

Using science to enable a better working world



The Importance of Science in a Goal-Setting Regulatory Regime: OSH Research in Great Britain

Dr Mary Trainor
Head of Science
The Health and Safety Laboratory

HSL: who are we?

- £39M turnover
- 370 staff
- 90 PhDs
- 550 acre site
- 100 publications per year
- Widest science base of any equivalent European Laboratory
- Multi-sector, inter-disciplinary capability for the real world of work



HSL: the context

- 1911: founded as government laboratory to study explosions in coal mines
- Since 1995: in-house scientific agency of the Health and Safety Executive (HSE)
- HSE regulates most risks to health and safety arising from work activity in Great Britain
- HSL external work approx. 23% of income – other UK government, industry & international



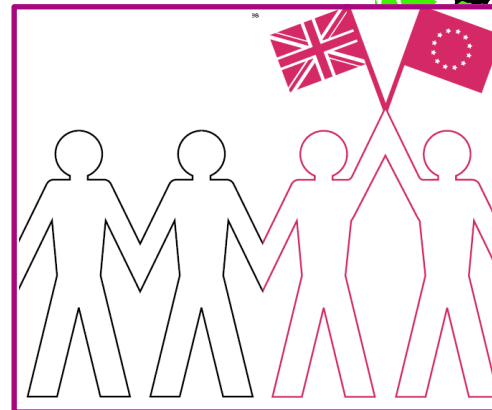
GB Regulatory Context: Goal Setting

Principle: those who create risk are best placed to manage it.

Established by 1974 Health and Safety at Work Act.

HSE Strategy: The Health and Safety of Great Britain
\\ Be part of the solution

HSE provides strategic direction. Research is one of its key activities.



HSL: science & technology

Translational
Research

Strategic
Research

Investigation &
research: incidents
& ill health

Research to
support
Interventions

Research to inform
policy

Investment
Research

Foresight
Centre

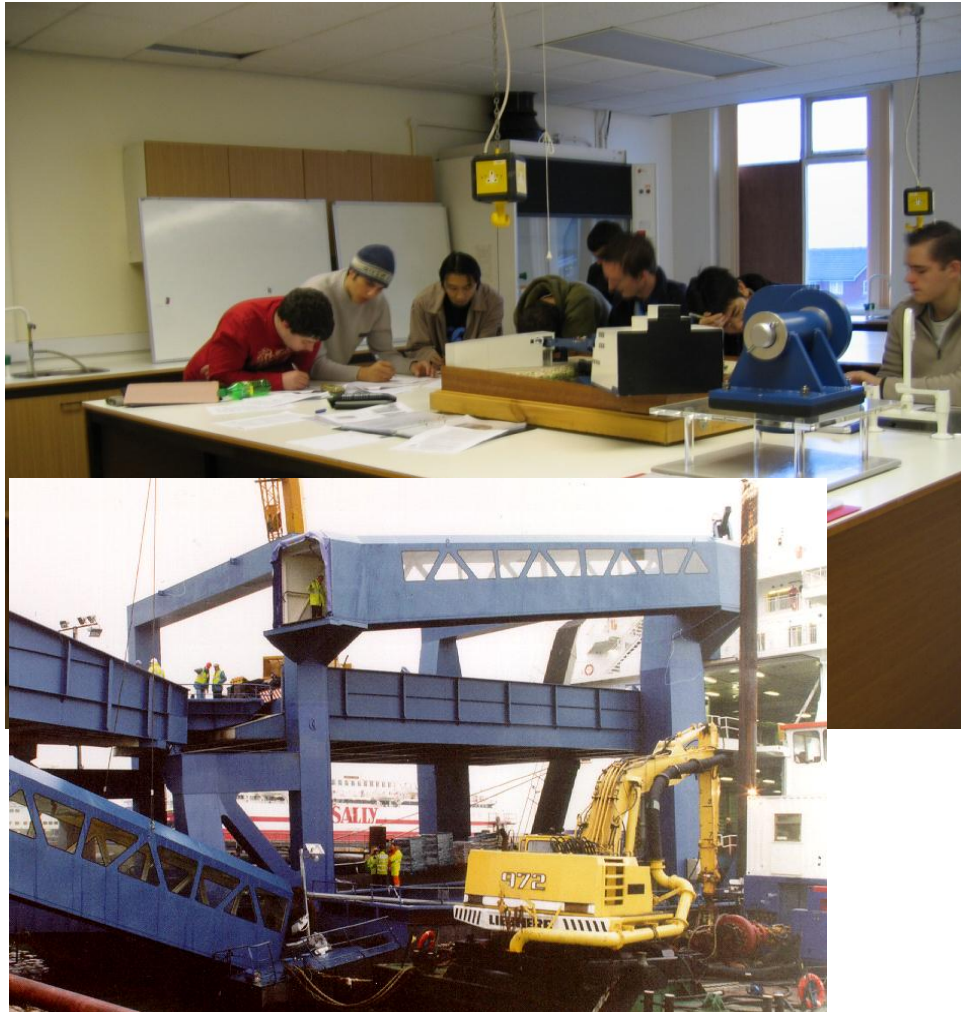
Understanding risks

Wind-loading
research
following crane
collapse



Investigation &
research: incidents
& ill health

Training the next generation of safety critical professionals

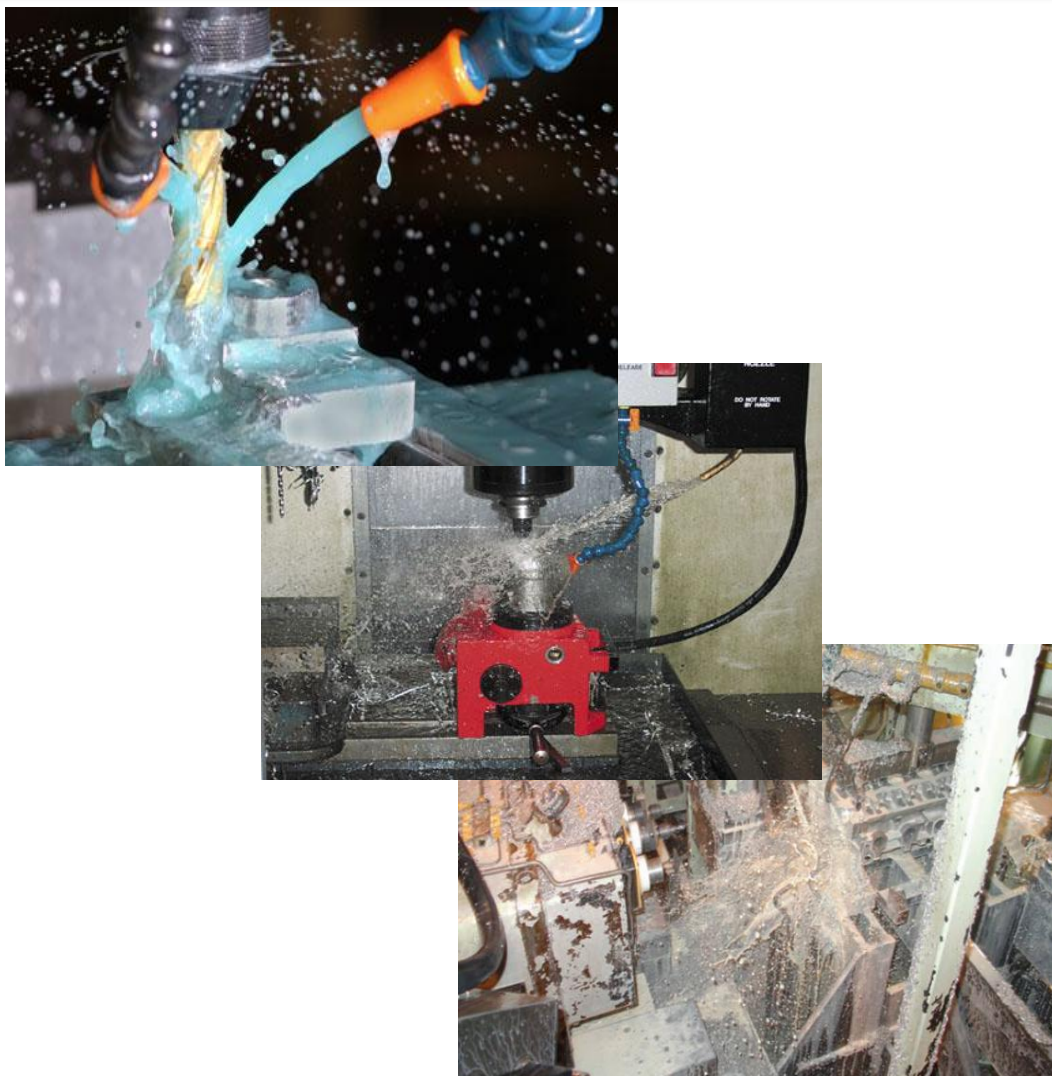


Integrating Occupational Health and Safety into Liverpool University Engineering Degree Course. With support from professional engineering bodies & BSI

STACEY,N.; et al., Experimental learning using a computer-based virtual reconstruction of an accident investigation. *EE 2012 - International Conference on Innovation, Practice and Research in Engineering Education*, Conference Proceedings, Loughborough University, UK, 18-20 Sept 2012

Translational
Research

Understanding risks

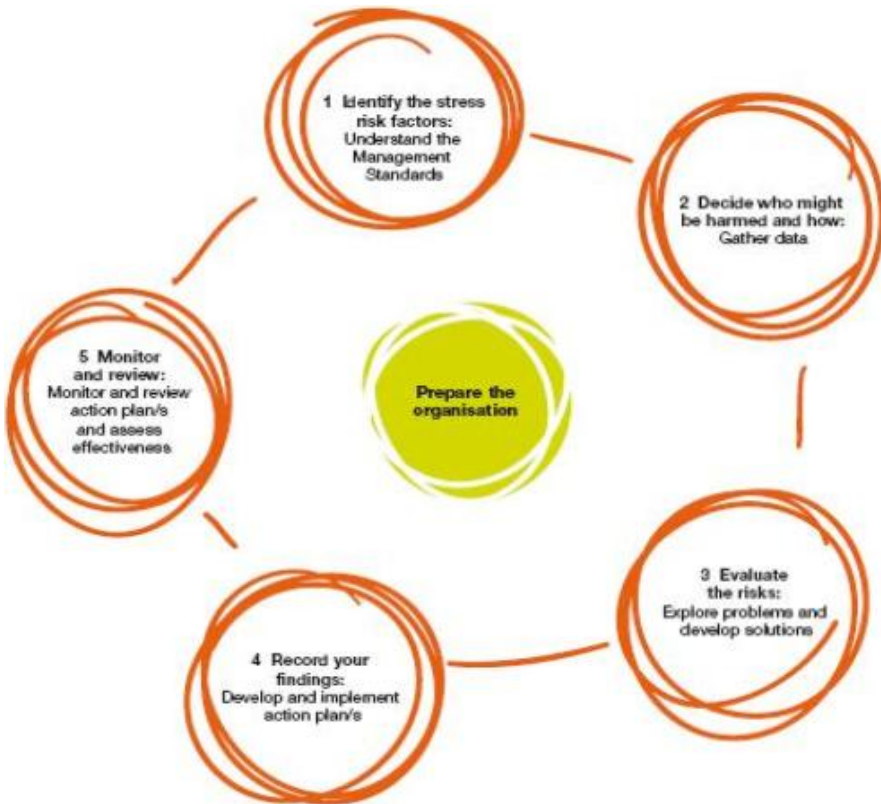


Metal-working fluid & respiratory disease - research following Powertrain outbreak in 2001 (over 100 affected workers)

BARBER, C., BURTON, C., ROBINSON, E., CROOK, B., EVANS, G., and FISHWICK, D. Hypersensitivity pneumonitis due to metalworking fluid (MWF) exposures. *CHEST*. 2013 143 (4) 118910.1378/chest.12-2865

Investigation & research: incidents & ill health

Research to Develop Practical Tools for Duty Holders

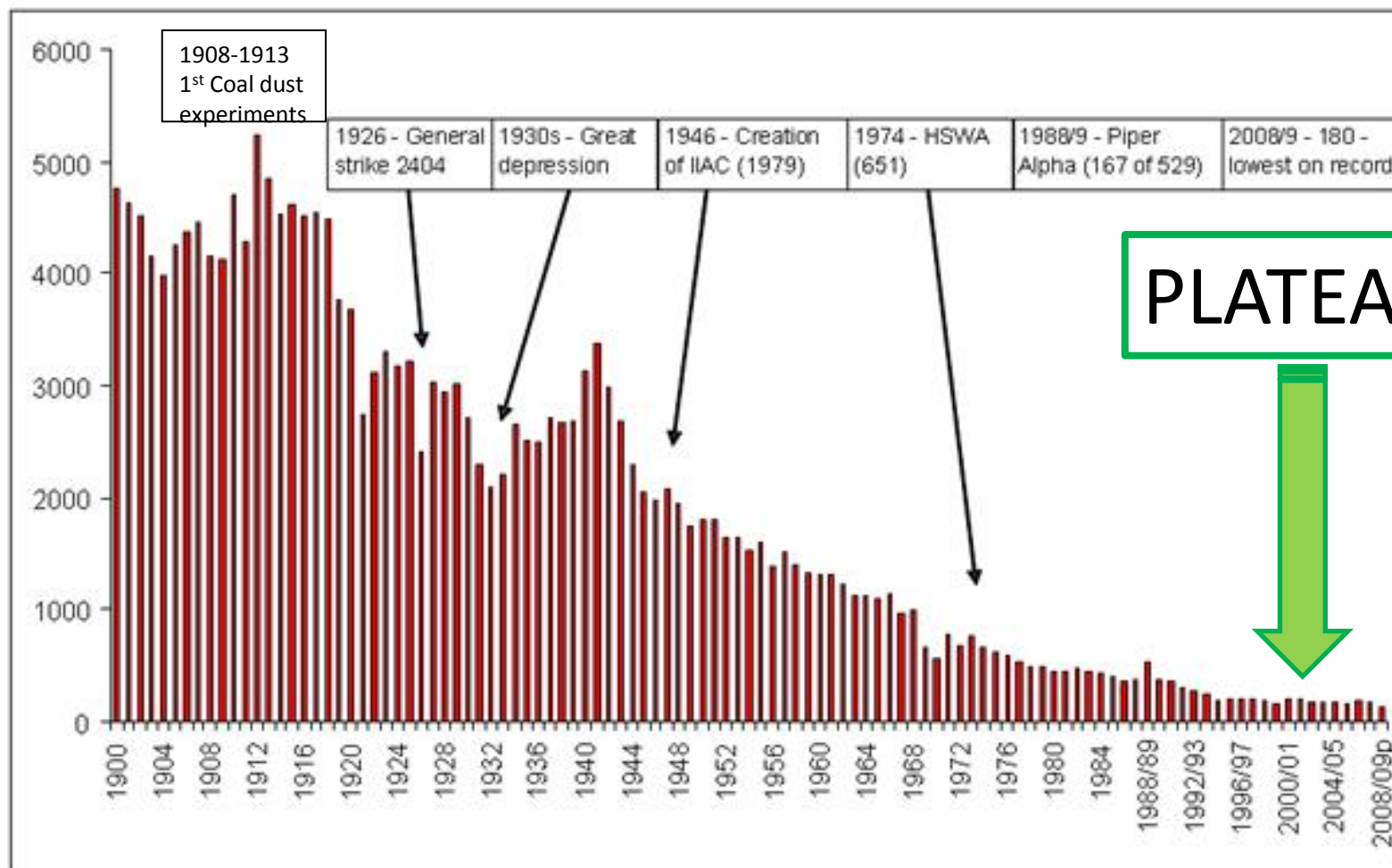


Translational
Research

Management Standards for Work Related Stress

Mellor, N., Mackay, C., Webster, S., Kelly, P., Palferman, D. 'Management standards' and work-related stress in Great Britain: progress on their implementation. *Safety Science*, Aug 2011, 49(7), 1040-1046

Employee fatalities since 1900



Research to Develop Practical Tools for Duty Holders



The Leadership & Worker Engagement:
Reducing harm by learning from the best in
construction (www.HSE.gov.uk)

Translational
Research

Research to Develop Practical Tools for Duty Holders



London 2012: The Learning Legacy - Practical case studies on construction safety

Sugden C. et al., Learning Legacy: lesson learned from the London 2012 Games
Construction Project – Safety Culture on the Olympic Park, ODA, 2011

Translational
Research

“They [HSL’s climate surveys] were invaluable to us. The data we obtained from each project team and across the programme’s workforce meant that we could take specific initiatives to develop the safety culture, and we knew that attitudes and perceptions on site were a wonderful pain-free surrogate for reacting after accidents had occurred. The data and its analysis told us where we were going, and identified opportunities for improvement”.

Laurence Waterman, Head of Health & Safety, Olympic Delivery Authority

Research into risk profile

Epidemiological Study: Cancer Burden in GB

2005:

- 8019 occupational cancer deaths (5.3%)
- 6326 Men
- 3616 Women

Industries with high cancer registrations include:

- Construction (56% of men)
- Shift Work (54% of women)
- Metal Working
- Personal & Household Services
- Land Transport
- Farming

RUSHTON, L. et al., Occupation and cancer in Britain. *British Journal of Cancer*, 2010, 102, 1428-1437



Research to inform
policy

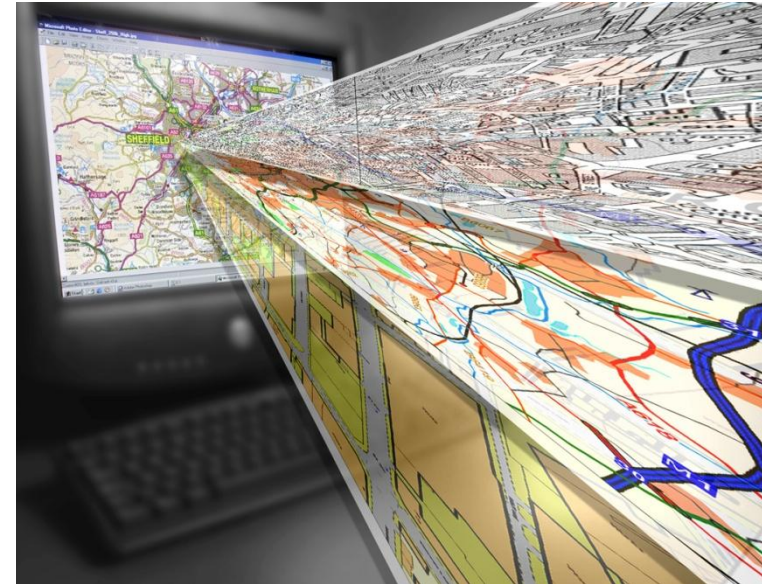
Research to Develop Practical Tools to Support OSH Enforcement

Information Intelligence Tool for HSE inspectors to enhance targetting of inspection visits on high-risk sectors and poor performing companies. Geographical Information Systems tool synthesises:

- Accident & complaints data
- Inspection history
- Addressing & business data
(location, activity, in business)

Trial 2011/12 showed:

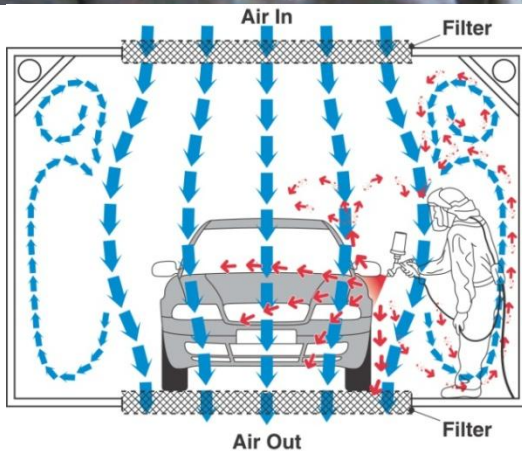
- 75% reduction in number of 'redundant' inspection visits
- 50% rate of finding a 'material breach'



FIND-IT TOOL

Translational
Research

Research to support national regulatory interventions: Motor Vehicle Repair



Motor Vehicle Repair:
Isocyanate exposure
80X average ~GB
industry incidence of
asthma

Research to
support
Interventions

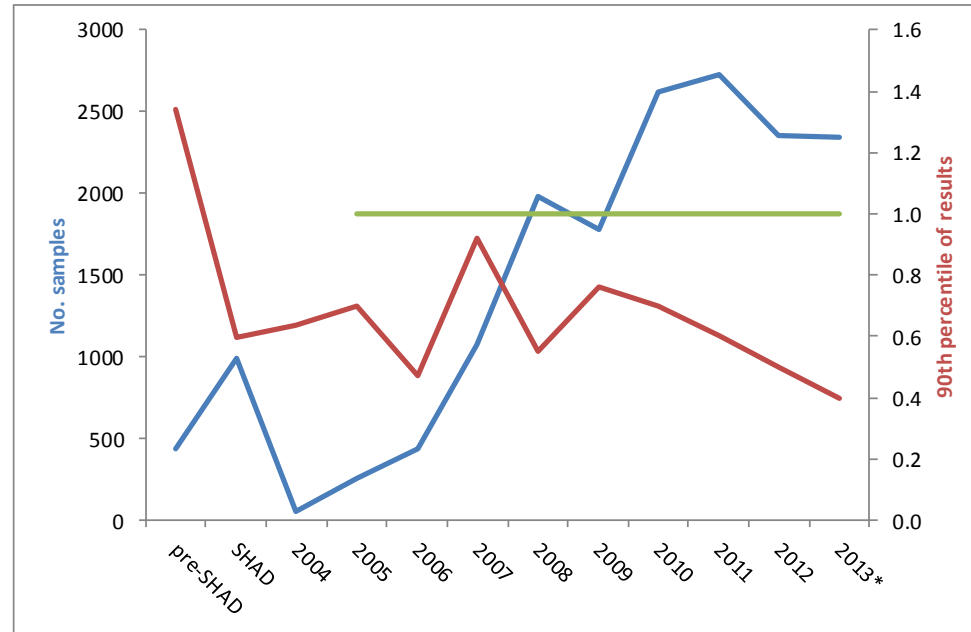
Research to support national regulatory interventions: Motor Vehicle Repair

Did it work? YES

National intervention so no untouched 'control group'

Indicators used:

- intention to act (90%)
- changes in exposure control measures (50%)
- -changes in biological monitoring uptake (increase sustained)
- Changes in biological monitoring results (significant)



Biological Monitoring Creatinine



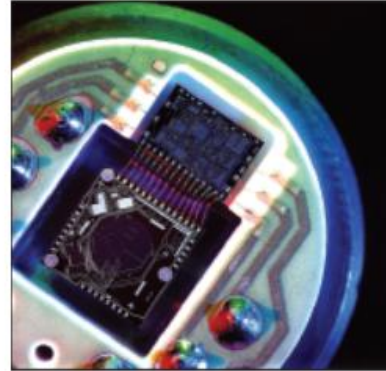
Research to
support
Interventions

Research into emerging & future issues

A Virtue of
Necessity

*Personal responsibility, pro-active adoption
of technology, management of risk*

Digital Rose Garden



Futures
Scenarios
for HSE

*Decreased UK global
competitiveness*

*Increased UK global
competitiveness*



Foresight
Centre

Tough Choices

*Blame culture, resistance to new
technology, rejection of risk*

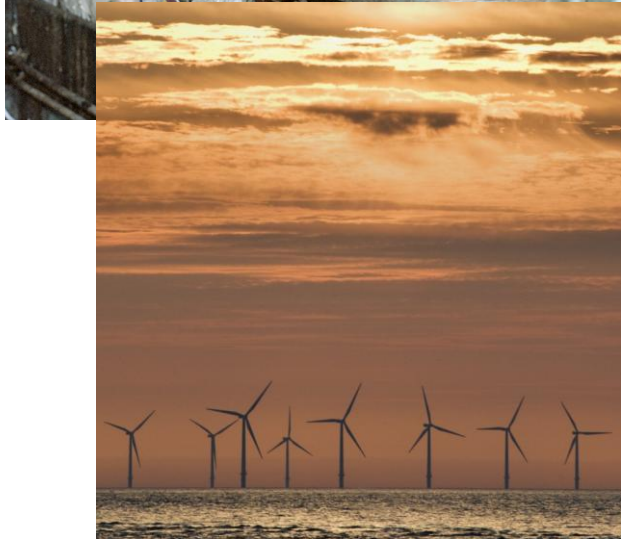
Boom and Blame

Research into emerging & future issues



Foresight of new and emerging risks to occupational safety and health associated with new technologies in green jobs by 2020

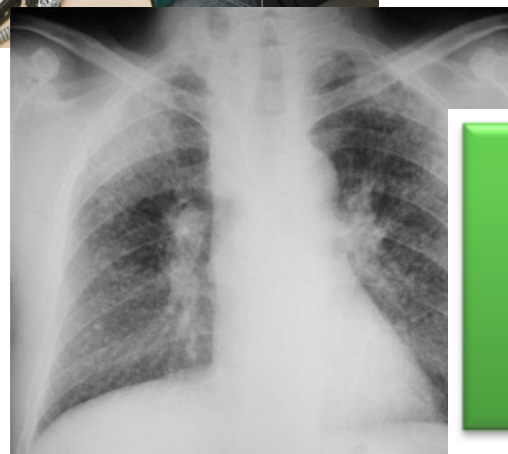
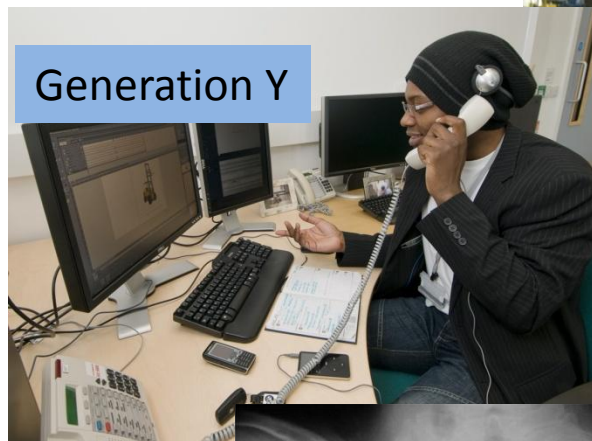
Futures
Scenarios
for EU-OSHA



Foresight
Centre

Strategic Research: 5 Programmes

- Demographics
- Advanced materials & manufacturing
- Exposome
- Mathematical Modelling
- Health Impact Assessment and Surveillance for Long Latency Diseases



Strategic
Research

Conclusions

Knowledge Generation

Learn from the
Past

Research the
Future

Support the
Present

Knowledge Transfer via Practical Solutions



Conclusions

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Presentation at:

EU-OSHA seminar - 'Moving Towards 2020 – Priorities for Occupational Safety and Health Research in Europe for the Years 2013-2020' Brussels October 9-10 2013

Disclaimer:

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Speaker Biography

Dr Mary Trainor is Head of Science at the Health and Safety Laboratory, an agency of the Health and Safety Executive. She is a member of the PEROSH Scientific Steering Committee.

Her role at HSL includes setting standards for scientific work across the laboratory and promoting the professional development of scientists. She works within the HSL-HSE partnership to promote effective delivery of science to improve the health and safety of workers and reduce risks to the public arising from workplace activities. She joined HSL over 20 years ago and initially specialised in the assessment of risks to health and safety. She headed HSL's Risk Assessment Section which she built into a multi-disciplinary team spanning human and organisational factors, engineering and the physical sciences. Before joining HSL, Mary was an experimental particle physicist: she was a researcher at Oxford University and a CERN Fellow.

