NATURAL ENVIRONMENT RESEARCH COUNCIL

GUIDANCE ON FIT TESTING OF RESPIRATORY PROTECTIVE EQUIPMENT

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Principles of Respiratory Protective Equipment and Fit testing

NERC's aim is that the use of respiratory protective equipment (RPE) should be avoided if possible with exposure to hazardous airborne concentrations of contaminants controlled by other measures.

RPE should only be selected as a means of control of the last resort, when other more preferred control measures such as engineering controls or local extract ventilation (LEV) have been considered and applied. If control by other means is not reasonably practicable or is not deemed sufficient on its own to provide adequate control, then additional protection against exposure via the airborne route may be provided by use of RPE.

Adequate control is deemed to be following the COSHH principles of good control practice and a level of exposure that is below any relevant Workplace Exposure Level (WEL) and, for asthmagens, carcinogens and mutagens, as low as is reasonably practicable. Occupational hygiene monitoring to measure airborne levels of contaminants may establish if adequate control has been achieved or if further precautions, such as use of RPE, are required.

This guidance gives advice on fit testing of RPE. It does not cover in any detail the wider topic of selection of appropriate effective RPE. This is covered by HSE guidance document HSG53 'Respiratory protective equipment at work – a practical guide' (latest edition updated in 2010).

There may be circumstances where RPE is used as a matter of personal preference by the worker but is not required by the risk assessment and in such cases there will be no need to undertake fit testing.

Fit testing is a method of checking that a tight-fitting facepiece or mask matches the person's facial features and seals adequately to the wearer's face. It will also help identify unsuitable facepieces which should not be used.

RPE which does not depend for its effectiveness on a tight fit to the contours of the face, e.g. powered respirators, will not require fit testing. Powered respirators are devices in which positive pressure air is supplied to a hood, helmet or visor by means of a built-in battery powered fan and filter. They do not depend on a facial seal for effectiveness but supply filtered air at a pressure above atmosphere to prevent contaminants entering the breathing zone. They have a loose seal around the face or neck.

Users who are unable to gain an effective face fit, e.g. those wearers who have significant facial hair in the area where the face mask seals against the skin, should be provided with suitable powered respirator. This should always be considered as an option so that fit testing is not required and may also give other benefits such as increased comfort and better compliance.

Legal requirements

The Approved Codes of Practice (ACoPs) which support the Control of Substances Hazardous to Health (COSHH) Regulations 2002 (as amended), the Control of Lead at Work (CLAW) Regulations 2002, the Control of Asbestos Regulations 2012 (CAR) and the Ionising Radiation

Regulations (IRR) 1999 require that all reasonable steps be taken to prevent exposure to substances hazardous to health, or where prevention is not possible, to adequately control exposure, often to the lowest level that is reasonably practicable. If, despite the use of more preferred control measures, adequate control of exposure cannot be achieved, employers must provide suitable Personal Protective Equipment (PPE), of which RPE is one type. This is required by COSHH Regulations reg. 7(3)(c), CLAW Regulations reg. 6(3)(i), CAR Regulations reg. 11(4) and IRR Regulations 8(2)(c) and 9. The RPE provided should be adequate (i.e. right for the hazard, reducing exposure to a safe level) and suitable (i.e. right for the wearer, task and environment).

'Nuisance' or non-safety situations

- Filtering facepiece respirators ('disposable dust masks') may often be used for 'nuisance' situations. This is where the dust does not itself present any specific hazard and exposure above the generic dust WEL of 10 mg per m^3 8 hour Time Weighted Average (TWA) of inhalable dust or 4 mg per m^3 8 hour TWA of respirable dust is unlikely.
- When 'non-approved' simple paper/gauze masks are used e.g. for surgical procedures or cleanroom situations and the intention is not to provide the wearer protection against hazardous inhalation of dusts, fit testing is not required.

Exposure to Dusts/Fumes/Vapours where the WEL may be approached / exceeded:

- Where the use of RPE is: (a) stipulated by a risk assessment (i.e. the conclusion is that a relevant WEL is likely to approached or exceeded and other more preferred control measures are not considered practicable or sufficient alone to adequately control exposure) and (b) a full face mask, a half mask or a filtering facepiece which requires a good face seal to be effective is selected to be worn, all wearers of such RPE following that risk assessment should be given fit testing to ensure the type and size of RPE provides a good face fit.
- The use of tight face fitting negative pressure respirators should be limited to short tasks, of generally less than an hour's duration, with powered respirators used for longer tasks.
- Guidance on fit testing is contained in the HSE Information Document HSE OC 282/28 (incorporating the Information Document HSE 282/28).
- If the wearer has significant facial hair in the area where the tight fitting RPE needs to seal then fit testing is not worthwhile. For such users the only alternative, other than excluding them from the work where RPE use is stipulated, is to use a powered respirator.
- Powered positive pressure RPE must be cleaned after use and before placing in storage, batteries re-charged, subject to servicing, maintenance and testing at least once a month with filters replaced at regular intervals. It is also likely that persons will need to be appointed and trained to undertake these tasks to ensure such RPE remains in safe workable condition.
- RPE fit testing should be conducted by a competent person. Competence can be demonstrated through achieving accreditation under the 'Fit2fit RPE Fit Test Providers Accreditation Scheme' – http://www.fit2fit.org - HSE Information Document HSE 282/28 also gives information on the competency required to do fit testing.
- Fit testing may either be qualitative, where it depends on an odour or a taste such as sweet or bitter to determine penetration of the seal by external contaminants or quantitative, e.g. by the TSI Portacount device, where a numerical figure for the 'fit factor' (FF) is determined.
- For most NERC uses with filtering facepieces a qualitative test will be sufficient.
- Where high efficiency tight fitting facial RPE such as full face mask respirator or self contained breathing apparatus is specified, a quantitative fit testing method is required.
- Quantitative is the preferred method of face fit testing for all applications.

References

1. HSG53 'Respiratory protective equipment at work – a practical guide' (3rd edition 2010), 63 pages, HSE ISBN 978 0 7176 2904 6, http://www.hse.gov.uk/pubns/priced/hsg53.pdf
2. HSE Operational Circular OC 282/28 (incorporating HSE Information Document HSE 282/28) ' Fit Testing of Respiratory Protective Equipment Facepieces' (2012) http://www.hse.gov.uk/foi/internalops/ocs/200-299/282_28.pdf
3. HSE Guidance Fit Testing basics