May 2021

Information for BOHS members on application of COSHH to dusts not assigned Workplace Exposure Limits or hazard classifications and also on application of the principles of good control practice

Purpose

The following information is made available to BOHS members in order that they make appropriately informed decisions when involved with assessments relating to low toxicity dusts and/or when exposures are below the Workplace Exposure Limit/trigger value.

Dusts without WELs

The absence of a WEL for a substance does not indicate that it is safe.[1]

Regulation 2 of the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended)[2] includes a definition of the substances hazardous to health which are covered by the regulations. In addition to substances such as those with Workplace Exposure Limits (WELs) or hazard classifications, the definition includes a more general description:

> (a) Dusts of any kind present at concentrations greater than 10 mg/m^3 inhalable or 4 mg/m^3 respirable, both as 8-hour time-weighted averages. These concentrations are not exposure limits, but trigger values for application of the COSHH regulations to the dust.
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> (b) Any substance which "because of its chemical or toxicological properties and the way it is used or is present at the workplace creates a risk to health."

Clearly, if a dust is caught by (b), it will be regulated by COSHH if it creates a risk to health (see background section), even if its concentration is less than the trigger values in (a).

The trigger values are often misapplied by employers and these should not be seen as safe values to work up to and the COSHH regulations may still apply for substances without WELs and where concentrations are less than these trigger values.

In addition, many authorities believe that research in the last 25+ years has shown that dusts previously considered 'inert' can produce serious health effects at long-term average exposures well below the 10 and 4 trigger values described in (a).

Principles of Good Control Practice

COSHH Regulation 7 defines adequate control of exposure to be when the principles of good control practice are applied, any workplace exposure limit is not exceeded and for carcinogens and asthmagens, exposure is reduced to as low as reasonably practicable.

The legal requirement to apply the principles of good control practice, as stated in the COSHH Regulations 2002 (and equivalent Northern Ireland legislation), is not widely appreciated by many employers. As a consequence, some employers may not be actually be complying with

their legal duties to adequately control exposure to substances hazardous to health, even if WELs have not been exceeded.

The principles of good control practice include (amongst other things) the requirement to design and operate processes and activities to minimise emission, release and spread of substances hazardous to health and this is applies even if exposure monitoring has confirmed that the WEL (or trigger values) have not been exceeded.

Background

Exposure to many dusts can cause or worsen chronic obstructive pulmonary disease (COPD). There are more details on the HSE website[3]. The risk decreases as exposure decreases, although it is unclear whether there is a threshold below which the risk is zero.

The Institute of Occupational Medicine (IOM) suggests that "until safe limits are put in place, employers should aim to keep exposure to respirable dust below 1 mg/m^3 and inhalable dust below 5 mg/m^3".[4] The Trades Union Congress (TUC) has advised health and safety representatives that they "should try to ensure that employers follow a precautionary standard of 2.5 mg/m^3 for inhalable dust … and 1 mg/m^3 for respirable dust."[5] In Germany, the MAK commission has adopted a limit equivalent to 0.3A mg/m^3 respirable, where A is the density of the substance in g/cm^3.[6] This is equivalent, for example, to 0.8 mg/m^3 for many silicate minerals or 1.2 mg/m^3 for titanium dioxide. All three bodies therefore regard 1 mg/m^3 respirable as a more appropriate guideline than the 4 mg/m^3 COSHH trigger. It is prudent for hygienists to take this into account in giving advice to clients. If a dust with an 8-hr time-weighted exposure < 4 mg/m^3 respirable creates a risk to health then it evidently will be regulated by COSHH under definition (b) in para 2 above, even if its time-weighted concentration is < 4 mg/m3 respirable. Some dusts have been assigned WELs of 10 mg/m^3 inhalable and 4 mg/m^3 respirable.

The Health and Safety Executive[3] says that, "The risk of developing COPD is greatly increased if you breathe in dusts/fumes in the workplace and you smoke." The website quotes findings which suggest that in Great Britain, "around 15% of COPD may be caused or made worse by work; 4000 COPD deaths every year may be related to work exposures; 40% of COPD patients are below retirement age; a quarter of those below retirement age are unable to work at all." Work-related COPD is therefore linked to hundreds of deaths and much suffering and economic loss every year.

Cherrie, J. *et al*[4] provides several examples, citing sources which indicate the risk for dusts with no clear specific toxic action, such as kaolin and carbon black and the loss of lung function. A mathematical model based on animal experiments with a low-toxicity dust (titanium dioxide) and considering when lung inflammation began, derived a human no adverse effect level of 1.3 mg/m^3.[7]

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