



# **HSL's Science & Technology Services**

*A guide for Local Authority staff*

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## *INTRODUCTION*

This booklet is designed to help you, a local authority officer charged with health and safety enforcement, to access the Health and Safety Laboratory's (HSL) services under HSC's new Local Authorities and HSE Working Together Strategic Programme. One aim of the programme is to enable local authorities to call on science and technology (S&T) resources to help them in delivering their health and safety enforcement targets. HSL is the major such resource, providing expertise across almost all areas of health and safety.

The Programme provides funding for S&T resources both through planned projects and as reactive support to inspections and investigations. This booklet provides a catalogue of the main S&T services that can be called off directly from HSL as reactive support. Section 1 gives an A-Z listing with some examples of the type of work that can be supplied. The second section contains a number of more detailed case studies illustrating support and project work that HSL has done either for local authorities or in areas likely to be of interest to LA officers.

The aim is to make commissioning this reactive S&T support as easy and unbureaucratic as possible. If you require any reactive S&T support you should contact your ELO in the first instance. If the request involves HSE inspector or specialist inspector input, the ELO will deal with the request through existing arrangements. If not, the ELO will put you in direct contact with Dr Mark White at HSL (Tel: 01298 218816, email: [mark.white@hsl.gov.uk](mailto:mark.white@hsl.gov.uk)). Because of the wide range of HSL's activities and of the possible situations you may be confronted with, this catalogue cannot be comprehensive. Dr Mark White can advise you if you don't see what you require.

***Please note this reactive support does not include any HSE inspector input, nor is it intended that it should replace your normal contact on day-to-day issues with ELOs. If you are unsure about who the enforcing authority is or you require HSE inspector input, you should always contact your local ELO in the first instance.***

### ***Who we are***

HSL is Britain's leading industrial health and safety facility with over 30 years of research experience across all sectors. Operating as an agency of HSE, we support their mission to protect people's health and safety by ensuring risks in the changing workplace are properly controlled.

We employ around 360 people including scientists, engineers, technical specialists, psychologists, and health professionals. Operating from the centre of the UK at Buxton, Derbyshire as well as from a number of field stations, our scientific capabilities range across chemistry, physics, engineering, materials science, ergonomics, work psychology, fire, explosion and process safety, toxicology, biomedical sciences, epidemiology and statistics. This breadth of expertise underpins our particular strength in creating multidisciplinary teams to solve health and safety problems.

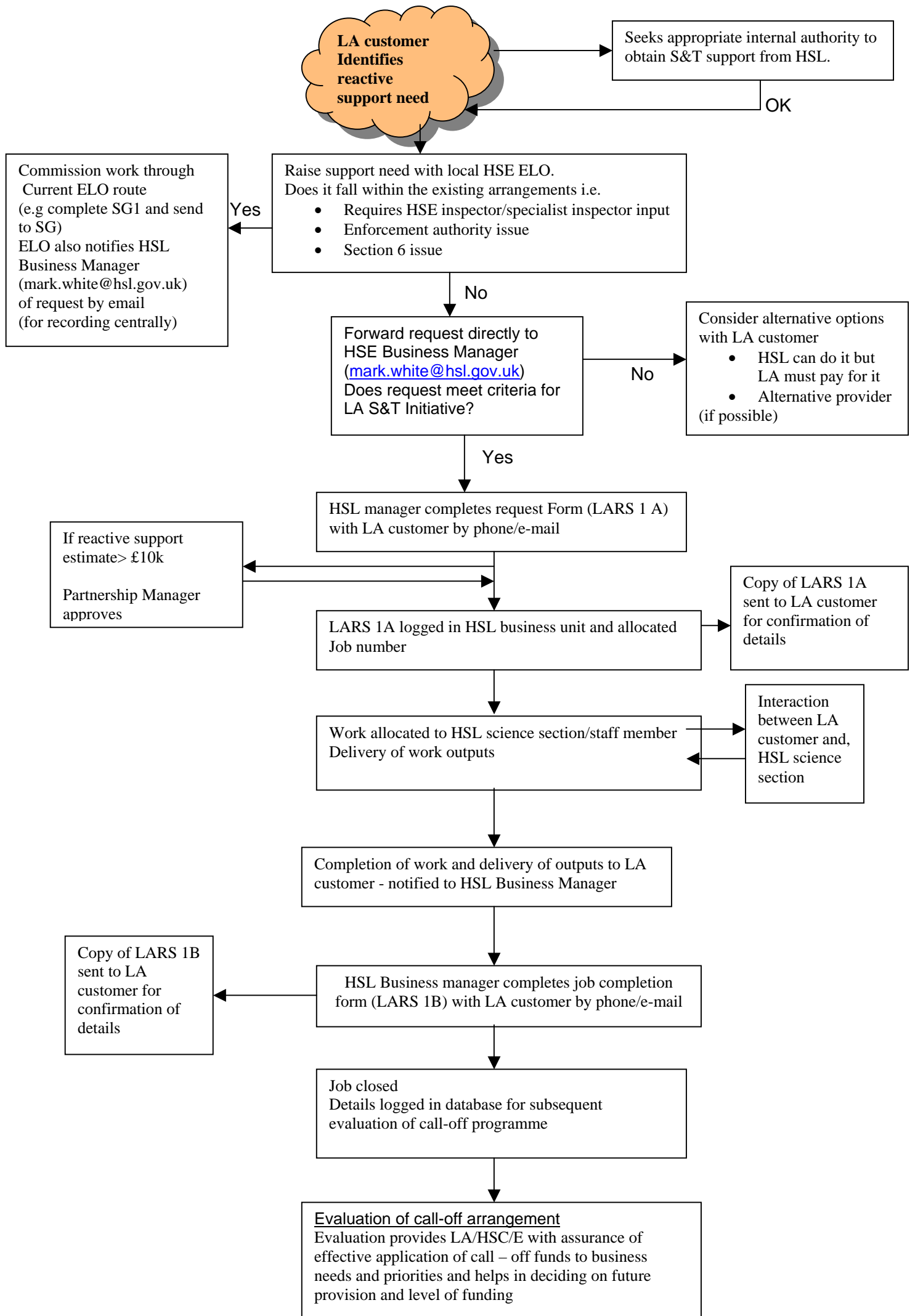
### ***Commitment to quality***

HSL operates a certified ISO 9001:2000 quality management system, covering all of our scientific activities. We have a track record of successful project management and are committed to targets agreed with our customers for delivery of projects to time and cost. In an independent survey carried out for us in 2004, HSL achieved 89% overall customer satisfaction. HSL is committed to train and develop its staff in line with business needs and was re-accredited as an Investor in People organisation in November 2002.

## *COMMISSIONING REACTIVE SUPPORT WORK*

The entire process for initiating and completing a reactive support job is summarised in the flow chart below. The important points to note are:

1. You should obtain appropriate internal LA authority to request the work
2. There are clear criteria for support work that can be funded by this programme. The request for work must:
  - Be in the field of health and safety at work (not other legislative responsibilities such as food safety or environmental protection)
  - Be in areas of strategic importance to HSC/LAs and/or LA priorities (either local or national)
3. Commissioning the work has been made simple – the HSL business manager will complete the necessary paperwork with you over the phone or by email.



# A-Z INDEX TO REACTIVE SUPPORT SERVICES

## A

### **Accidents – Investigation**

HSL offers a wide range of expertise and facilities for the forensic investigation of work-related incidents including:

- Experienced, specially trained, rapid response teams
- Multi-disciplinary capability
- Highly specialised stills and video photography for recording scientific and forensic evidence
- Preparation of witness statements and presentation of expert evidence in court

*See also Expert Witnesses, Forensic Investigation, Photographic & Technical Services*

### **Accident reporting**

We can provide advice to LAs on systems for reporting, analysing and learning from near misses, accidents and ill health at work.

### **Accidents - Underlying Causes**

As part of any incident investigation, we will look beyond the immediate, physical cause, seeking information on the underlying factors contributing to the accident. These may involve a company's safety culture, usability issues or other human factors. We can also provide advice on applying these root cause analysis techniques to your own investigations.

### **Aerosol Sampling**

We can provide rapid, comprehensive, real-time exposure measurements for any work activity that generates aerosols during manufacturing, processing, machining or handling operations.

### **Allergens**

The laboratory can undertake investigations for airborne allergens, where respiratory allergy is suspected. These measurements are usually done in conjunction with specific antibody measurements in the sera of allergic workers.

*See also Biological monitoring*

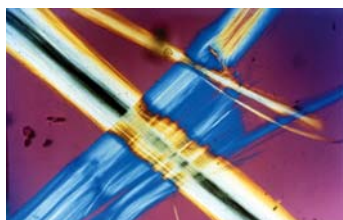
### **Amusement Rides**

*see Fairground Rides*

## Asbestos

HSL offers a comprehensive service for the measurement and assessment of asbestos, including asbestos appearing as a contaminant in bulk materials. We can also assess Method Statements (plan of work and risk assessment) provided by asbestos licensed removal contractors.

*see also Fibres*



*We have developed sensitive methods for the measurement of airborne fibre levels during the removal of textured decorative coatings from domestic and non-domestic premises.*

## Asthmagens

Asthmagens are substances that cause sensitisation of the respiratory system. HSL offers a comprehensive service for monitoring exposure to many asthmagens through both environmental and biological monitoring.

## B

### Behavioural Programmes

HSL's Human Factors team can give advice on the design and implementation of behavioural health and safety improvement programmes, which involve the workforce and worker representatives.

### Biocides

*See Pesticides*

### Biological Analyses

We can provide analyses of a wide range of substances in blood, breath or urine; our website gives the full list of analyses available ([www.hsl.gov.uk/capabilities/biolist.htm](http://www.hsl.gov.uk/capabilities/biolist.htm)) for further details.

### Biological Monitoring

Biological Monitoring involves measuring the chemical or its breakdown products in urine, blood or breath. It is a useful way of assessing all routes of exposure to chemicals - inhalation, ingestion and absorption through the skin. It can be used to good effect on its own, especially in situations where control relies on respiratory protection, or alongside other monitoring techniques such as air and surface contamination measurements.

*See also Biological Analyses*

## **Body Piercing, Tattooing & Scarification**

HSL prepared the Local Authority Circular on this subject and can provide information and advice on this as well as on new issues related to micropigmentation methods (temporary tattoos).

*See also Case Study 3*



*Visits have been made with LA enforcement officers to practitioners in the field of micropigmentation and body piercing, and the concerns of both parties discussed. Issues as diverse as infection control, use of local anesthetics and unfair business competition were covered during these site visits.*

## **Breathing Apparatus**

*See Respiratory Protective Equipment*

## **C**

### **Call Centres**

HSL has produced Local Authority Circular 94/1(rev) on this topic and our teams of specialists can provide information and advice on health and safety issues relating to Call Centre working practices.

### **Cold Stress**

*See Thermal Stress*

### **Control Systems**

HSL engineers can advise on the operation and malfunction of a wide range of mechanical, electrical and electronic control systems, including software-driven ones.

*See also Accidents - Investigation*

## **CORGI**

A number of our engineers are CORGI registered and can therefore advise on installation and maintenance issues around gas appliances and fittings.

*See also Gas Appliances*

## **D**

### **Diesel Engine Exhaust Emissions**

HSL offers a service for the assessment of exposure to diesel engine exhaust emissions (DEEEs). We can:

- Supply sampling materials and analyse collected samples, or alternatively
- Provide qualified staff to collect samples, assess controls and provide guidance on reducing exposure where appropriate.

### **Drugs of Abuse Screening**

We have a team trained to provide an accredited screening service for drugs of abuse.

### **Dust Explosion Hazards**

Our specialists can provide advice and guidance on all aspects of explosion protection and prevention. We have a comprehensive range of laboratory test facilities to assess the explosibility of particular dust hazards.

### **Dust Sampling**

*See Exposure Assessments*

## **E**

### **Engineering Failure**

*See Mechanical Engineering*

### **Environmental Microbiology**

Not food, but soil, water, air.

*See Microbiology*

### **Environmental Pollution**

*See Personal Exposure*

### **Environmental Tobacco Smoke**

We can advise on ventilation and monitoring strategies for both premises and workers subject to tobacco smoke exposure.

*We are working with Liverpool City Council to monitor the exposure to tobacco smoke of workers in the hospitality industries, including the development of updated cost effective methods of analysis for a range of toxic tobacco smoke constituents.*

*See Tobacco Smoke*

### **Epidemiology**

We provides a broad spectrum of epidemiological and statistical skills and experience including a quality assurance role in the planning of new projects, advice on experimental design and sample sizes, together with support for data analysis and modelling. Our epidemiologists and statisticians often support their scientific colleagues on a wide range of projects requiring this type of specialist input.

*See also Statistical services*

## **Ergonomics**

HSL's ergonomists are experts in the assessment, prevention and reduction of ergonomic-related workplace risk and can provide professional assistance in a wide range of services from simple solution-orientated workplace assessments to advice on the design and implementation of a full health and safety management system.

## **Expert Witnesses**

Our staff have considerable experience in the preparation of witness statements and presentation of expert evidence in court, in relation to forensic investigations of work related incidents.

## **Exposure Assessments**

We can provide support with carrying out exposure assessments in any type of LA-enforced premises, as well as providing recommendations for improved control.

*See also Personal Exposure and Local Exhaust Ventilation*

# *F*

## **Fairground Rides**

HSL has extensive experience of both incident investigations and research involving fairground and amusement park rides, and is well-placed to offer advice in this area.

## **Falls from Height**

We have expertise in a wide range of health and safety issues relating to work at height. We can carry out assessments of the integrity of fall arrest harnesses and lanyards, the testing of safety nets and we can provide advice and information on safe systems for work at height.

## **Fatigue, Shiftwork and Working Hours**

We can carry out reviews of working hours and shift patterns to identify whether fatigue is a potential risk as a causative factor in accidents.

These reviews can include:

- assessment of short-term, daily fatigue and cumulative fatigue using the HSE Fatigue Index
- analysis of performance, accident and sickness absence data
- assessment of a worker's alertness and individual adjustment to shift work
- evaluation of measures to reduce fatigue including provision of breaks and rotation of tasks.

## **Fibres**

HSL scientists can provide qualitative and quantitative analyses of a range of natural and man-made fibres, including asbestos. They can also advise on and undertake sampling schemes.

*See also Asbestos*

## **Fires**

HSL can advise on a wide range of issues relating to fires, for example:

- Development and suppression of large fires involving chemicals, plastics, textiles or other commodities
- Assessing the effectiveness of commonly installed automatic suppression systems, e.g. sprinkler/foam/deluge systems
- Assessing other means of reducing risks, e.g. fire partitioning, use of fusible skylights and frangible roofing materials, fire resistant packaging and stock reorganisation

## **Fit Testing**

*See Respiratory Protective Equipment*

## **Footwear**

Using our laboratory facilities, we can carry out objective assessments and comparisons of the slip performance of footwear under various conditions and on different flooring materials, including wet, icy and oily surfaces.

*See also Slips, Trips & Falls*

## **Forensic Investigation**

*See Accidents – Investigation, Expert Witnesses and Photographic Services*

# **G**

## **Gas Analysis**

We can analyse a range of permanent gases such as methane, oxygen, carbon monoxide and carbon dioxide.

## **Gas Appliances**

HSL can investigate incidents involving gas appliances, including small equipment such as flambé units in restaurants, as well as advising on good practice relating to their use. This service extends to equipment using gases other than natural gas, e.g. welding equipment.

*See also Accidents – Investigation and CORGI*

## **Gas Detection**

Real time monitors can be used for surveying and leak detection of a range of gases (e.g. refrigerant gases, oxygen depletion). We can also assist in the calibration of gas monitors.

## **Geographical Information Systems (GIS)**

HSL has a national holding of large scale Ordnance Survey digital mapping products and modelling tools, which enable us to provide state of the art GIS support for a wide range of activities, including land use planning decisions and risk assessments.

## H

### **Hand-Arm Vibration**

We can carry out assessments of the risk of hand-arm vibration exposure, including measurements of HAV exposure, and provide advice on appropriate controls or health surveillance. We also have a dedicated Hand Arm Vibration Syndrome (HAVS) Assessment Centre to which employees can be referred by employers or OH physicians.

*See also Whole-body Vibration*

### **Health Effect Monitoring**

We can undertake a wide variety of analyses and measurements to identify early health effects arising from workplace exposure to chemical, biological and physical agents

*See Hand-Arm vibration, biological monitoring, asthmagens*

### **Hearing Protection Assessment**

*See Noise Assessment*

### **Heat Stress**

*See Thermal Stress*

### **Human Error**

We can make an assessment of a workplace task where a human operator has the potential to make an error. A quantitative estimate of the probability of an error occurring is developed, and we can then advise on suitable measures to reduce that probability.

### **Human Factors**

We can provide a comprehensive service for the investigation of all aspects of human, social and organisational factors impinging on health and safety at work by bringing together expertise in psychology, behavioural toxicology, ergonomics, risk assessment, social science and health economics.

## I

### **Incident Investigations**

*See Accidents – Investigation*

### **Intermediate Bulk Containers (IBCs) for Liquid Storage**

We can provide advice and guidance on risk assessments for premises using IBCs for liquid storage and on the selection and design of IBCs.

### **Isocyanates in Motor Repair and Other Industries**

We provide a comprehensive service for the assessment of exposure to isocyanates using both workplace air monitoring and/or biological monitoring.

## K

## L

### **Legionella**

We can provide advice and guidance on legislation, risk management, sampling and testing for Legionella.

*See also Microbiology*

### **Local Exhaust Ventilation**

HSL's capabilities in exposure control encompass expertise in all aspects of ventilation systems including design and effectiveness of local exhaust ventilation (LEV).

## M

### **Man Made Mineral Fibres in Air Analysis**

*See Fibres*

### **Manual Handling**

We can carry out assessments of manual handling operations and advise on risk reduction, appropriate use of manual handling aids or other work changes to reduce the risk of injury.

*See Case Study 7*

### **Mechanical Engineering**

HSL engineers and metallurgists are available to provide testing of a huge range of equipment, both as part of an incident investigation or simply arising out of a routine inspection. Some recent examples include a water boiler from a care home, stair lifts in private homes, ladders and garage equipment.

### **Metal Fumes**

We can sample and analyse metal fumes, including welding and solder fume, as well as advising on control measures such as Local Exhaust Ventilation.

*See also Local Exhaust Ventilation*

### **Microbiology**

We provide a comprehensive advice and analysis service for investigations of potential exposure to biological agents in a wide range of work situations including agriculture, healthcare, manufacturing and waste handling.

## **Musculoskeletal Disorders**

HSL's ergonomists use a wide range of methods to provide professional assistance in risk assessment for manual handling and musculoskeletal disorders and the development of safe working procedures.

## **N**

### **Noise Assessment**

We can carry out assessments of risk from noise exposure, including on-site or laboratory measurement of noise where needed, and provide advice on appropriate controls or health surveillance.



*Use of head and torso simulator to assess noise exposure in call centres*

## **O**

### **Occupational Asthma**

*See Allergens and Asthmagens*

### **Occupational Health**

We offer a comprehensive range of services to help solve occupational health problems. We can rapidly assemble cross-discipline teams to respond promptly to individual requirements

### **Occupational Hygiene**

We offer flexible answers to a broad range of occupational hygiene needs, including workplace exposure assessment (inhalation and dermal), direct on-site measurement of surface contamination and various inhaled agents, bulk sampling of solids and liquids for subsequent analysis including asbestos identification and video visualisation of airborne exposure to dusts, fumes and organic vapours as an aid to good working practice and exposure control.

### **Occupational Psychology**

*See Work Psychology*

## Occupational Stress

*See Stress Management*

## P

### Pedestrian Safety

*See Footwear and Slips, Trips & Falls*

*See also Case Study 1*

### Personal Exposure

We can measure personal exposure to a range of environmental pollutants, e.g. carbon monoxide, ultrafines and ozone. Telemetry allows us to make these measurements in real time and with minimal disruption to the work activity.

### Personal Protective Equipment (PPE)

HSL specialists can carry out laboratory or field examination of any item of personal protective equipment and advise on its suitability for a particular task as well as on maintenance and cleaning.

### Pesticides

There are several hundred inorganic and organic chemicals that are classified as pesticides or biocides, and HSL ranks as one of the top laboratories in Europe for their analysis. We offer an analytical service for:

- occupational hygiene samples (Tenax tubes, filters, pads, gloves, etc)
- environmental samples (vegetation, soil, water, etc)
- formulations
- pesticide residues on agricultural spraying equipment
- biological samples (urine and blood)

We can also advise on the use of pesticide smoke generators.



*We have conducted operator exposure assessments of Local Authority Pest control officers during various work activities using different pesticide formulations and treatments.*

### **Photographic Services**

HSL has a team of specialists who not only have experience in health and safety-related stills and video work – including forensic photography – but who can also undertake digital image enhancement and decoding of digital and analogue CCTV footage. We also have an extensive archive of photographs available under Crown Copyright.

### **Post-Traumatic Stress**

HSL can provide advice on risk management procedures to prevent, mitigate and manage post-traumatic stress disorder (PTSD).

*See also Stress Management*

### **Psychology**

*See Work Psychology*

## *R*

### **Respiratory Protective Equipment**

HSL undertakes investigations of all forms of RPE, from filtering face pieces to closed circuit breathing apparatus and diving equipment. We can also provide advice on fit testing of respiratory protective equipment to assess suitability for and fit to the individual.

### **Risk Assessment**

Our capabilities encompass all aspects of risk assessment, covering safety and health related ergonomics, human factors, risk perception and communication, social and economic factors, work organisation and job design.

## *S*

### **Safety Management Systems**

HSL can provide advice on safety management systems and associated documentation.

### **Shiftwork**

*See Fatigue, Shiftwork and Working Hours*

### **Slips, Trips & Falls**

HSL scientists can carry out assessments of workplaces and public buildings and identify slip and trip risks in entrances and on stairs, ramps and walkways, and advise on how to reduce those risks. We can also carry out on-site or laboratory measurements on a flooring surface to determine its slip potential both when dry and when contaminated by water, oil or other material.

*See also Falls from Height*



*We have provided slips and trips workshops for Local Authorities (both as employers and as H&S regulators) and undertaken site visits to LA enforced premises both to investigate accidents and provide advice on suitability of flooring materials (see case study 1)*

### **Solvent Analysis (Air, Breath, Urine & Blood)**

HSL can provide analysis of a wide range of solvents in air and analysis of solvents and their metabolites in blood, breath or urine

*See also Biological Monitoring*

### **Sports Facilities, Stadia**

Our engineers and human factors specialists can advise on and assess aspects such as crowd control measures, crowd movement, staging, barriers and scenery.

### **Stair Lifts**

*See Mechanical Engineering*

### **Statistical services**

*See Epidemiology*

### **Stress Management**

Having had significant input to the development of HSE's Stress Management standards, HSL's psychologists can advise on the process of working with these standards, on identifying risks of stress and on implementing controls.

*See also Post-Traumatic Stress*

## **T**

### **Task Analysis**

*See Human Error, Manual Handling, Thermal Comfort, Workplace Adaptations*

### **Tattooing**

*See Body Piercing, Tattooing & Scarification*

## **Thermal Stress**

HSL's thermal specialists offer expertise in the assessment of work operations carried out under heat or cold conditions. They can advise on the management and control of thermal stress.

## **Tobacco Smoke**

*See Environmental Tobacco Smoke and Ventilation*

## **Training Needs Analysis**

We can advise you on how to identify the need for training in order to carry out work safely, and how to draw up suitable training specifications.

## **Tyres**

Amongst HSL's engineering staff is a certified tyre examiner who can be called upon for advice or investigations.

*See also Accidents – Investigation*

## **V**

## **Ventilation**

*See Local Exhaust Ventilation*

## **Vibration**

*See Hand-Arm Vibration and Whole-body Vibration*

## **Violence**

HSL's work psychologists can advise on suitable, practical control measures to manage the risk of violence to workers.

## **Volatile Organic Compounds (VOCs)**

We can provide an analysis service for volatile organic compounds (VOC's), exposure to which is common in a wide range of work activities.

## **W**

## **Welding**

*See Gas Appliances and Metal Fumes*

## **Whole-body Vibration**

We can carry out assessments of the risk of whole-body vibration exposure, including measurements of WBV exposure where needed, and advise on appropriate controls or health surveillance.

*See also Hand-Arm Vibration*

## **Working Hours**

*See Fatigue, Shiftwork and Working Hours*

**Workplace Adaptations**

HSL can assess a work situation and advise on adaptations to the workplace or job, in order to accommodate a disabled person or worker returning after ill health or injury.

**Workplace Transport**

We can carry out assessments of workplaces shared by moving vehicles and pedestrians, and advise on measures to reduce the risk of people being struck by moving vehicles. As part of an incident investigation involving workplace transport we will look at a range of issues as appropriate, for example visibility, training and mechanical failure.

*See also Accidents – Investigation and Accidents - Underlying Causes*

**Work Psychology**

We can apply a variety of techniques to address occupational health and safety problems involving human factors and psychosocial issues.

*See also Violence and Stress Management*

**Work-related Violence**

*See Violence*

## *CASE STUDIES*

### **CASE STUDY 1 Assessment of Flooring in the Millennium Galleries, Sheffield**



A number of factors come into play when specifying flooring materials for public buildings such as the new Millennium Galleries in Sheffield. Aesthetics are clearly important, as are durability and ease of cleaning, but from a safety point of view it is slip resistance that carries the most weight. The statistics are clear; over 30% of all non-fatal major injuries in Local Authority and HSE-enforced premises are caused by a slip, trip or fall at the same floor level.

At the request of Sheffield City Council, HSL scientists undertook an assessment of the slip resistance characteristics of the flooring of the Millennium Galleries prior to the opening of the building. Tests were carried out in a number of areas of the Galleries including the entrance foyer, restaurant, kitchens and lavatories. Two test methods are recommended for this type of assessment. The first involves the use of a pendulum with a rubber pad, which swings across the floor surface and measures the coefficient of dynamic friction. The second instrument measures the micro-roughness of the floor which for a smooth surface, such as the terrazzo-type tiles laid in the Galleries, is typically less than 10 millionths of a metre.

Drawing on HSL's wide experience of interpreting slip resistance test results, it was concluded that the likelihood of someone slipping when the floors were clean and dry was very low. However, if the floors became wet then there was a significant risk of slipping. Clearly, certain areas of the Galleries flooring might become wet: for example the entrance foyer and lavatories, or, in the case of the cafe and bar, have drinks spilt on the floor. To overcome these potential problems, two approaches were adopted. A substantial area of matting was installed in the foyer to absorb water brought in by the public

on wet days, and the flooring in areas of gallery where fluid contamination was likely was treated with an acid etching process to improve slip resistance in the wet by roughening the surface. The etching process had been tested by HSL in the laboratory prior to its application and further on-site testing showed a significant reduction in the slipperiness of the floor surface in the areas treated.

The Galleries opened to the public in April 2001 with displays tracing the history of the cutlery industry in Sheffield and a major exhibition of items loaned from the Victoria & Albert Museum in London.

## **CASE STUDY 2 Release of Chloramines from Swimming Pools and Processing Salad Vegetables**



What is the connection between swimming pools and lettuce processing?  
Answer: a group of chemicals known as chloramines.

It is generally known that chlorine is used to disinfect the water in swimming pools. On its own this is not usually a problem but when bathers enter the water they introduce organic matter, such as urine, which can react with chlorine to form chloramines. The three chloramines (mono- and dichloramine and nitrogen trichloride) are known to cause eye and respiratory irritation. Nitrogen trichloride is of particular concern. It is hydrophobic and readily outgases from the swimming pool water into the atmosphere, potentially exposing attendants who might spend much of their working day at the poolside.

It may be less well known that lettuce and other salad vegetables are washed in water containing chlorine before being packed for the ready-to-eat market. When the vegetables are cut during preparation, they release sap proteins

that, in the presence of chlorine, form chloramines to which the packers may be exposed.

In the UK there is no occupational exposure limit for chloramines and very little is known about the extent of workplace exposure. To fill this knowledge gap, a survey was carried out to measure exposure of swimming pool attendants and personnel engaged in lettuce preparation. The properties of the three chloramines are quite different so a two-stage sampling device was required: mono- and dichloramine were trapped on the front section of the sampler and analysed electrochemically; nitrogen trichloride was collected on the rear section and measured by ion chromatography.

French researchers have proposed an upper limit value and a 'comfort' limit value for exposure to nitrogen trichloride based on its irritancy effects. A few of the results from the swimming pools indicated exposures that were at or just above the proposed 'comfort' limit, but most results were significantly lower. All the exposures recorded during lettuce processing were well within the proposed limits. These data have contributed to an assessment of the risks associated with exposure to chloramines in two quite diverse occupational groups.

### **CASE STUDY 3 Health, Safety & Legal Issues Related to Body Piercing, Tattooing & Scarification**



Body piercing can no longer be regarded as a fringe activity and has recently become popular across the age groups and at all social levels. In part, this has been driven by the large number of celebrities who have chosen to have their bodies pierced, and many piercings are now performed as fashion statements. In view of this increased interest, the Local Authority Unit in HSE

approached HSL for technical assistance in updating its existing guidance on this topic, in the form of a Local Authority Circular (LAC).

In much of the UK there is still no legal requirement to register a business with the Local Authority (LA) when performing cosmetic body piercing on areas other than the ears. However, any business performing ear piercing, tattooing or acupuncture requires LA registration. To reduce the inspection problems associated with visiting and assessing piercing studios, legal and infection control issues required clarification within the new circular. HSL performed a wide consultation exercise which included discussions with LA enforcement officers, body piercers, medical staff, the Home Office and the Department of Health. Through this process definitive guidance has been developed on issues such as equipment sterilization, anaesthesia, assault and consent; all topics that have caused difficulty for LA officers and body piercers alike.

Many skin piercing businesses use non-vacuum steam sterilizers, and information on the safe use of such equipment is presented in the LAC. Appropriate sterilization of jewellery and instruments can help to prevent localised bacterial infections caused by *Staphylococcus aureus* and *Pseudomonas aeruginosa*. Sterilization also reduces the risk of blood-borne virus infections such as hepatitis and HIV. Limitations on the use of local anaesthetics are also clarified in the LAC. Specifically, injected products can only be administered by a medical doctor or dentist. Non-prescription drugs become prescription-only if they are injected, and skin piercers must be informed of this for their own legal protection, and to prevent the inappropriate use of drugs.

In most of England, Wales and Scotland, there is currently no lower age limit for cosmetic body piercing, although permanent tattooing is restricted to over 18s. Good practice, using legislation that is already in place, is presented in the LAC in the hope that young people will be protected. In making this information clear for LA enforcement officers, the LAC will ensure that young people, along with their parents or guardians, can make an informed decision about treatment.

Professional interest in the circular remains high, and HSL is responding to requests for presentations to interested parties across the country, as well as new issues related to micropigmentation methods (temporary tattoos).

The LAC open document can be found on HSE's website ([www.hse.gov.uk](http://www.hse.gov.uk)).

## CASE STUDY 4 Work-related Violence: Taxi Drivers



Work-related violence is a real and growing problem. It can include physical assault, threats or verbal abuse. In a recent study, HSL investigated how organisations manage the risk of violence to their lone working staff and presented the findings as a set of case studies.

One of the case studies focused on 'black cab' taxi drivers in London. 'Black cab' drivers can pick up customers by being hailed in the street or waiting at designated taxi ranks. Certain aspects of the taxi drivers' work expose them to the risk of violence from the public. These include carrying money in the cab (or the public perception that the driver is carrying money), drunken and disorderly behaviour, and working late at night or early in the morning.

Members of the taxi organisations that HSL talked to had experienced robberies involving a variety of weapons, and verbal abuse and aggressive behaviour by passengers. The consequences of violent and abusive attacks include physical injuries, depression, and in the worst case, death.

The organisations reported many cost-effective measures that drivers can use to help prevent and manage violence. Prevention is the key; drivers are encouraged not to put themselves in a situation where they might be at risk. Training messages include being polite to passengers, acting in a non-confrontational manner and not retaliating if threatened. Communication between drivers and liaison with local police is essential. Although most drivers are self-employed, they are prepared to help fellow drivers if an incident occurs or if a cab breaks down.

Other measures relate to the use of equipment. These include the use of deadlocks in known violent areas; the installation of CCTV and visible signage in cabs; use of a decoy money bag; and lockable sliding screens fitted between the passenger and driver. Drivers are also able to do account work,

which means that no cash changes hands between the driver and customer. This helps to minimise the risk of robbery. Taxi drivers also avoid known trouble spots.

The case study showed that using violence prevention and management measures increased drivers' confidence and enabled self-employed drivers to continue to work with minimum risks to their health and safety.

## **CASE STUDY 5 Health Surveillance of Vibration Exposed Workers**



Vibration White Finger (VWF) is a prescribed disease under the Industrial Diseases Regulations (1985) and is caused by excessive exposure to vibration from hand-held vibrating tools resulting in damage to the blood vessels and nerves in the hands and fingers.

The Department of Trade and Industry, who have had responsibility for handling British Coal compensation claims, invited HSL to set up a medical centre in Sheffield and run a pilot study where claimants could be objectively and independently examined to assess the degree of their disability. The HSL centre was opened in May 1998, and assessed over 8,000 miners over four years as part of the standardised review process. Although the centre stopped assessing miners in 2002, a health surveillance service is now offered to a range of industries where vibration is a hazard.

The busy HSL centre is staffed with specially trained occupational physicians, technicians and administrative staff. In a typical day, the claimants and relatives are shown to the centre reception area to check in. The examination begins when they are taken to the test room where the technician assesses damage to the nerves in the fingers using vibrotactile and thermal perception instruments. The doctor then sees the patient and after taking a full work history carries out a clinical examination. The final test assesses the integrity of the blood supply to the fingers. This is done by looking at the re-warming profile of the fingers after the hands have been immersed in cold water. The

full assessment can take two to three hours and then the doctor prepares a detailed medical report.

In addition, the centre is involved in a programme of research aimed at developing improvements to the assessment process. Simple, practical tests are also being evaluated for use in the workplace.

## **CASE STUDY 6 Use of Improved Footwear to Reduce Slipping Accidents**



Slips, trips and falls account for 35% of non-fatal major injuries and 21% of over three day injuries reported to HSE.

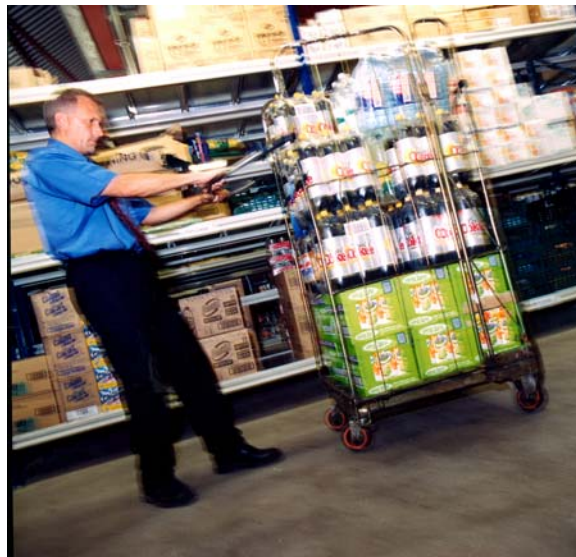
At the request of HSE, HSL staff have supervised a number of footwear trials undertaken in real workplace situations to evaluate the effect of footwear choice on the incidence of slipping accidents. Laboratory investigations were carried out to evaluate the anti-slip performance of a range of commercially available footwear using a test in which volunteers walk up a ramp which can be set at a range of angles.

The shoes were given to a representative group of workers at a company specialising in rendering animal products, primarily for use as pet foods. Historically the company experienced a very high level of slip accidents, which had proved resistant to other intervention strategies previously attempted.

At the end of the trial period results showed that no slip accidents were reported among employees wearing the trial footwear, while the rate of slip accidents remained characteristically high among those not participating in the trial. The company was so pleased with the dramatic reduction in slip accidents and the workers' positive response to the comfort and durability of the footwear that it was decided to issue it as standard to all employees in high-risk areas. Thirteen months after the completion of the trial no slip accidents have been reported among employees issued with the new footwear. The company reported higher levels of morale and productivity among its workers, and are negotiating lower insurance premiums due to reduced accident rates.

Footwear trials have proved that appropriate footwear selection can be a simple and cost-effective solution to reduce slip accidents. Additional footwear trials are currently being conducted in a range of other workplace environments where slip and fall accidents have historically been a problem.

## **CASE STUDY 7 Safety of Roll Containers**



Roll containers are half-pallet sized platforms with four running castors and a wire cage used to contain goods during transport. They are used to carry goods in lorries between warehouses and retail stores or within supermarkets to move products from the storeroom to the sales floor. Roll containers are now in widespread use and evidence has emerged over recent years that they are a significant source of accidents. There are also concerns about the manual forces needed to move containers especially where space is limited.

HSL was asked by HSE to investigate the extent and causes of roll container accidents and to develop advice on container design. Accident analysis showed that they are involved in a high proportion of accidents in the retail and distribution sector. For example, they contributed to 30% of manual

handling accidents to sales assistants referred to the Royal Liverpool University Hospital, 35% of reported accidents in a major distribution company and 20% of reported accidents in a major supermarket chain.

The design study showed that there were a number of important features which would help to reduce accidents by improving stability and manual handling. These were the use of larger diameter castors positioned close to the corners of the containers, the incorporation of handles to assist manoeuvring and the marking of maximum load heights.

The research also investigated the forces needed to move the roll containers both on level surfaces and on the sort of slopes found in storerooms and warehouses. For level surfaces the maximum forces needed to manoeuvre containers carrying a typical load of 400kg are within the capability of nearly all men and most women. However, where containers need to be handled on even slight slopes the position is very different. Here the operator has to overcome a force proportional to the load and the angle of the slope. For a 400kg load and a slope of 1 in 12 the force needed is well above what an average man might be expected to handle and almost double the force a woman could handle. As a result of the research load limits for roll containers have been proposed for a range of slope angles.

It was decided that a video would be the most effective method of passing the results of the investigation to end users in the retail sector and Local Authority enforcement officers. The video was produced by HSL and has received good feedback following wide distribution to interested parties.