EDITORIALS

Enabling a better working Britain: celebrating the centenary of the Health and Safety Laboratory

On 3 May 1911, Mr Enoch Edwards MP (member of parliament for Hanley) enquired what arrangements were being made to continue experiments with coal dusts that had previously been funded by coal owners and others at Altofts colliery in West Riding. In response, the Secretary of State for the Home Department, Mr Winston Spencer Churchill, replied, ‘This matter has been receiving the careful consideration of my right hon. Friend the Chancellor of the Exchequer, and myself, and I am glad now to be able to state that it has been decided to continue these experiments under the supervision of the Home Office, and that the Treasury have sanctioned the considerable expenditure that will be necessary for the purpose’ [1]. With these words, Winston Churchill established the Home Office Experimental Station at Eskmeals in Cumberland, the organization now known as the Health and Safety Laboratory (HSL), and transferred the funding of research into the safety of coal mines from the private to the public sector. At that time, a number of underpinning principles were established that have stood the test of time. Specifically, the research station was established as a national asset for the UK; the focus was on the development of practical solutions to workplace health and safety problems; that these problems were best solved by multidisciplinary teams and that the knowledge generated should be transferred to those who need it. One hundred years later, those principals still hold good, even though the organization and the world in which it operates has significantly changed. At the time of HSL’s foundation, 1000 people died every year as a result of underground accidents in coal mines [2], and many more died as a result of the health consequences of working with coal. In those early days, the majority of the work carried out by the laboratory centred on coal dust explosions, but the effects of coal and other dust exposures on health were also considered. Indeed, in the very first report of the Explosions in Mines Committee (under whose auspices the experimental work was performed), they presented work by Dr Beatie from Sheffield University regarding the potential health consequences that could arise from the addition of stone and other incombustible dusts to the miners’ working environment to prevent explosions [3]. The first Director of the new government-funded facility was Dr R. V. Wheeler, who worked closely with Dr Marie Stopes on the physical and chemical properties of coal. In 1918, they published a monograph entitled ‘The Constitution of Coal’, published in 1918 by the Department of Scientific and Industrial Research [4]. It was a comprehensive review of the subject and indicated many areas for future advance. Around this time, Dr Wheeler wrote to Marie Stopes saying, ‘I received a slight thrill reading that you have dissolved coal’. She responded by sending him a copy of her book on ‘Married Love’ also published in 1918 [5]. Over the years, HSL has evolved as its operating context changed, be it political, social or economic. The first major change came in 1920, when it was agreed that the facilities in Eskmeals had deteriorated as a result of the First World War, while problems in the industry had steadily accumulated which required urgent solutions. A new location was sought, and a new body, The Safety in Mines Research Board, was appointed to oversee the development of a new research facility. Part of the specification included the requirement that the site ‘must not be near any working coal mine’, so as not to alarm local residents when experimental explosions were undertaken. In January 1924, a site near Buxton was identified and £500 000 (current £16.4M today) was provided to establish the facility. The official opening of the site by The Viscount Chelmsford (Chairman of the Miner’s Welfare Committee) took place in June 1927. The Buxton site focused on large-scale experimental explosions of coal dust and firedamp, experiments with gob fires and mining explosives and other work, which, as the programme to commemorate the opening event stated, ‘owing to its character can only be conducted in a position of comparative isolation’. A further site was opened in Sheffield in 1928 by the Prime Minister, Stanley Baldwin, which undertook work on the constitution of coal, the safe use of electricity in mines and on the improvement of the miners’ safety lamp. Staff from the two sites worked as one unit, and the broad range of disciplines meant that more complex problems could be investigated. Indeed, it was recorded in a report describing the research activities undertaken, that, ‘The work of research now is less often within the capacity of one man than it was when Davy invented a safety lamp after a few weeks’ work’ [6].

Throughout the 1930s and 1940s, the work in both the Sheffield and Buxton facilities became more sophisticated and included increasing work on health-related issues. As a consequence, the international reputation of the facility grew, and in 1931, the First International Conference of Safety in Mines Research Institute was held at the Buxton facility; this conference continues to this day, and the international mining community will celebrate the 80th anniversary of this prestigious global conference in India in 2011. During the 1930s, the Buxton site also hosted
demonstrations and training events for young miners; in 1937, 6153 visitors came to the site to witness the size and impact of a coal dust explosion, as well as receiving demonstrations on respiratory protective equipment and appropriate use of machinery. In the same year, members of staff also gave 110 lectures off site to >10 000 people [2].

The nationalization of the coal industry in 1946 placed a statutory duty on government to undertake research on mine safety [7]. As a consequence, the research work in Buxton and Sheffield was brought together with some other mining-related research facilities under the name, Safety in Mines Research Establishment (SMRE). In the 1950s and 1960s, the Sheffield site was expanded, and some unique facilities were developed on the Buxton site, including a 1200 ft long surface explosion gallery, which is still in use today. In addition, the growing concern over the incidence of pneumoconiosis in miners led to work investigating the movement of respirable dust particles in air. Techniques were developed that enabled the collection of personal samples of the dusts for gravimetric analysis and for on-line monitoring of ventilation systems by light scattering. The next significant change came as a consequence of the Health and Safety at Work (etc.) Act 1974, when SMRE, the occupational hygiene and medicine laboratories and the British approvals service for electrical equipment in flammable atmospheres (BASEEFA) were brought together to create the Research and Laboratory Services Division (RLSD) of the newly formed Health & Safety Executive (HSE). This expanded the remit of the organization considerably to include all workplaces rather than just mining-related activities. For the first time, occupational hygienists, explosives experts, ergonomists, biochemists and psychologists (among others) could work together, giving the organization access to the widest range of scientific disciplines compared to any other similar national health and safety laboratory around the world. It also established the laboratory’s role in the investigation of incidents and in outbreaks of workplace ill-health; to this day, staff from the laboratory attend one such event every working day. In 1995, RLSD was renamed the Health and Safety Laboratory (HSL) and became an Agency of HSE. Agency status gave HSL new freedoms to work for clients other than HSE, providing the opportunity to improve performance in the UK health and safety system across all sectors of industry. Furthermore, new strategic relationships could be developed which enabled doctors and nurses to be brought into the organization for the first time. It also enabled the development of skills around the understanding of people, processes and plant and the complex interfaces between them. However, the new status also brought with it the need to renovate and expand the facilities available. As a consequence, a new laboratory was constructed on the Buxton site under the private finance initiative and in 2004, the new building was occupied, bringing all the staff together on a single site for the first time since 1911. As well as construction of a new building, this project also saw the demolition of many of the original structures built on the Buxton site in the 1920s; only those required for hazardous experiments were retained. However, while the health and safety hazards of mining occupied the research agenda for the early part of HSL’s history, it now represents <0.5% of the activities undertaken. Over the last hundred years, the balance between health- and safety-related work has also shifted significantly; for example, HSL has recently trained over a thousand doctors and nurses on the Faculty of Occupational Medicine approved training course for hand–arm vibration syndrome, a different constituency for knowledge transfer compared to the young miners trained in the 1930s.

The history of the organization underpins HSL’s approach to the work it delivers; over the last hundred years, it has investigated most major occupational incidents and ill-health outbreaks in the UK; it has worked across all sectors of UK industry and in later years, it has developed solutions to workplace health and safety problems that cross traditional discipline boundaries. HSL’s work is practical and makes use of a hundred years of knowledge and experience both for the UK and internationally. This approach has stood the test of time and has enabled a better working Britain for the last one hundred years.

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Conflicts of interest
None declared.

References
1. HC Deb 03 May 1911 vol. 25 cc421–2.
7. Coal Industry Nationalisation Act. 1946. 9 and 10 Geo g Ch59.