The Evolution of Evidence and the Changing Nature of Employment

The past, present and future – reflections from the Chair of the Industrial Injuries Advisory Council

The Lane lecture 2026

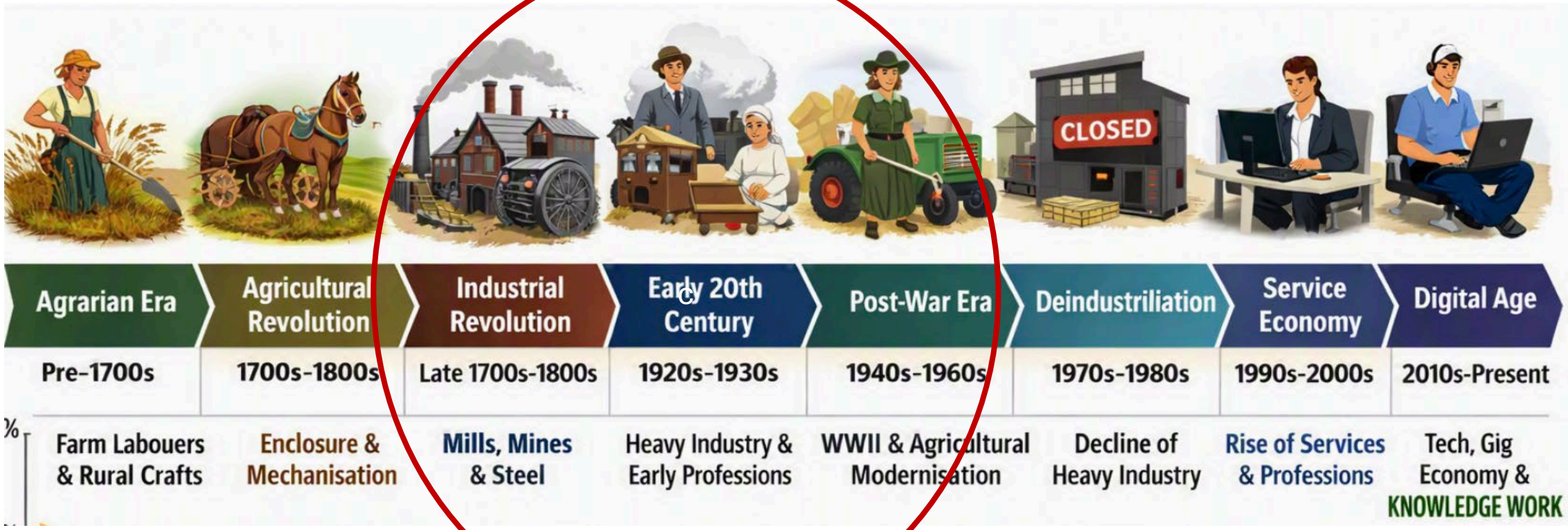
Professor Gillian Leng CBE



The past

UK occupational history

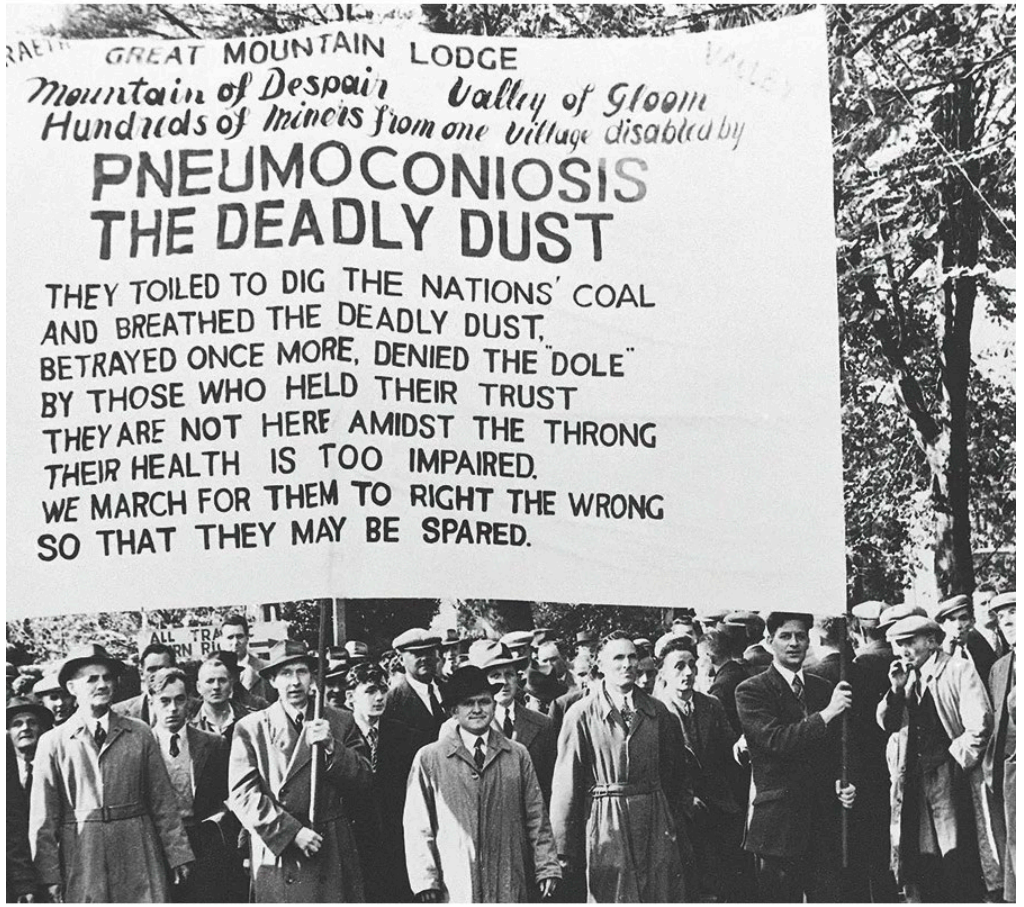
From farm to factory to office



Made with Co-Pilot

Black lung disease in coal miners

- **16th–17th Century:** German mineralogist Georgius Agricola first described lung issues in miners, and British observers noted black lung in coal miners during the 1600s.
- **1831–1836:** Physicians formally documented coal dust accumulation and black pigment in the lungs of deceased Scottish and British miners.
- **Early 20th Century:** Experts wrongly argued that coal dust was harmless or even protective, confusing the condition with silicosis (caused by silica).
- **1943:** The British Medical Research Council introduced the formal term "coal workers' pneumoconiosis" and established the Coalmining Industry (Pneumoconiosis) Compensation Scheme, officially recognizing it for compensation.



ational Union of Mineworkers protest against pneumoconiosis in March 1952 (Cr

Chimney sweeps’ cancer

An historical term for squamous cell carcinoma of the scrotum, recognized in **1775** by British surgeon Percivall Pott as the first-ever occupational cancer linked to a specific environmental carcinogen, launching the science of occupational health. Young climbing boys were forced inside narrow London chimneys, often naked. Soot contains high levels of polycyclic aromatic hydrocarbons, which caused chronic skin irritation and malignant tumour growth.

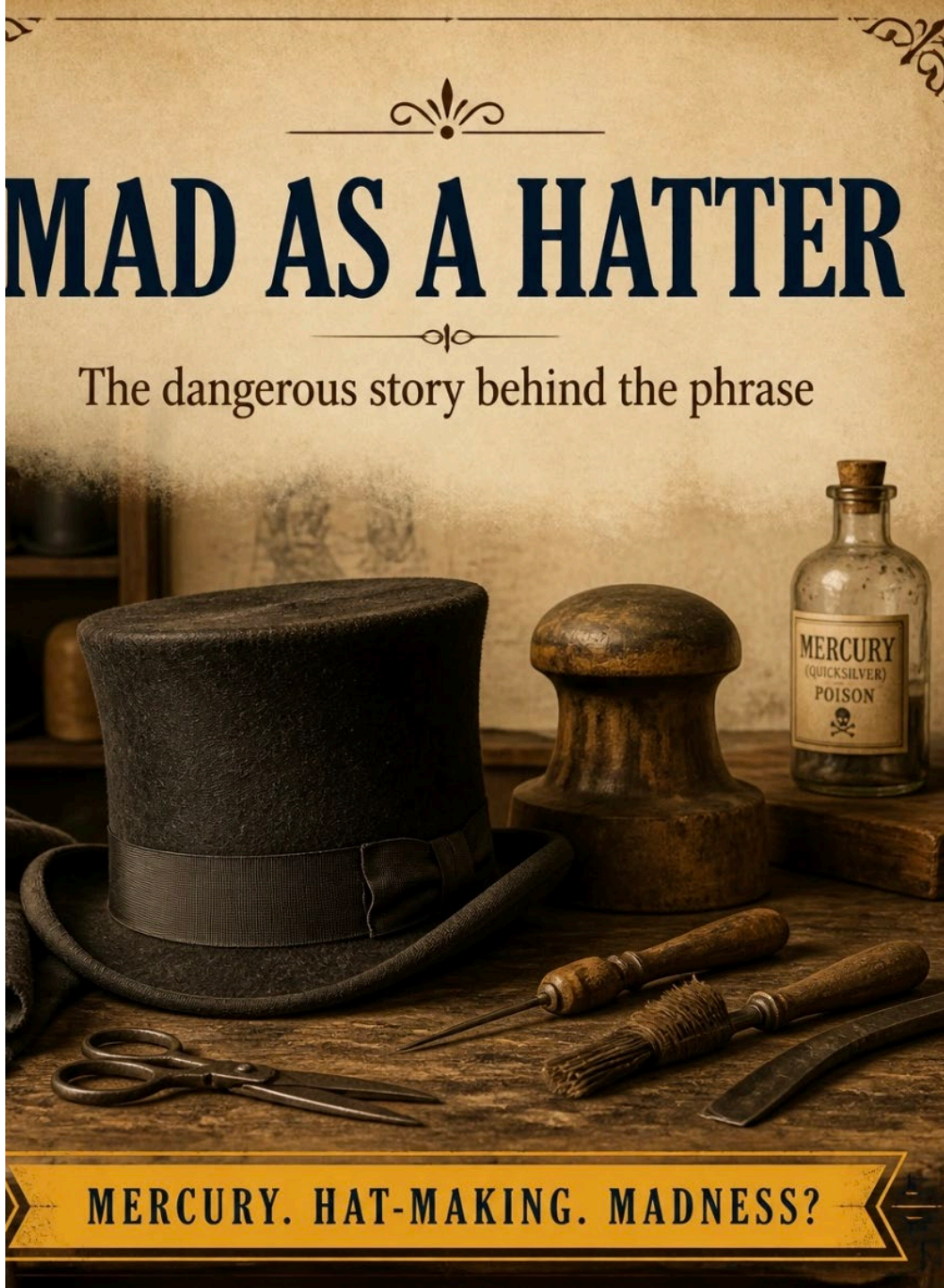
- While medical knowledge of "soot warts" and other severe health risks grew rapidly after 1775, ending the practice took a **century of failed political attempts**.
- The practice of sending boys up flues was finally stopped for good in **September 1875** with the passage of the Chimney Sweepers Act 1875.



Erethism – Mad Hatter disease

A neurological disorder affecting the central nervous system from long-term mercury exposure. Hatters used a liquid mercury compound in poorly ventilated rooms to turn animal fur into felt hats.

- **1829:** The first official medical report explicitly connecting mercury to the neurological syndrome was published in St. Petersburg, Russia.
- **1898:** France became the first major hub to pass laws explicitly protecting hatters from mercury.
- In the UK, the practice was gradually abandoned around **the turn of the 20th century** as safer chemical alternatives were adopted.



Ionising radiation

1890s

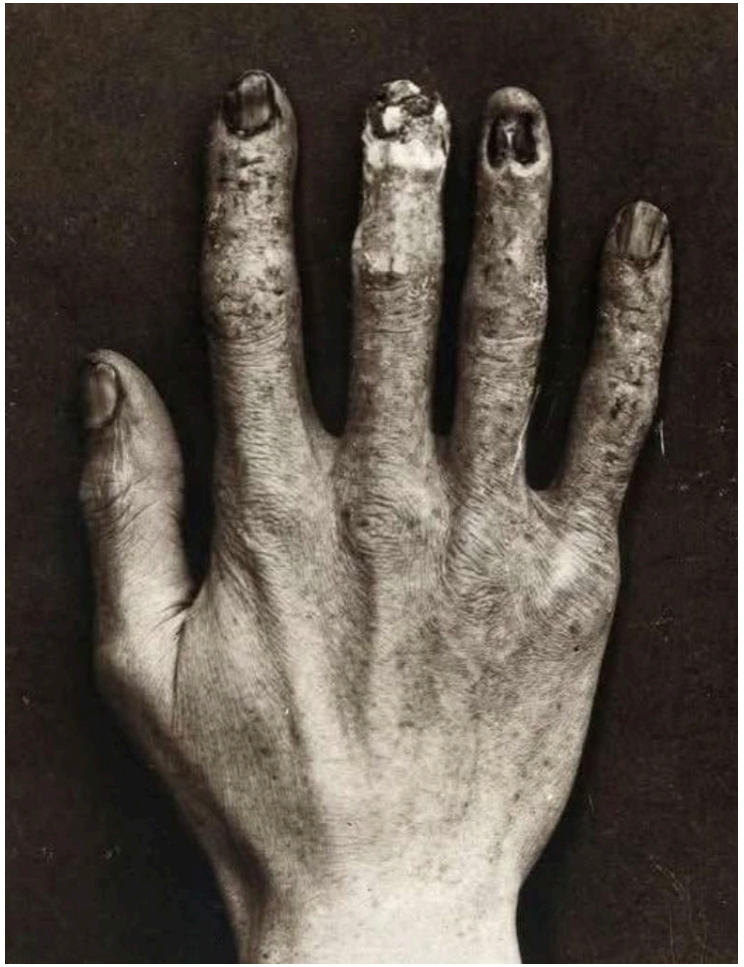
Early physicians, engineers, and laboratory workers handling Crookes tubes and radioactive salts experienced acute skin damage, hair loss, and severe burns.

1902–1904

Chronic skin ulcers and skin cancers among early operators were formally documented as serious occupational hazards

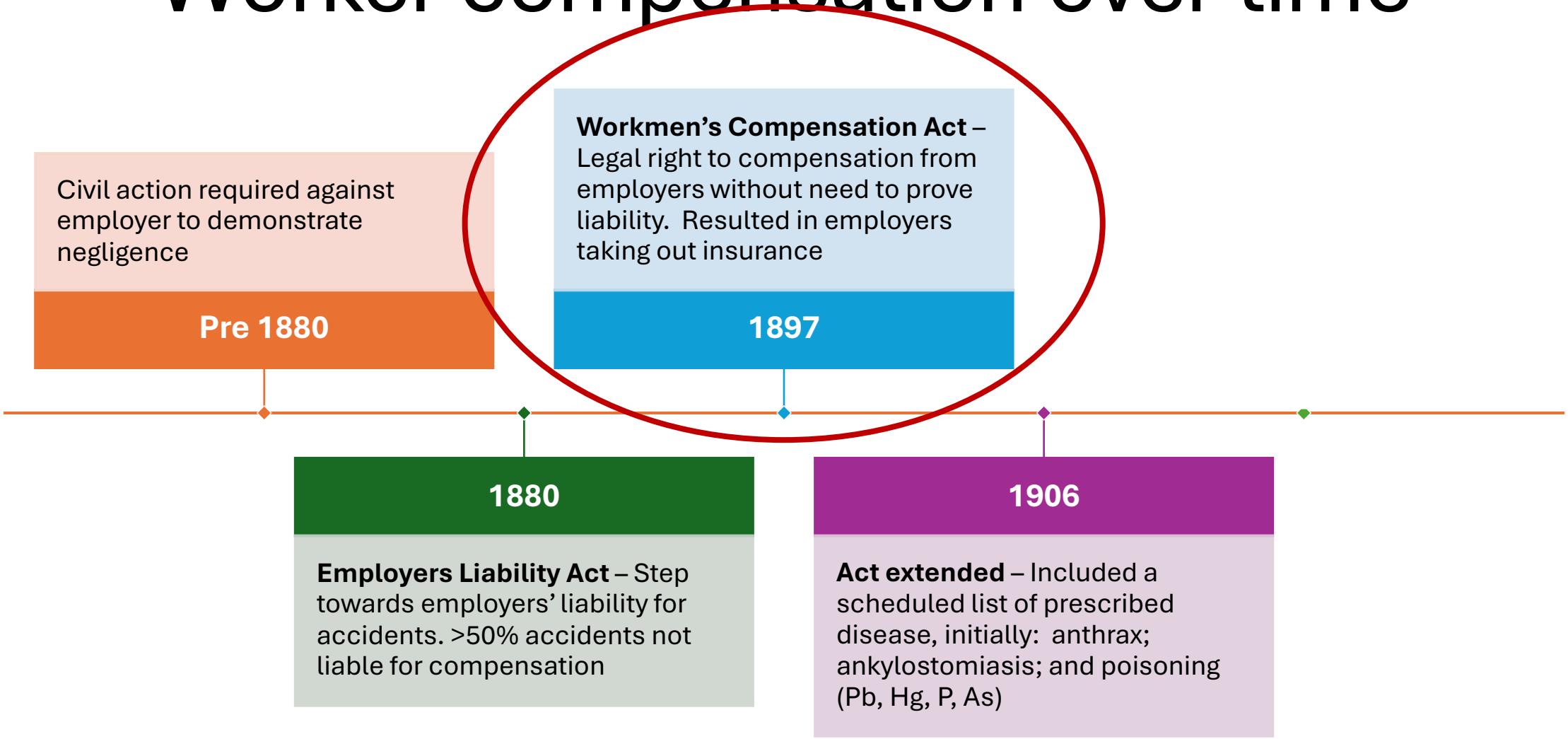
1915

The British Röntgen Society proposed the first formal radiation protection standards for workers



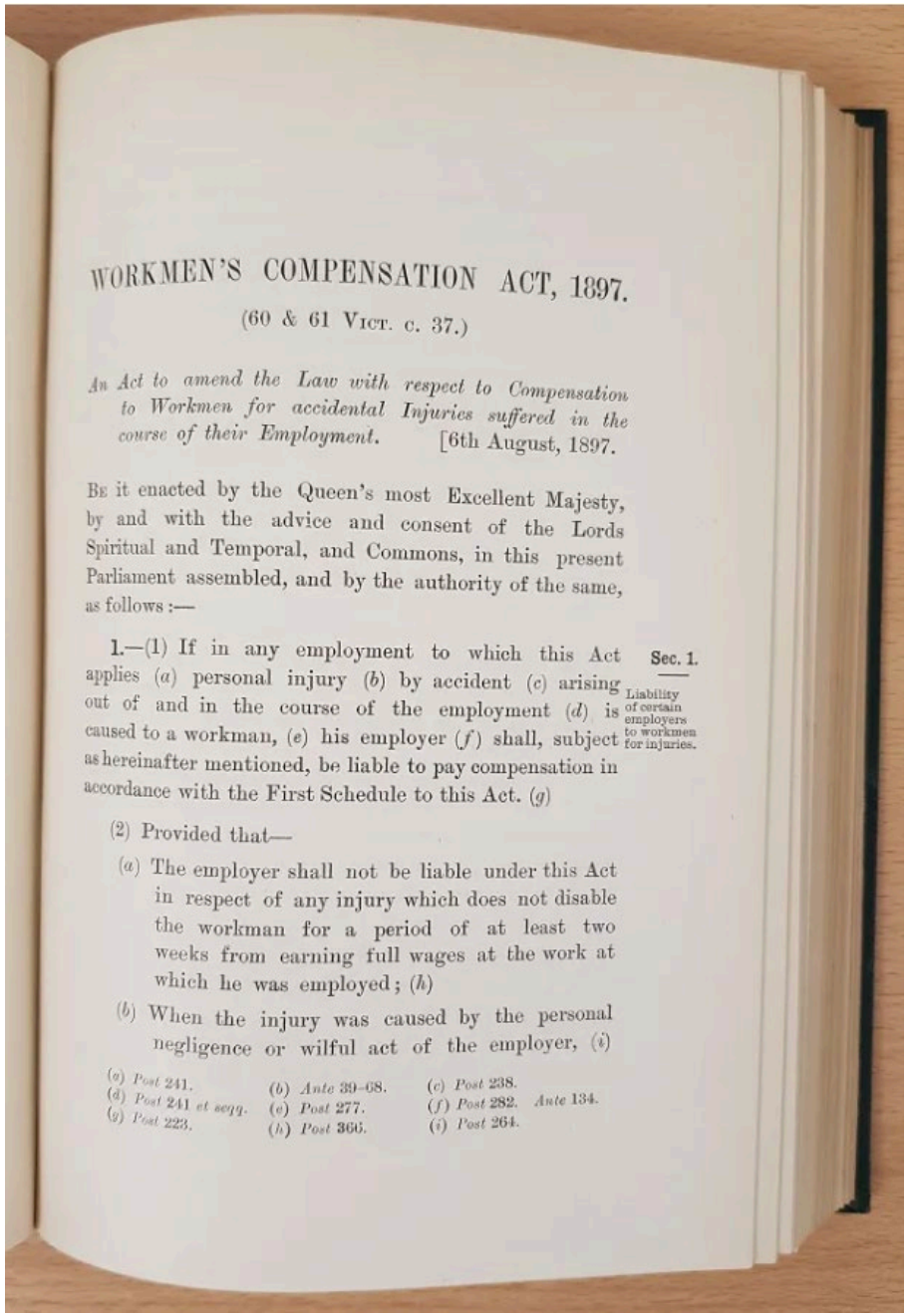
Hand of X-ray technician after repeated exposure, 1900, Royal London. Wellcome Collection.

Worker compensation over time



1897 – Workmen's Compensation Act

- A major step, with employers - not the state - becoming legally liable to compensate workers injured "in the course of employment," regardless of fault.
- It applied mainly to manual labourers in high-risk industries (mining, railways, factories). Extended to all workers in 1906.
- This marked the shift from suing employers under common law to statutory compensation.
- Established the principle that industrial injury was a social risk, not a personal failing.



WORKMEN'S COMPENSATION ACT, 1897.

(60 & 61 VICT. c. 37.)

An Act to amend the Law with respect to Compensation to Workmen for accidental Injuries suffered in the course of their Employment. [6th August, 1897.

BE it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows :—

Sec. 1. Liability of certain employers to workmen for injuries.

1.—(1) If in any employment to which this Act applies (*a*) personal injury (*b*) by accident (*c*) arising out of and in the course of the employment (*d*) is caused to a workman, (*e*) his employer (*f*) shall, subject as hereinafter mentioned, be liable to pay compensation in accordance with the First Schedule to this Act. (*g*)

(2) Provided that—

(*a*) The employer shall not be liable under this Act in respect of any injury which does not disable the workman for a period of at least two weeks from earning full wages at the work at which he was employed; (*h*)

(*b*) When the injury was caused by the personal negligence or wilful act of the employer, (*i*)

(*a*) *Post* 241. (*b*) *Ante* 39–68. (*c*) *Post* 238.
(*d*) *Post* 241 *et seqq.* (*e*) *Post* 277. (*f*) *Post* 282. *Ante* 134.
(*g*) *Post* 223. (*h*) *Post* 366. (*i*) *Post* 264.

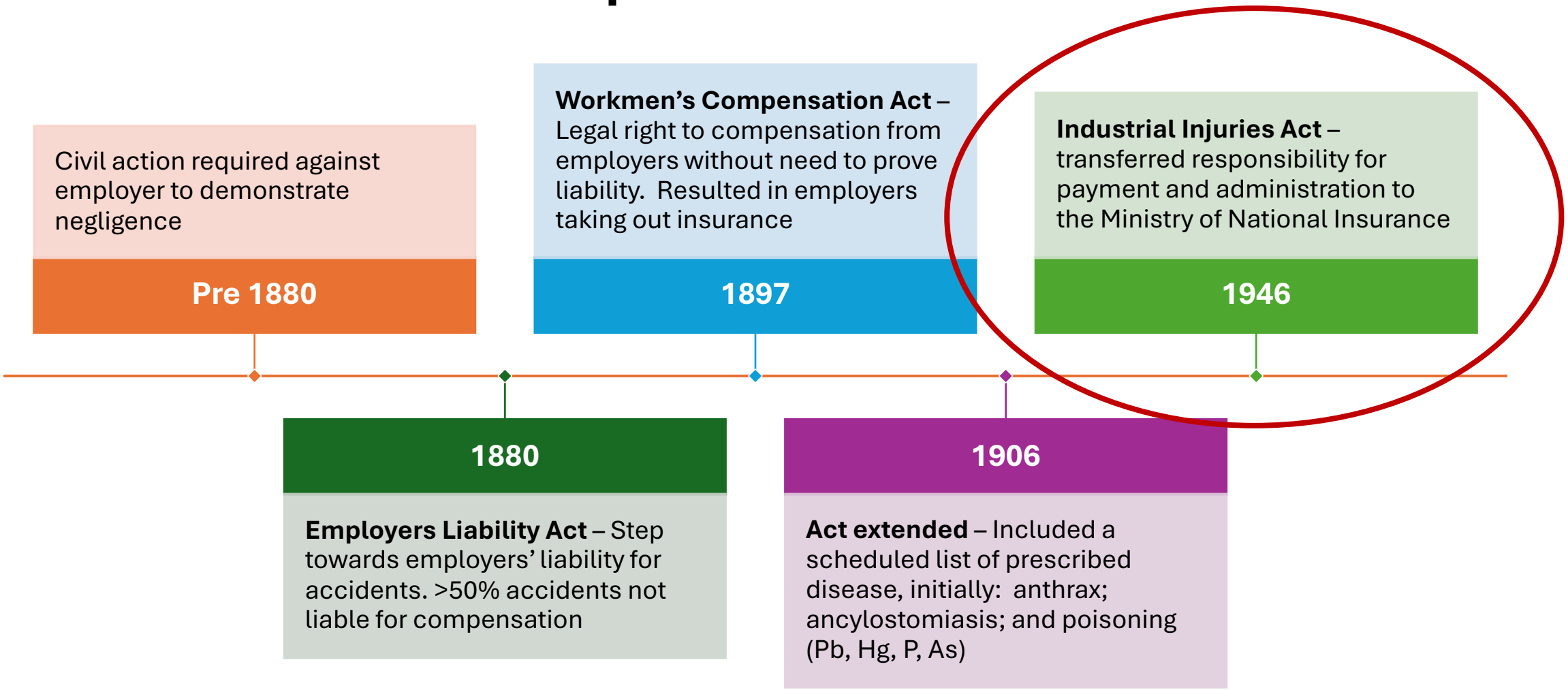


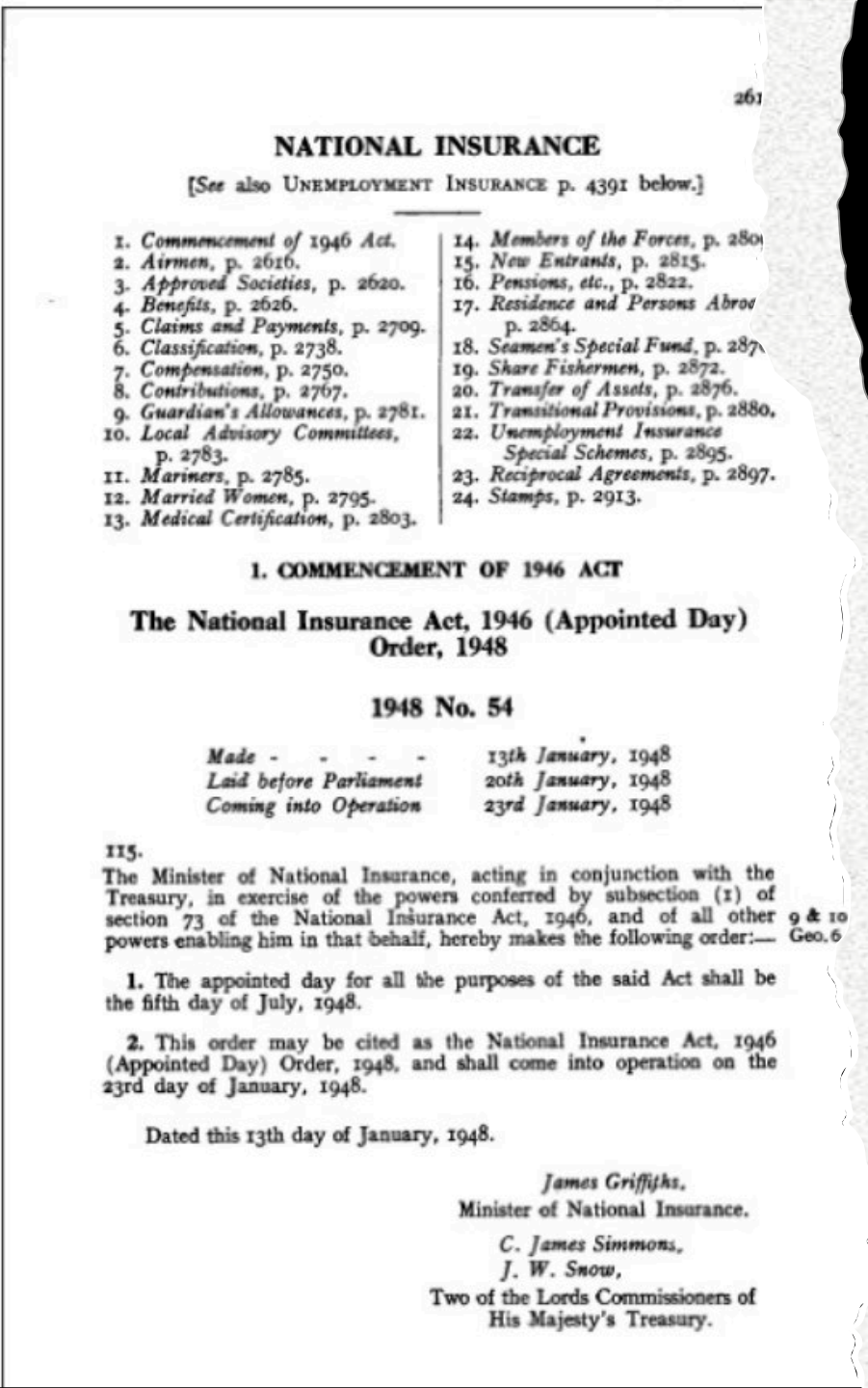
1944 – planning a new Industrial Injuries scheme

This system is in many respects like that which is the basis of the war pension schemes. It thus recognises a certain similarity between the position of the soldier wounded in battle and that of the man injured in the course of his productive work for the community. Each is compensated not for loss of earning capacity but for whatever he has lost in health, strength and the power to enjoy life.

Foreword to Proposals for an Industrial Scheme, Sept 1944

Worker compensation over time.





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NATIONAL INSURANCE

[*See also* UNEMPLOYMENT INSURANCE p. 4391 below.]

1. *Commencement of 1946 Act.*
2. *Airmen*, p. 2616.
3. *Approved Societies*, p. 2620.
4. *Benefits*, p. 2626.
5. *Claims and Payments*, p. 2709.
6. *Classification*, p. 2738.
7. *Compensation*, p. 2750.
8. *Contributions*, p. 2767.
9. *Guardian's Allowances*, p. 2781.
10. *Local Advisory Committees*, p. 2783.
11. *Mariners*, p. 2785.
12. *Married Women*, p. 2795.
13. *Medical Certification*, p. 2803.
14. *Members of the Forces*, p. 280
15. *New Entrants*, p. 2815.
16. *Pensions, etc.*, p. 2822.
17. *Residence and Persons Abroa* p. 2864.
18. *Seamen's Special Fund*, p. 287
19. *Share Fishermen*, p. 2872.
20. *Transfer of Assets*, p. 2876.
21. *Transitional Provisions*, p. 2880.
22. *Unemployment Insurance Special Schemes*, p. 2895.
23. *Reciprocal Agreements*, p. 2897.
24. *Stamps*, p. 2913.

1. COMMENCEMENT OF 1946 ACT

The National Insurance Act, 1946 (Appointed Day) Order, 1948

1948 No. 54

Made - - - -	*13th January*, 1948
Laid before Parliament	*20th January*, 1948
Coming into Operation	*23rd January*, 1948

115.

The Minister of National Insurance, acting in conjunction with the Treasury, in exercise of the powers conferred by subsection (1) of section 73 of the National Insurance Act, 1946, and of all other powers enabling him in that behalf, hereby makes the following order:— 9 & 10 Geo. 6

1. The appointed day for all the purposes of the said Act shall be the fifth day of July, 1948.

2. This order may be cited as the National Insurance Act, 1946 (Appointed Day) Order, 1948, and shall come into operation on the 23rd day of January, 1948.

Dated this 13th day of January, 1948.

James Griffiths,
Minister of National Insurance.

C. James Simmons,
J. W. Snow,
Two of the Lords Commissioners of His Majesty's Treasury.

1946 – National Insurance (Industrial Injuries) Act

- A watershed moment: the state took over responsibility for compensating industrial injuries.
- Introduced the Industrial Injuries Scheme, funded by national insurance contributions.
- Provided weekly benefits, disablement pensions, and death benefits for dependants.

The Industrial Injuries Advisory Council

- IIAC was a statutory body established under the National Insurance Act 1946. It provides independent, evidence-based advice to the Secretary of State for Work and Pensions on the Industrial Injuries Disablement Benefit (IIDB) scheme.
- This scheme compensates employed workers in England and Wales who suffer from occupational diseases or injuries arising from their employment.
- IIAC's core function is to assess whether specific diseases should be 'prescribed' under the IIDB scheme.



Prescribed conditions in the 1948 schedule

Exposure	Condition
Ionising radiation	Cancer and leukaemia
Red- or white-hot material	Cataract
Manual labour causing pressure on the elbow	Bursitis or s-c cellulitis of the elbow
Anthrax spores	*Pulmonary anthrax*
B. Mallei (equine carcasses)	*Glanders*
Brucella (contact with infected animals)	*Brucellosis*
Leptospira (various occupations)	*Leptospirosis*
Tuberculosis (various occupations)	*Tuberculosis*
Raw sewage	*Hepatitis*
Infected birds	*Ornithosis*

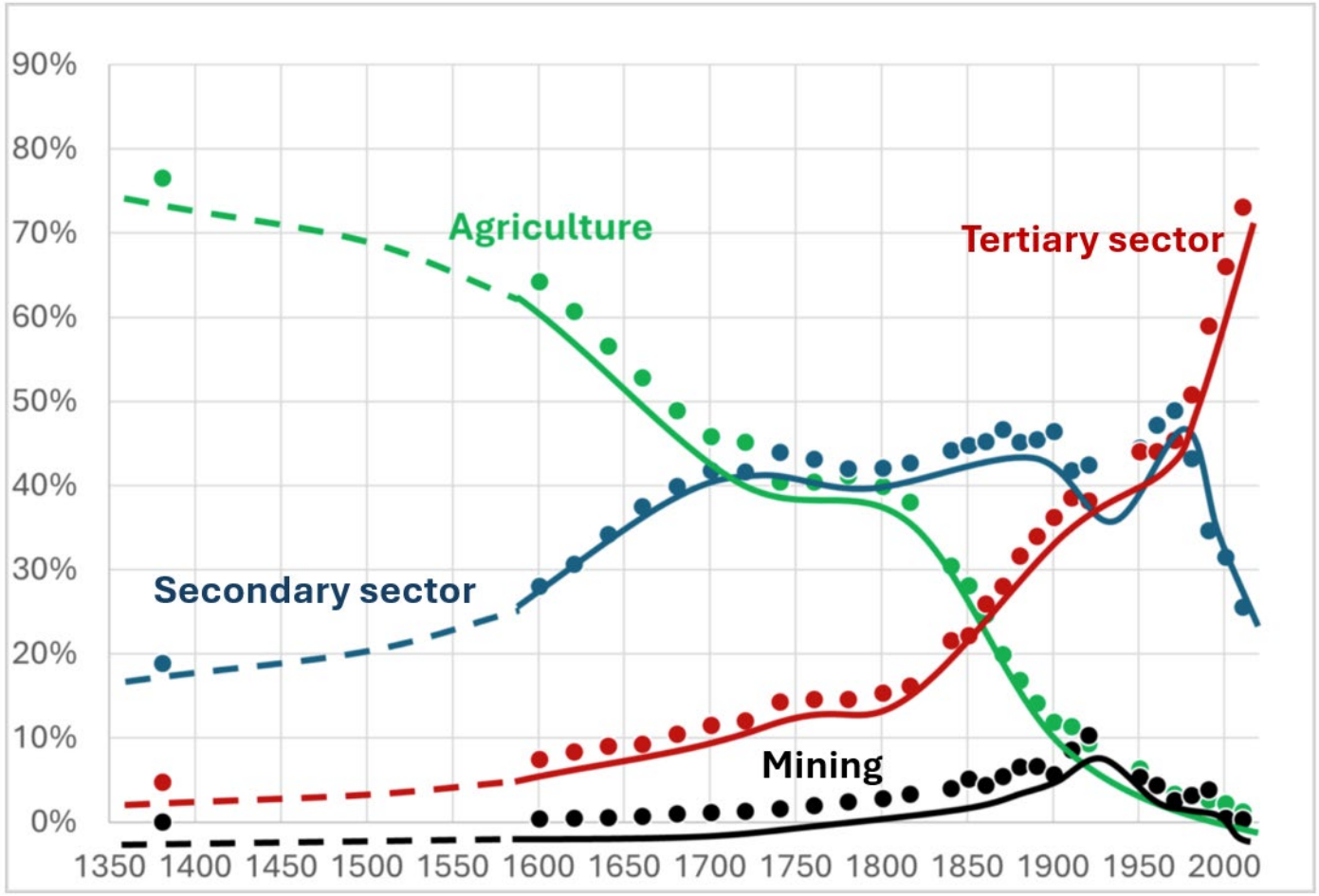






The present

Adult male occupational structure of Britain over time



Leigh Taylor-Shaw
Cambridge Group for the History of Population and Social Structure, Faculty of History, University of Cambridge

Industrial Injuries Disablement Benefit

Claimants must have a work-related accident or a prescribed disease caused by their job, which results in permanent disablement assessed by a DWP medical advisor.

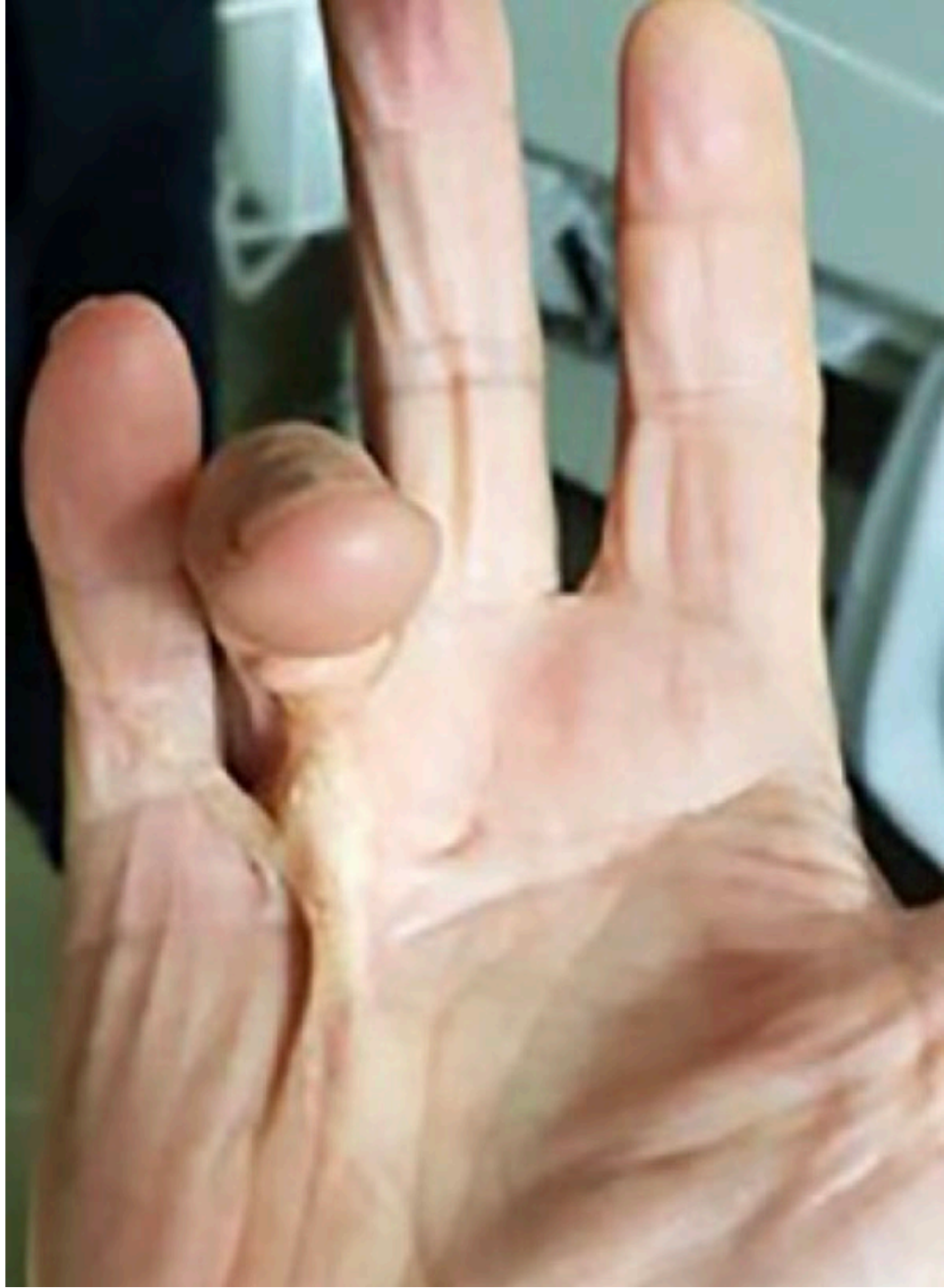
Category	Definition	Examples	Key differences
Accidents	A sudden, unexpected event arising “out of and in the course of employment.”	Falls, crush injuries, burns, machinery accidents.	Must be linked to a specific incident.
Prescribed diseases	Conditions recognised by law as being caused by particular types of work or exposure.	Asbestosis, silicosis, vibration white finger.	Linked to **long-term exposure** or **work processes**, not a single event.

List of prescribed diseases 2026

Category – conditions by cause	Number included	Examples
A – Physical agents	14	Leukaemia linked to ionising radiation OA of the knee linked to mining underground
B – Biological agents	15	Avian chlamydiosis linked to working with birds
C – Chemical agents	31	Lung cancer linked to arsenic exposure Liver and kidney toxicity linked to handling **carbon tetrachloride**
D – Miscellaneous	14	Diffuse mesothelioma linked to exposure to asbestos

Most recent addition – Dupytren’s contracture

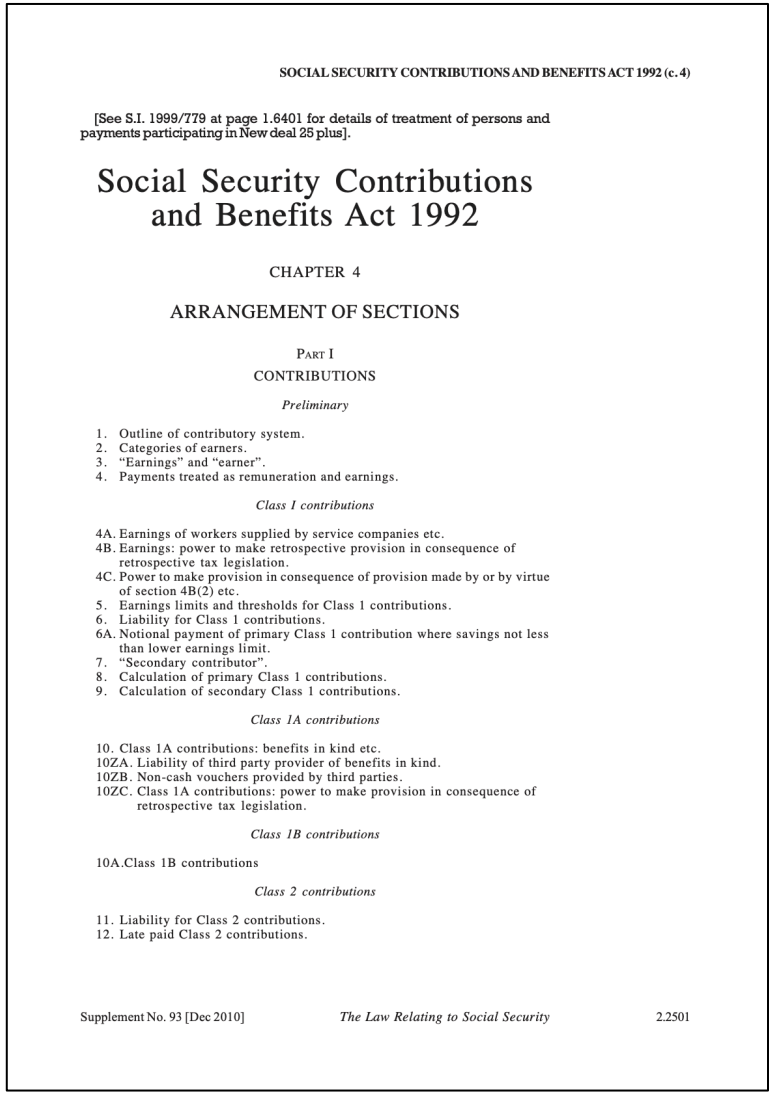
- Dupuytren's Contracture due to hand-transmitted vibration was added to the prescribed list in **2019**
- A specific link between Dupuytren's contracture and occupational vibration was first clearly established in a **1992** research paper by **Thomas and Clarke.**
- It showed that workers suffering from **Vibration White Finger** had a significantly higher prevalence of Dupuytren's contracture (nearly 20%) compared to an age-matched control group (10.7%).



Legal framework for recommending prescription

Social Security Contributions and Benefits Act 1992

Under the Act, a disease may be prescribed if it can be caused by work and if such a link can be made with *reasonable certainty*. IIAC looks for evidence that the disease is likely to be due to work *on the balance of probabilities* (or put another way '*more likely than not*').



SOCIAL SECURITY CONTRIBUTIONS AND BENEFITS ACT 1992 (c. 4)

[See S.I. 1999/779 at page 1.6401 for details of treatment of persons and payments participating in New deal 25 plus].

Social Security Contributions and Benefits Act 1992

CHAPTER 4

ARRANGEMENT OF SECTIONS

PART I

CONTRIBUTIONS

Preliminary

1. Outline of contributory system.
2. Categories of earners.
3. "Earnings" and "earner".
4. Payments treated as remuneration and earnings.

Class 1 contributions

4A. Earnings of workers supplied by service companies etc.
4B. Earnings: power to make retrospective provision in consequence of retrospective tax legislation.
4C. Power to make provision in consequence of provision made by or by virtue of section 4B(2) etc.
5. Earnings limits and thresholds for Class 1 contributions.
6. Liability for Class 1 contributions.
6A. Notional payment of primary Class 1 contribution where savings not less than lower earnings limit.
7. "Secondary contributor".
8. Calculation of primary Class 1 contributions.
9. Calculation of secondary Class 1 contributions.

Class 1A contributions

10. Class 1A contributions: benefits in kind etc.
10ZA. Liability of third party provider of benefits in kind.
10ZB. Non-cash vouchers provided by third parties.
10ZC. Class 1A contributions: power to make provision in consequence of retrospective tax legislation.

Class 1B contributions

10A.Class 1B contributions

Class 2 contributions

11. Liability for Class 2 contributions.
12. Late paid Class 2 contributions.

Factors considered by IIAC

- **Causal link:** there should be scientific evidence demonstrating a causal relationship between disease and specific occupational exposures defined as ‘certain’.
- **Strength of association:** IIAC usually only makes a recommendation for prescription when the relative risk is double that of the general population.
- **Specificity of exposure:** the exposure should be clearly defined and associated with identifiable work activities or environments within the UK.
- **Future evidence:** there should be an expectation that an exposure-response relationship is unlikely to be overturned by future evidence.
- **Other factors:**
  - Feasibility of diagnosis and attribution
  - Exposure equivalence
  - Issues of equality and gender

Balancing the probabilities



Clear causal relationship

RR 2 or above

Large volume of evidence

Easy diagnosis with link to work

Easier:
Pneumoconiosis
Mesothelioma
Chemical poisoning

Causal relationship unclear

RR not statistically different

Minimal evidence

Difficult to link solely to occupation



Harder:
Lung cancer
Covid
Dementia

Key challenges for IIAC

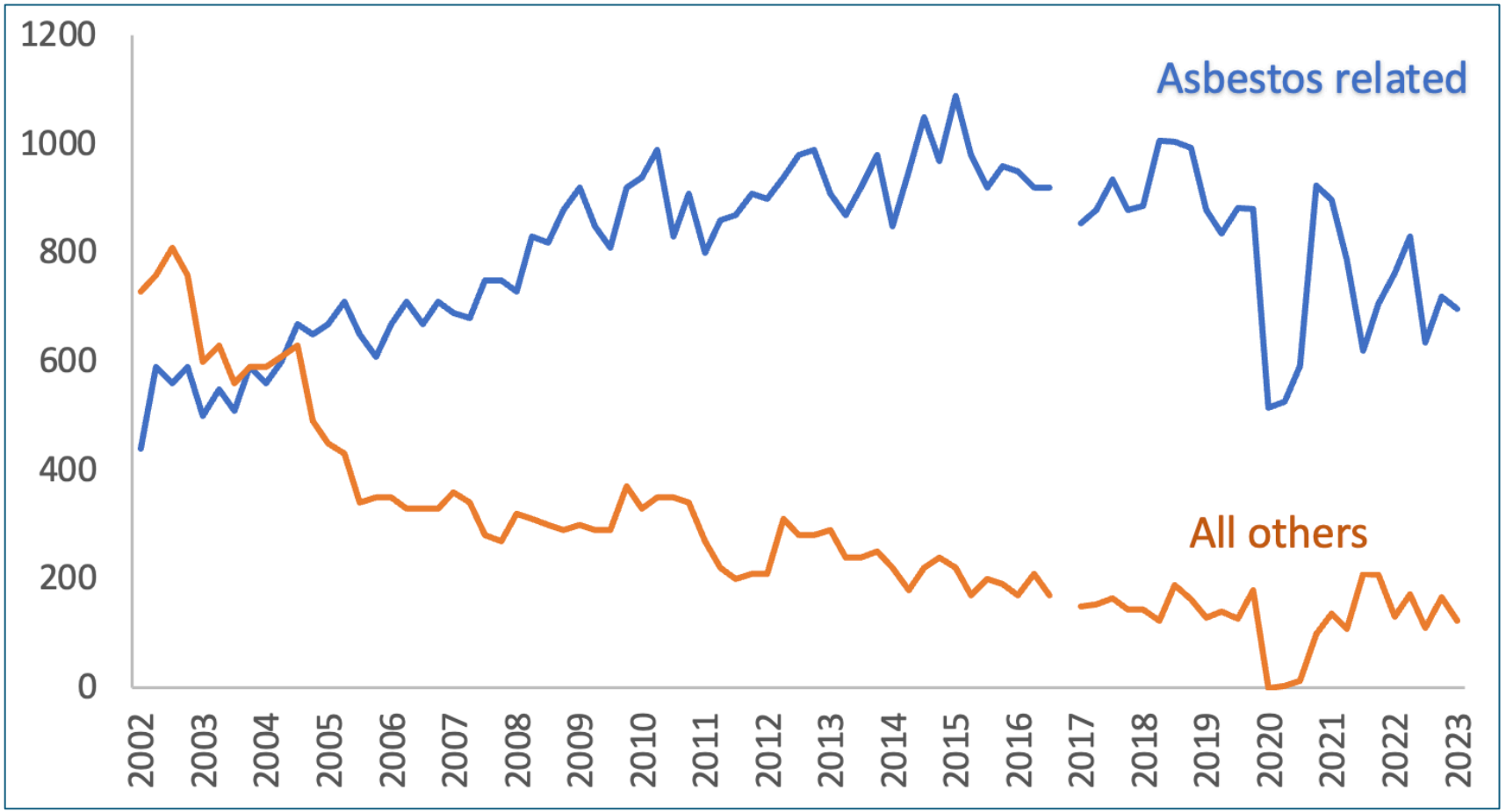
- Access to research evidence and data to answer the questions required for prescription
- Associated delays with evidence and government agreement
- Challenges with lack of specificity, of both disease and exposure e.g. dementia in sportspeople; exposure to covid.

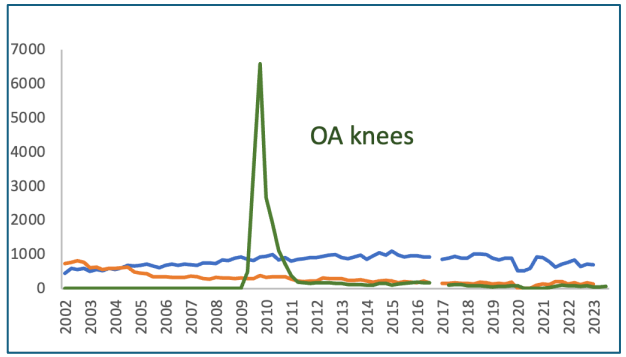
How the scheme is being used



IIDB awards for prescribed diseases

Excluding osteoarthritis of the knee





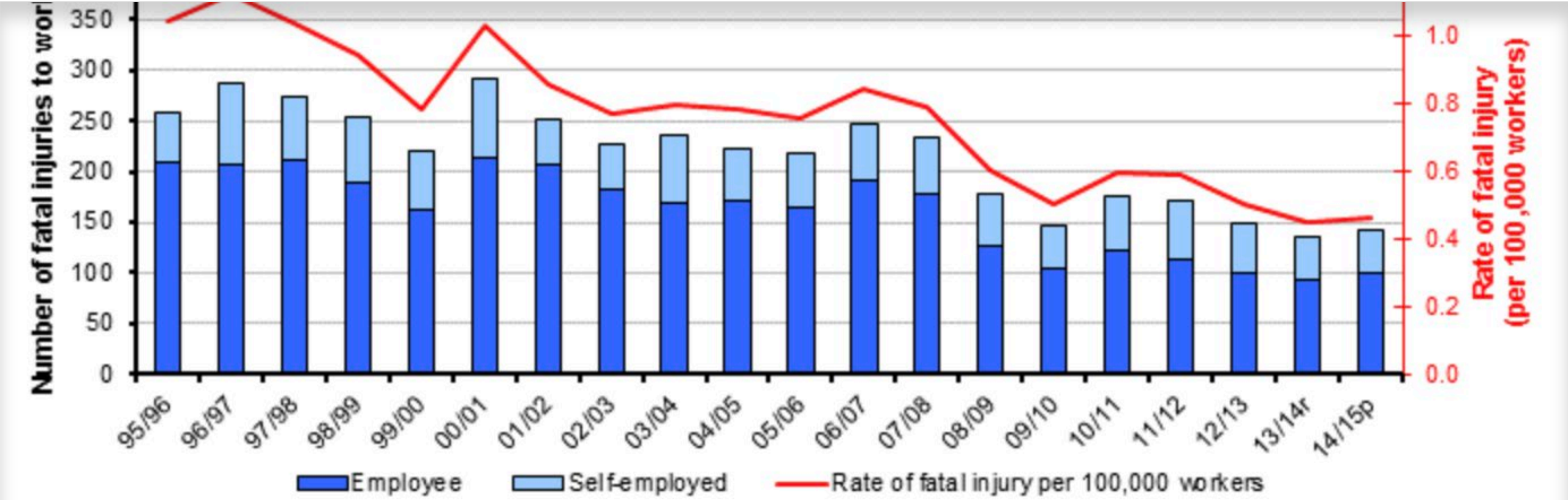
Categories where awards were made

March 2017 to September 2023

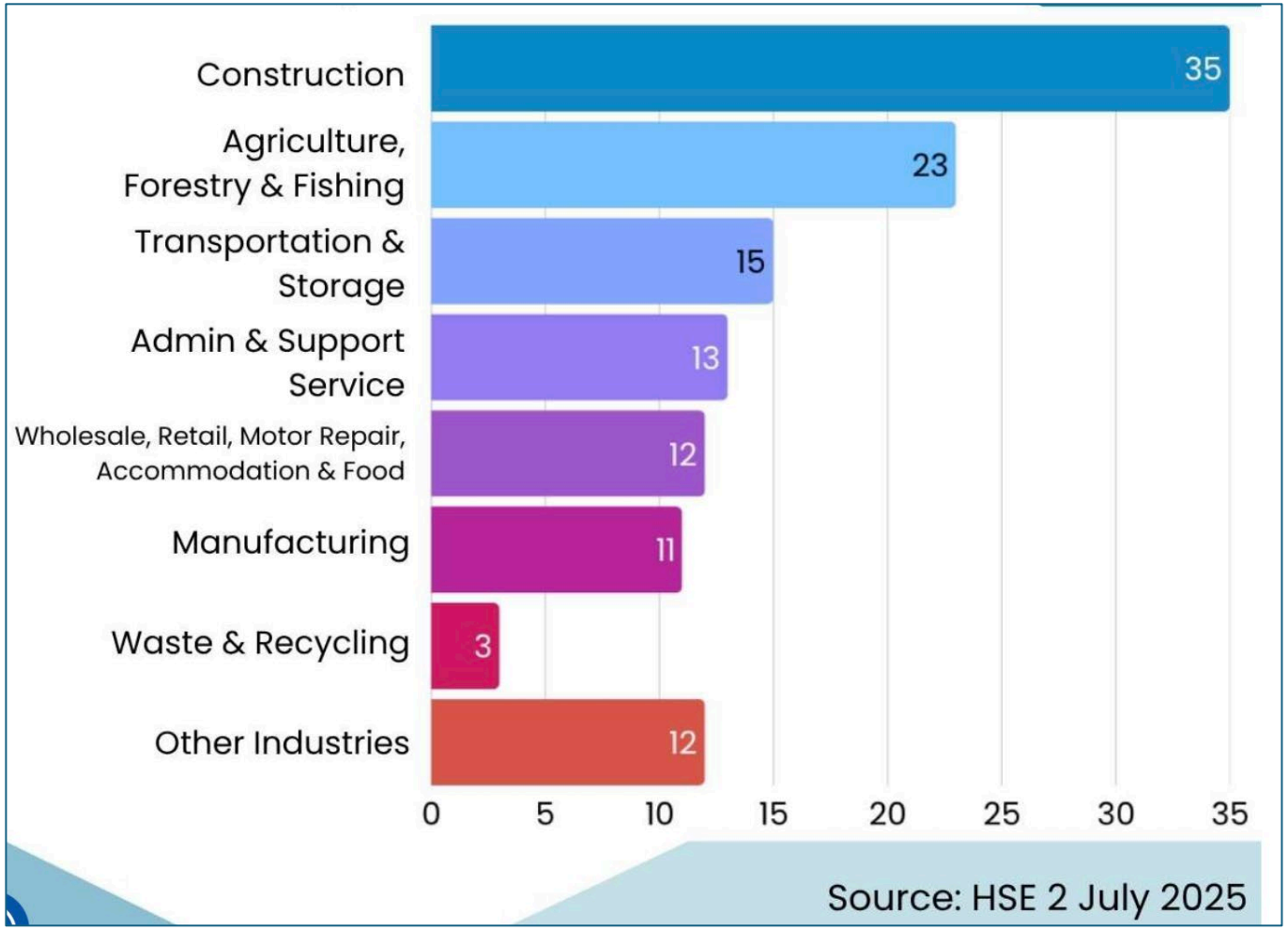
	No. claims	Accepted (%)
A8: Traumatic inflammation to tendons of hand or forearm	32	61
A10: Occupational deafness	423	17
A11: Vibration white finger	205	11
A12: Carpal tunnel syndrome	389	22
A14: Osteoarthritis of the knee (II)	1602	43
A15: Dupytren's contracture (III)	439	33
D1: Pneumoconiosis	5538	52
D3: Diffuse mesothelioma	12832	96
D5: Non-infective dermatitis of external origin	16	100
D7: Occupational asthma	187	39
D8: Primary carcinoma lung with evidence of asbestosis	473	50
D8A: Primary carcinoma of the lung - asbestos	732	54
D9: Unilateral or bilateral diffuse pleural thickening	2288	53

Prevention is better than compensation

- UK is one of the safest places to work in Europe, with one of the lowest rates of fatal injuries to workers in leading industrial nations.
- The Health and Safety Executive (HSE) enforces foundational legislation like the *Health and Safety at Work etc. Act 1974* and specific regulations like COSHH.

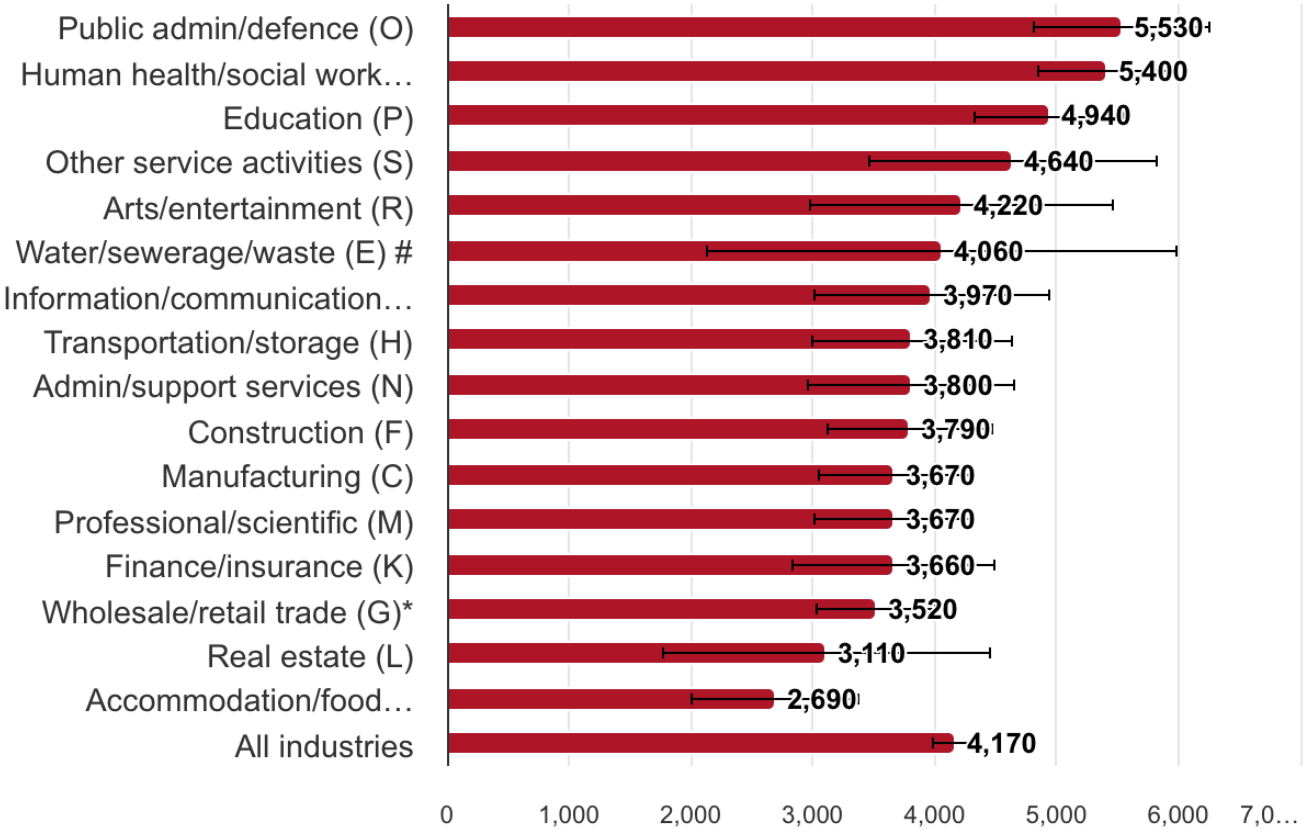


Fatal injuries to workers by main industry 2025/26

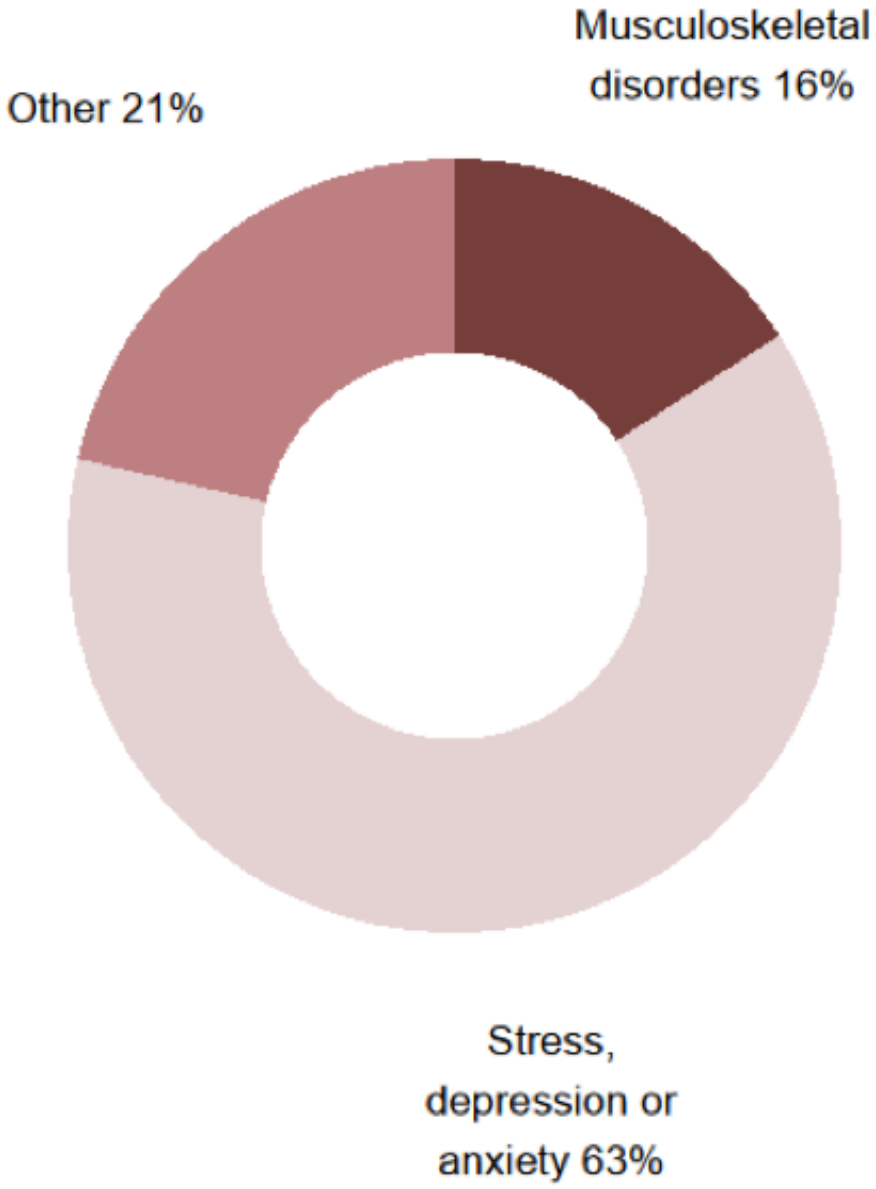


Self-reported work-related ill health by industry in the last 12 months, per 100,000 workers

Source: Labour Force Survey, annual average 2022/23 – 2024/25

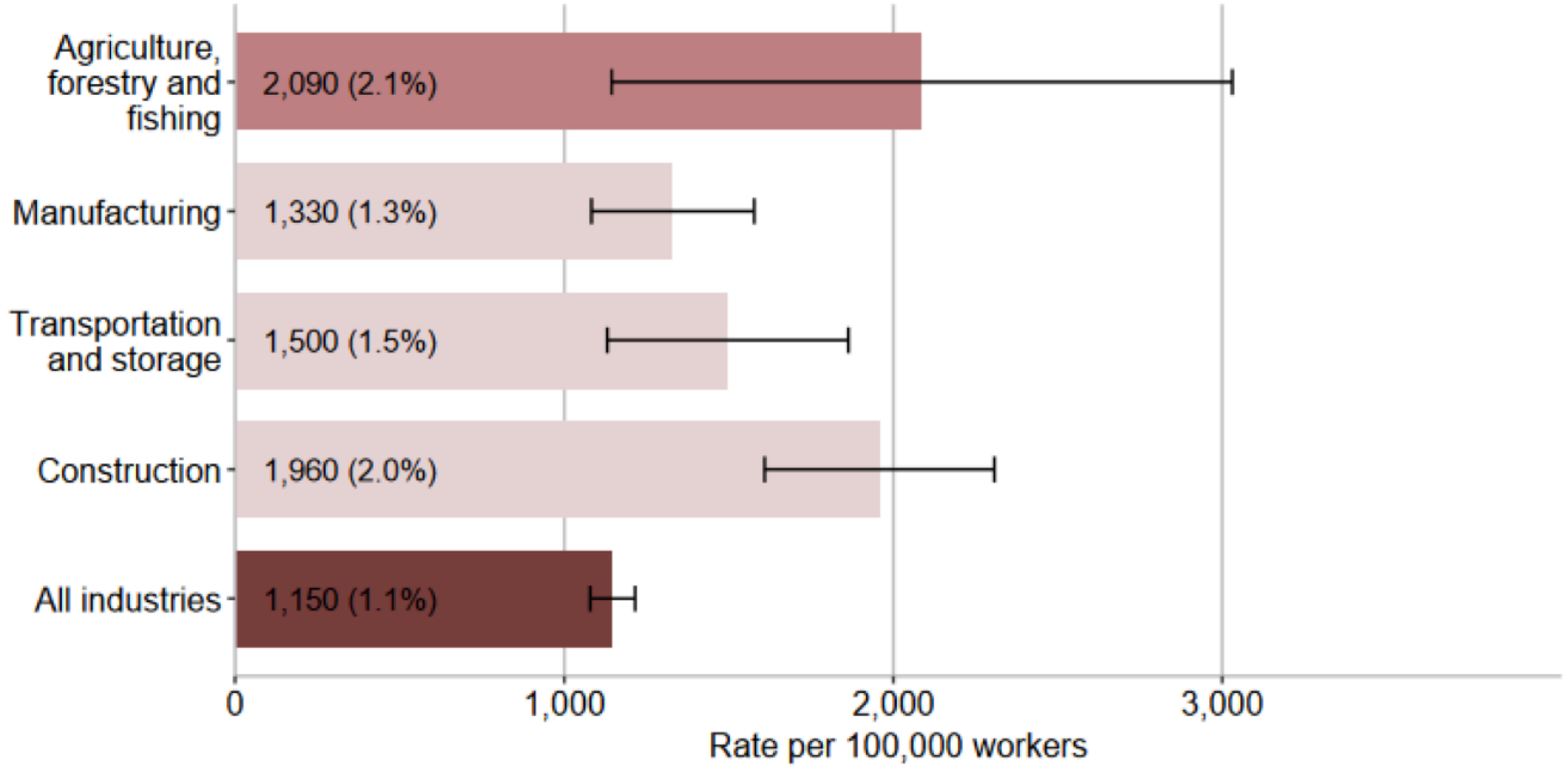


Self-reported work-related ill health in public administration and defence, new and long-standing



Source: LFS, average estimate over 2022/23-2024/25

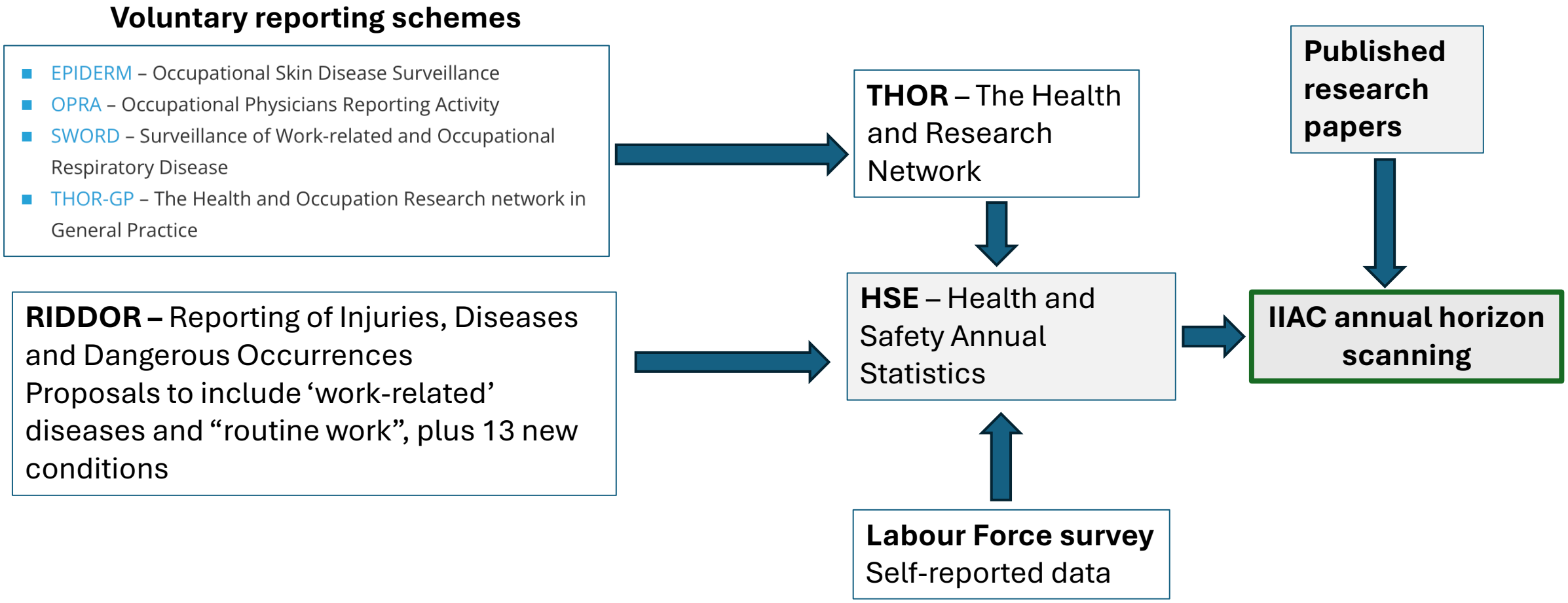
Self-reported work-related musculoskeletal disorders, new and long-standing



A five-year period has been used to improve the reliability of the sector estimates. 95% confidence intervals are shown on the chart.

Source: LFS, average estimate over 2020/21-2024/25

Anticipating future occupational diseases





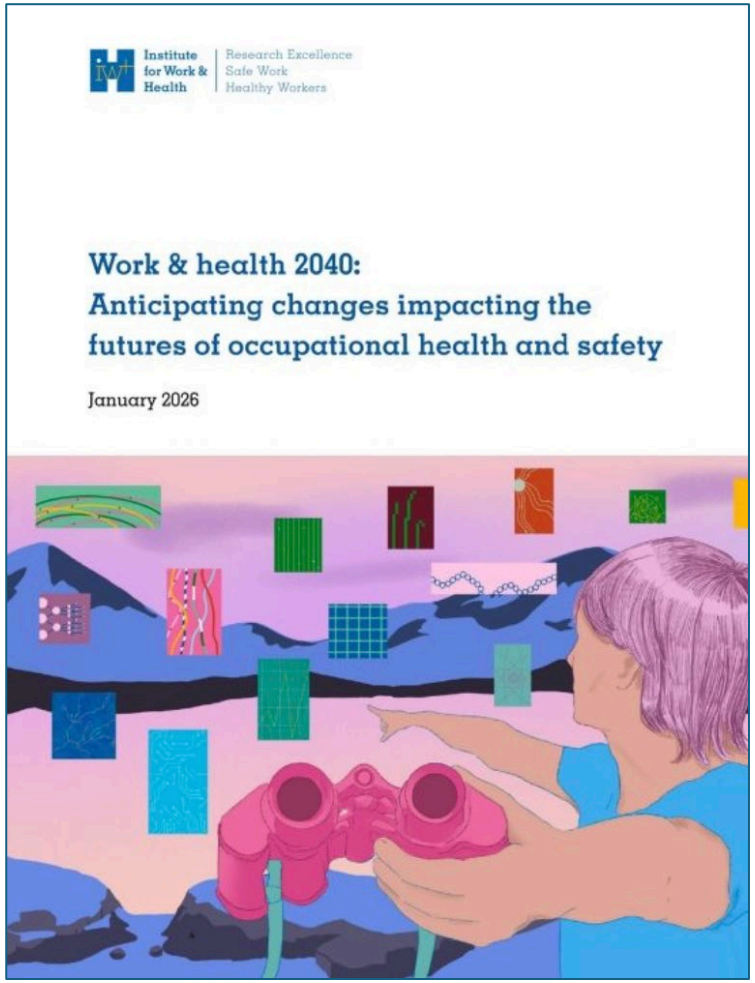


The future

Anticipating the future of work and health

Seven trends identified:

1. **Eroding institutional trust** – shift towards influencers and media personalities
2. **Increasing longevity** – cross-generational workforce
3. **Intensified climate impacts** – creating new risks for workers
4. **Algorithmic shifts** – AI as co-worker
5. **Isolation rising** – social disconnection
6. **Horizons of hostility** – warfare and cyber
7. **Expanding precarious prosperity** – unstable jobs and economic environment



"My prediction is that work will be optional. It'll be like playing sports or a video game or something like that. If you want to work, it's the same way you can go to the store and just buy some vegetables, or you can grow vegetables in your backyard. It's much harder to grow vegetables in your backyard, and some people still do it because they like growing vegetables."

Elon Musk



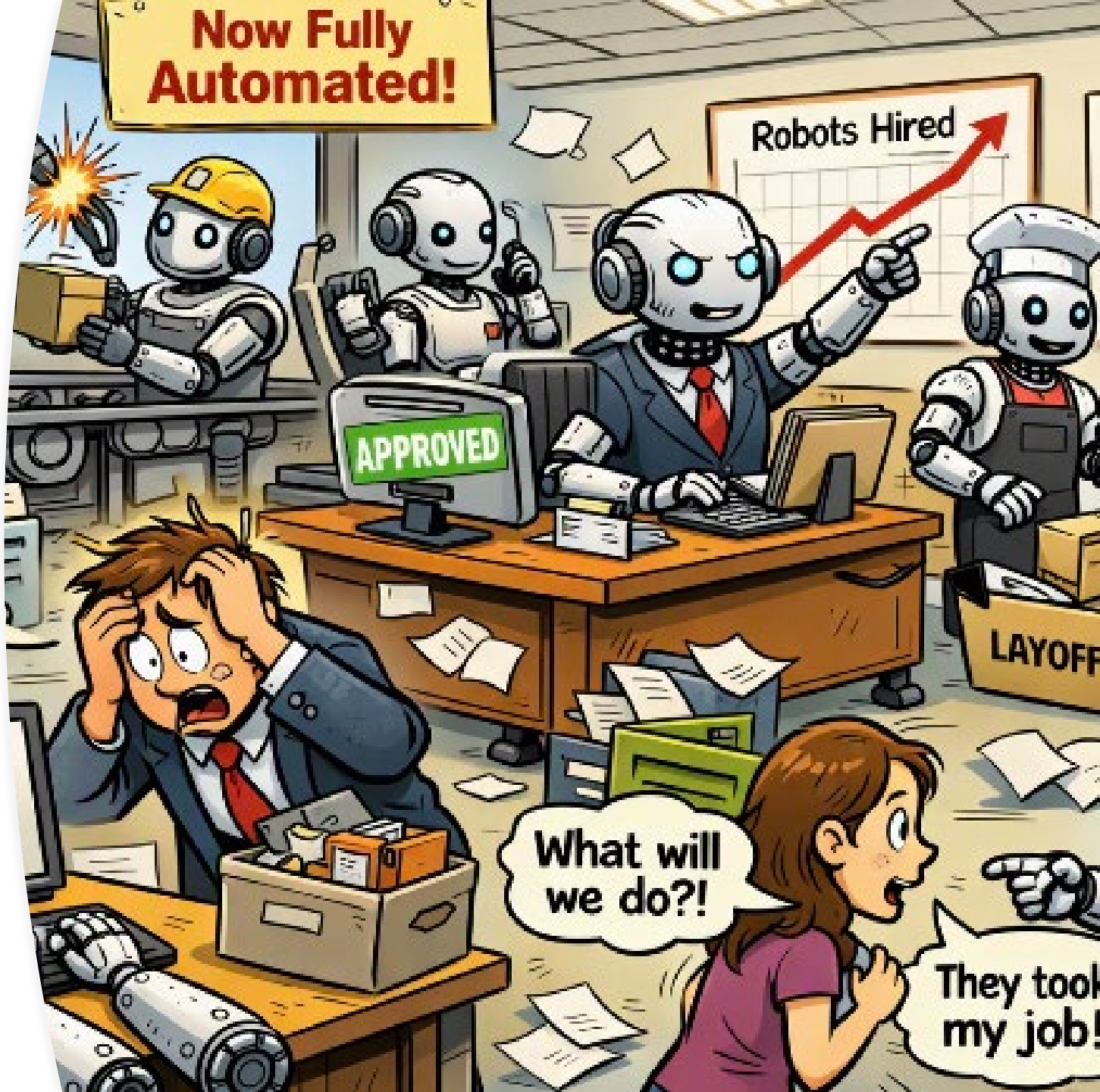
Jobs likely to be done by robots or AI systems

Category	Examples
Manufacturing & logistics	Assembly line work, warehouse picking, packaging, quality inspection
Transport & delivery	Autonomous vehicles, drones, freight handling
Routine administration	Data entry, invoice processing, scheduling
Agriculture & food production	Crop monitoring, milking, sorting
Cleaning & maintenance	Floor cleaning, window washing, waste sorting

These are roles where tasks are repetitive, rule-based, or physically hazardous, and automation already shows strong performance. Humans will supervise, maintain, and design the systems doing them.

Rapid change seems inevitable

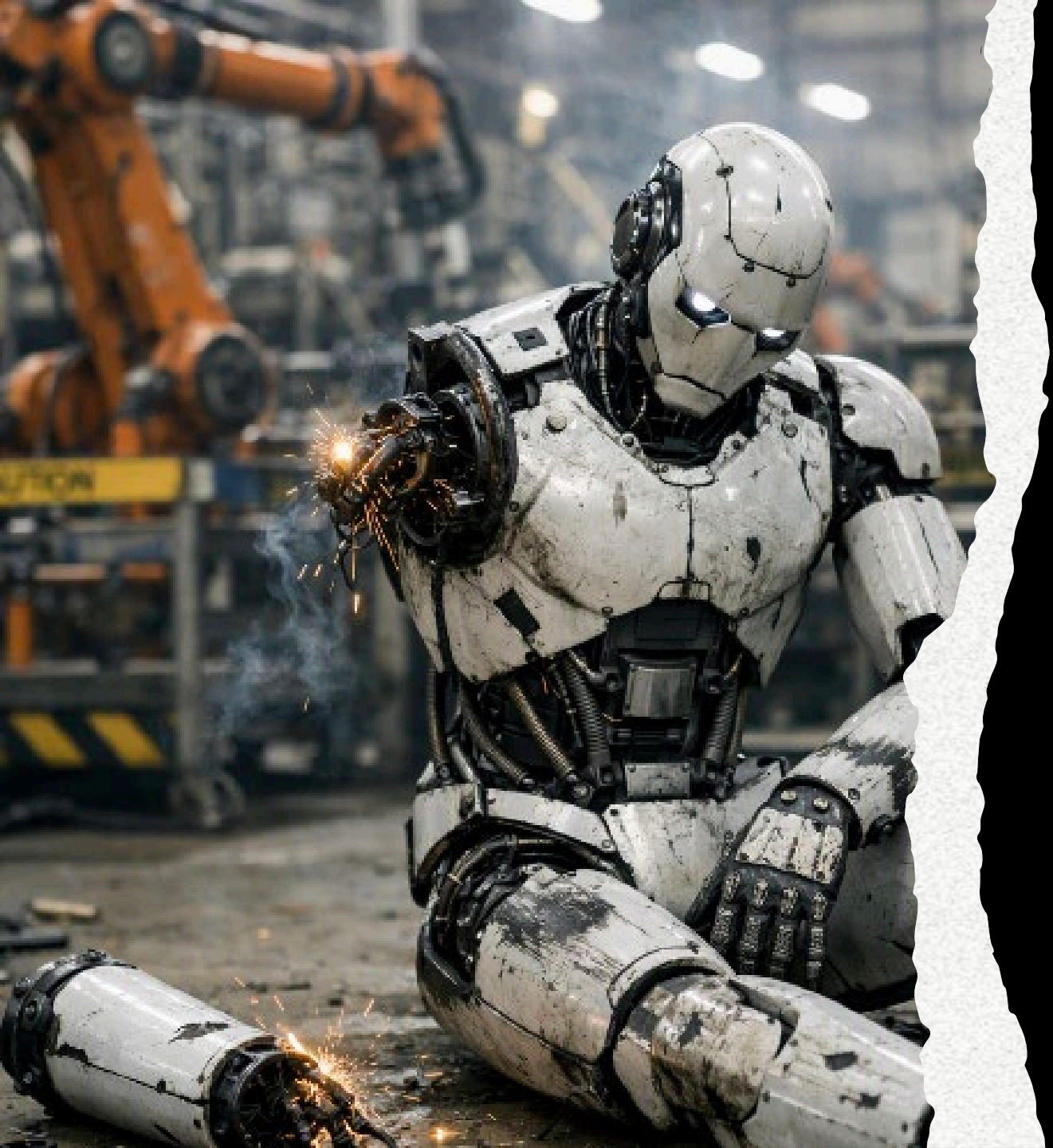
- We need a system with better early identification of new hazards.
- Assuming these will be difficult to predict, there should be:
  - Improved data collection and monitoring
  - Use of AI technology to link health and workforce data, improving pattern recognition
- Regular review and publication of evidence-based assessments. Future role for IIAC?



The holy grail?

- A safe workplace environment, that prioritises prevention of harm – using robots in high risk areas
- Rapid protection of workers when problems are identified
- Compensation available when required – ideally at a minimum
- And a list of prescribed conditions?





Final question: will injured robots require compensation?

Save the Date

Thomas Ashton Institute Annual Lecture
Wednesday 12 May 2027

Guest speaker: Sir Charlie Mayfield
Sir Charlie Mayfield will reflect on the activities, developments and impacts arising from the publication of the *Keep Britain Working* report.

Further details and registration information to follow.

To join the Thomas Ashton Institute mailing list, scan the QR code or visit
www.ashtoninstitute.ac.uk/connect/contact