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7.1 Note on laboratory safety

It is an important precursor to any laboratory work that careful consideration is taken of any implications for health and safety. Most developed countries have health and safety legislation that may be applied to the laboratory environment.

In the USA the Occupational Safety and Health Act 1970 places legal obligations on both employers and employees. The act has been responsible for the promulgation of many thousands of standards on health and safety and has recently led to the introduction of federal legislation controlling Occupational Exposures to Hazardous Chemicals in Laboratories. There are also recommendations produced by the National Institute for Occupational Safety and Health, which develops criteria on exposure levels for toxic chemicals. These recommendations are published as the Registry of Toxic Effects of Chemical Substances by the US Department of Health and Human Services. In addition the American Conference of Governmental Industrial Hygienists (ACGIH) recommend threshold limit values for: noise; ultrasound; lasers; ultraviolet, visible, infrared and radio frequency radiation; magnetic fields; heat and cold stress and vibration.

Australia has a standard relating to laboratory health and safety, AS 2243 Parts 1–10, which contains advice on general safety and on specific types of laboratory work, e.g. ionizing and non-ionizing radiations.

Recent health and safety directives issued by the European Community are applicable to all places of work within the Community. One common theme of these directives is the requirement for the employer to make suitable and sufficient assessments of the risks to the health and safety of the worker. The aim is to identify possible hazards and to assess any significant risks arising from those hazards. Another common requirement is the need to provide employees with any information about risks to their health and safety, and any associated preventive or protective measures, that the assessments have identified. Member countries have had to convert these directives into their own legislation, such as legislation on ionizing radiations that includes dose limitation. Further EC directives that could affect laboratory work are under consideration, covering the use of physical agents, chemical agents and biological agents.

In the UK during 1992 six sets of regulations were promulgated, covering the management of health and safety, display screen equipment, personal protective equipment, manual handling, work equipment and workplace health, safety and welfare. These, together with previous UK health and

safety legislation, i.e. The Health and Safety at Work Act 1974, the Control of Substances Hazardous to Health Regulations 1988 and the amendments relating to carcinogens and biological agents, the Noise at Work Regulations 1989, the Electricity at Work Regulations 1989, the Pressure Systems and Transportable Gas Containers Regulations 1989 and associated Approved Codes of Practice, now cover most aspects of laboratory work.

A considerable amount of further guidance is also available as UK Health and Safety Executive Guidance Notes, e.g. EH40/95 Occupational exposure limits 1995, together with British and other national standards on various topics relating to laboratory work, e.g. BS EN 60825-1:1995 and BS EN 60825-2:1995 Safety of laser products (information on equipment classification requirements, user's guide and safety of optical fibre communication systems), and BS 7258:parts 1–4:1994 Laboratory fume cupboards (information on the design, installation, use and maintenance of fume cupboards).

There are a large number of textbooks on subjects applicable to laboratory health and safety. The following references are just a few of them but they present a reasonably comprehensive package of health and safety legislation and advice which, if complied with, should result in a safe laboratory working environment.

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