**Recent important update to MDHS 14.**

In June of 2014, MDHS 14/4 *‘General methods for sampling and gravimetric analysis of respirable, thoracic and inhalable aerosols’* was published by the Health and Safety Executive. This update to MDHS 14 (previous edition MDHS 14/3) now includes important information on sampling methodology for not only total inhalable and respirable size fractions, but also thoracic as well. The procedures described by MDHS 14/4 guide those, including consultants, who wish to collect the respirable, thoracic and inhalable aerosol fractions of aerosols in air for the purpose of monitoring workplace exposure.

The term ‘aerosol’ is used to describe any suspension of particles in air, whether they constitute dust, fibres, fume, smoke or liquid droplets. Most aerosols consist of a wide range of particle diameters. The method is commonly used for gravimetric dust monitoring but can also be adopted for other purposes of monitoring workplace exposure to hazardous substances\*.

As described in the method, the behaviour, deposition and fate of any particle after entry into the human respiratory system are determined by the chemical nature and size of the particle. For occupational hygiene purposes **it is important to consider not only the concentration but also the size fractions present.** With this in mind it is possible to define aerosol size fractions that relate to the region of the respiratory tract where they deposit (the convention for these size fractions are described in ISO 77081 or BS EN 481.2). Respirable fractions of hazardous substances commonly have lower Occupational Exposure Limits (OELs) than the total inhalable fraction, including those assigned Workplace Exposure Limits (WELs) in EH40/2005 (2nd Edition).

In summary, the size fractions described by the method are as follows:

(a) **Inhalable fraction** – this approximates to the fraction of airborne material that enters the nose and mouth during breathing, and is therefore available for deposition anywhere in the respiratory tract.

(b) **Thoracic fraction** – this is the fraction of inhaled airborne material penetrating beyond the larynx (for example, with respect to sulphuric acid mist and the WEL of 0.05 mg/m3 8-hr TWA listed in the latest version of EH40/2005, the mist is defined as the **thoracic** fraction).

(c) **Respirable fraction** – this is the inhaled airborne material that penetrates to the lower gas exchange region of the lung.

**MDHS 14/4 is freely available from the HSE website and if further information is required please do not hesitate to contact us.**

(\*Note: In some instances alternative specific methods exist (e.g. for isocyanates) and these specific methods should be referred to).