

Breathing Air

The provision of breathable air to be used by a person in the execution of a work related task is controlled by certain legal requirements.

Legal requirements

These requirements are contained variously in the following non-exhaustive listing;

The Personal Protective Equipment Regulations 2002 (SI 2002/1144) - these regulations include provisions for respiratory protective equipment.

The Work in Compressed Air Regulations 1996 (SI 1996/1656) - these regulations deal with those aspects where the user is operating in a pressure higher than atmospheric, e.g. tunnelling.

Control of Substances Hazardous to Health (COSHH) Regulations 2002 (SI 2002/2677) (also as amended by S.I. 2004 No. 3386 in respect of term 'workplace exposure limit' (WEL) - these regulations identify the maximum exposure limits for a defined list of contaminants which may be present in a workplace atmosphere. The exposure limits are now identified by the single term 'workplace exposure limit' (WEL) which encompasses both long and short term exposure. Related to COSHH is a reference listing published annually under the identity **EH40 'Occupational Exposure Limits'**. The listings are in addition to those in COSHH. Where any doubt exists as to the limits for any contaminant then this should be used as a starting point.

Standards

The most commonly specified standard for the prescription of breathable air is BS 4275:1997 'Guide to implementing an effective respiratory protective device programme' **which was withdrawn on 22 November 2005**. This was then replaced on that date by **BS EN 529:2005 Respiratory protective devices. Recommendations for selection, use, care and maintenance. Guidance document**. Unlike BS 4275 the new standard BS EN 529 does not identify an air purity specification but indicates in Annex A, Clause 4.5 that reference be made to BS EN 12021. **BS EN 12021 'Respiratory protective devices - Compressed air for breathing apparatus'** is now the only standard to indicate contaminant levels for breathing air both in the UK and in the EU.

Substance	Extract from BS EN 12021 - Clause 6.
Contaminants - Compressed air for breathing apparatus shall not contain any contaminants at a concentration, which can cause toxic or harmful effects. In any event all contaminants shall be kept to as low a level as possible and shall be far below the national exposure limit. (WEL - See EH40)	
Oxygen	(21 ± 1) % by volume (dry air)
Carbon monoxide	As low as possible but not to exceed 15ml/m ³ (formerly BS 4275 specified 5ml/m ³)
Carbon dioxide	500ml/m ³
Oil mist	Lubricants (droplets or mist) 0.5 mg/m ³
Odour / Taste	Without significant odour or taste
Water (Liquid)	There should be no free liquid water

Measurement

For the measurement of any or all of the contaminants reference should be made to the ISO 8573 series. The series identifies measurement methods, which can be done either on-site or in a laboratory.

COSHH - Code of Practice - L5 (Fifth edition)

Clause 180 - Frequency of examination and tests - extract

The quality of the air supplied to a breathing apparatus should be tested **at least every three months** and more frequently when the quality of the air supplied cannot be assured. The code of practice L5 (Fifth edition) was updated prior to the publication of BS EN 529 and therefore L5 still makes reference to BS 4275. The only difference in contaminants listing and values between BS 4275 and BS EN 12021 is that for carbon monoxide, as noted in the table above. The contaminants actually tested for will be subject to a risk assessment made under COSHH, Regulation 6 which should guide what other contaminants will require testing.

Mobile compressor supply

Where the air supply is from mobile compressors, the employer should ensure that wherever a compressor is located, the quality of air it supplies is not compromised by nearby contaminants.