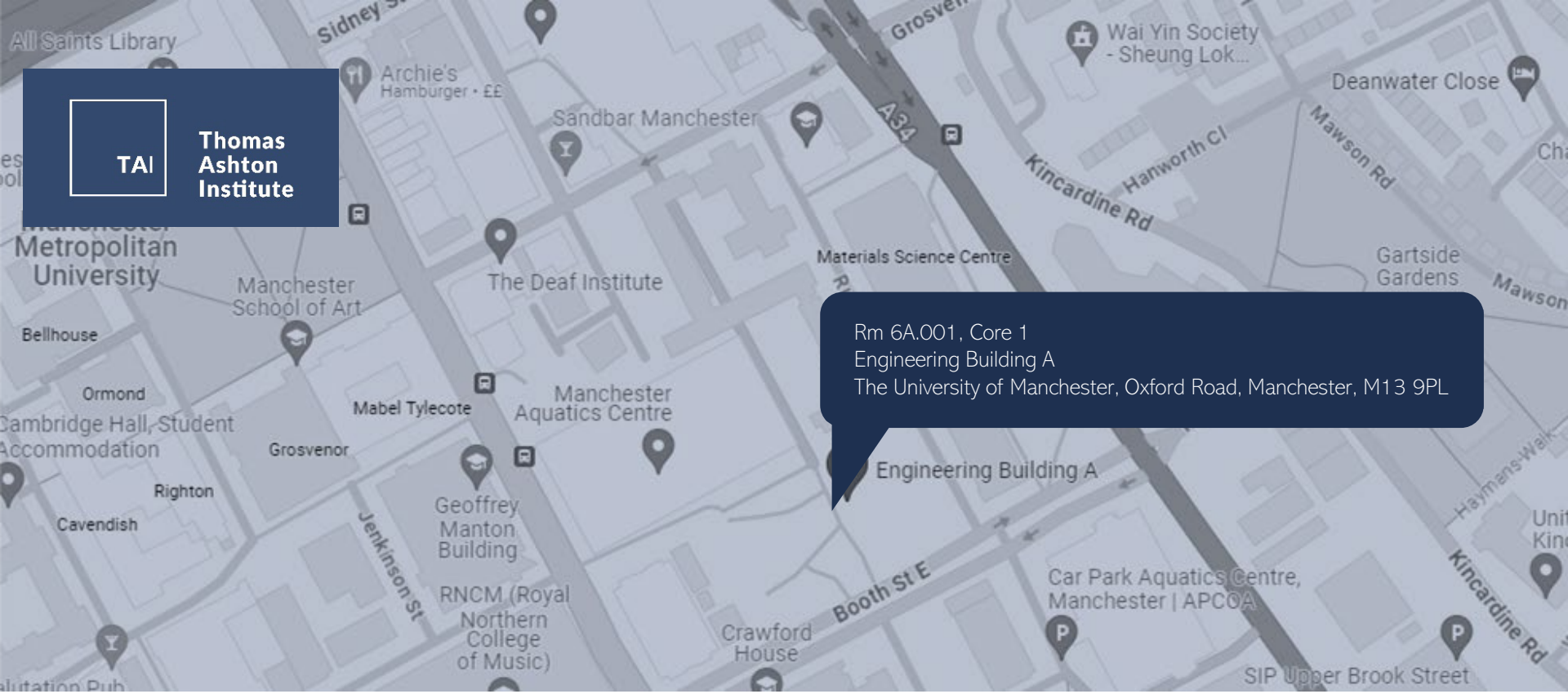
# Thank you

# Join us for the Lane Lecture 2025 featuring Professor Malcolm Sim from Monash University!

Professor Sim is an esteemed Emeritus Professor at the School of Public Health and Preventive Medicine. As a leading Occupational and Environmental Physician, he has dedicated his career to understanding the health impacts of workplace and environmental exposures. His research spans chronic diseases such as cancer and respiratory illnesses, the health of military personnel and veterans, and the mental and physical health of long-term injured workers.

Professor Sim has led pivotal studies on the health effects of chemical exposures, the impact of heat on workers, and the aftermath of significant events like the Hazelwood Mine Fire. His work has been instrumental in shaping occupational health policies and improving workplace safety standards globally.

Don’t miss this opportunity to hear from a world-renowned expert in occupational and environmental health!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Materials Science Centre
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Ormond
Cambridge Hall, Student Accommodation
Mabel Tylecote
Manchester Aquatics Centre
Grosvenor
Righton
Cavendish
Jenkinson St
Geoffrey Manton Building
RNCM (Royal Northern College of Music)
Crawford House
Booth St E
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Car Park Aquatics Centre, Manchester | APCOA
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