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Periodic inspection and testing of breathing apparatus cylinders

Issued by:

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Addressed to:

**The Commissioner of the London Fire and
Emergency Planning Authority**
The Chief Fire Officer
The Chair of the Fire and Rescue Authority

Please forward to:

BA and Technical Officers
Health and Safety Officers

Summary

This circular updates fire and rescue services on the inspection and testing of breathing apparatus cylinders, following recent changes in regulations and guidance.

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1.0 Introduction

1.1 Two regulatory items have recently been published which impact upon the inspection and testing of breathing apparatus (BA) cylinders:

- The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2004 (the "Carriage Regulations"). These replaced previous legislation covering gas cylinders and implemented a number of new legal requirements.
- The Health and Safety Executive (HSE) publication HSE-AL-FW2 – 'Specification for Fully-Wrapped Carbon Composite Containers.' Appendix 1 to this document covers the inspection regime itself. The regime has been amended to allow manufacturers of carbon composite cylinders to have their retest period extended from three to five years, subject to the conditions laid out in the document.

1.2 Advance notice of the proposed changes regarding the Carriage Regulations was given in DCOL 2/2001 and DCOL 2/1999. The relevant sections of these documents are now revoked.

1.3 This circular:

- Advises fire and rescue services of these changes
- Advises fire and rescue services to ensure that their contracted inspection organisation is aware of these changes and is taking appropriate action
- Reminds fire and rescue services to ensure that all BA cylinders are inspected at the time they are refilled.

2.0 Legislative Changes

2.1 The Carriage Regulations came into force on 10 May 2004, replacing three earlier sets of regulations covering gas cylinders:

- The Transportable Pressure Vessels Regulations 2001 (TPVR, SI 2001 No 1426.
- The Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Receptacles Regulations 1996 as amended (CDGCPL2 Regulations) SI 1996 no. 2092.
- The Gas Cylinders (Pattern Approval) Regulations 1987 (Pattern Approval Regulations, SI 1987 no. 116.

2.2 The changes introduced by the Carriage Regulations are as follows:

- they implement for the first time the requirements in RID/ADR¹ governing the construction, inspection, testing and use of new tanks and pressure receptacles used for the transport of dangerous goods

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- they fully implement the requirements of the Transportable Pressure Equipment Directive (TPED)
 - they carry forward the requirements for old pressure receptacles so that they can continue to be used according to those requirements for the rest of their safe lives.
 - they phase out the 'competent person' inspection regime and replace it with a new regime giving HSE the authority to appoint inspection bodies.

¹RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
ADR - The European Agreement concerning the International Carriage of Dangerous Goods by Road

3.0 New cylinders

- 3.1 Previously, new BA cylinders had to be manufactured and assessed to the standards set out in the Pressure Equipment Regulations 1999 (PER). The relevant sections of these regulations remain in force.
- 3.2 However from 10 May 2004, when the Carriage Regulations came into force, new BA cylinders must also be manufactured and assessed according to the requirements of RID and ADR to which the Carriage Regulations refer.
- 3.3 The Carriage Regulations came into force immediately on 10 May 2004, with no transition period. To ensure that there is no gap in the availability of inspection bodies to carry out assessments of new BA cylinders, the HSE will provisionally re-appoint bodies already appointed by the Department of Trade and Industry under PER, subject to certain conditions.

Periodic inspection and use

- 3.4 PER only pertains to the design, manufacture and assessment of pressure equipment, not to continued use and periodic inspection thereafter. Therefore new BA cylinders must henceforth comply in this regard only with the requirements set out in the Carriage Regulations.

4.0 Old cylinders

- 4.1 Cylinders for breathing apparatus manufactured before the Carriage Regulations came into force must now comply with Schedule 2 of those Regulations.
- 4.2 Cylinders manufactured and assessed in accordance with the requirements of PER or its predecessor regime (the CDGCPL2 Regulations) will be deemed already to comply with the requirements of Schedule 2 of the Carriage Regulations.
- 4.3 Such cylinders may continue to be used and periodically inspected in accordance with Schedule 2. This allows periodic inspections to continue to be carried out by a "competent person", as under the previous regime, until 1 July 2006. However periodic inspections must thereafter be carried out by an HSE-appointed Inspection Body.

5.0 HSE-AL-FW2 'Specification for fully-wrapped carbon composite containers'

- 5.1 In January 2002 the Health and Safety Executive published 'issue' (or 'version') 5 of the document HSE-AL-FW2 'Specification for Fully-Wrapped Carbon Composite Containers'.
- 5.2 Appendix 1 to this document ('Periodic examination and testing') requires that composite cylinders to this specification shall be visually examined for external defects at each cylinder fill, by a person having appropriate training, experience and facilities.
- 5.3 It also requires that within 3 years of its last hydraulic pressure test, every composite cylinder of this specification shall be examined for defects both externally and internally.
- 5.4 Each cylinder must also pass a hydrostatic pressure test in accordance with both clause 4.7.3 of BS 5430 Part 3(1990) and the manufacturer's recommended procedure. This hydrostatic pressure test must be carried out by either the manufacturer or by a station authorised to test the cylinders on behalf of the manufacturer.
- 5.5 The amendment to the specification stated that after the first re-test, the re-test performance data will be reviewed by the manufacturer, or the competent organisation, or the approved Inspection Body (as appropriate).
- 5.6 Satisfactory performance would result in the extension of the re-test period from 3 to 5 years once the HSE was notified of the extension.
- 5.7 An extension of the re-test period would have no effect on the maximum lifespan of a cylinder, which will remain 15 years.
- 5.8 Under HSE-AL-FW2, the procedure for external and internal inspection must be specified by the manufacturer. This procedure must include damage identification criteria for the acceptance or rejection of cylinders for further service.

6.0 Guidance

- 6.1 HSE has published new guidelines on the appointment of conformity assessment bodies, and updated information on appointed bodies and approved standards on the HSE web site:
<http://www.hse.gov.uk/cdq/pressure.htm>
- 6.2 Several cylinder manufacturers have already extended the re-test period from 3 years to 5 years in accordance with the requirements of HSE-AL-FW2.
- 6.3 These manufacturers recommend that the external surface of cylinders be periodically inspected by a competent and trained person. No periodic interval for such visual inspections has been prescribed by manufacturers; it is recommended that such an interval be determined according to the environment and circumstances of the cylinder's use.

6.4 BS EN 1920:2000 *Transportable gas cylinders - Cylinders for compressed gases (excluding acetylene) - Inspection at time of filling* requires that each transportable gas cylinder is inspected when filled in order to establish that :

- It has no defects that would render the cylinder unsafe for filling or continued use
- It complies with the relevant requirements regarding markings, labelling and colour coding
- It has a complete set of accessories
- Its valves function satisfactorily.

The standard also requires that such an inspection shall be carried out only by persons who are trained and competent to do so, for the purpose of ensuring that a cylinder is safe for continued use.

7.0 Recommended action

- 7.1** Fire and rescue services should ensure that the organisations currently conducting their BA cylinder inspection and test programmes are fully aware of the implications for them under the regulations indicated above.
- 7.2** They should also establish whether or not their organisation intends to apply to HSE for approved status to enable them to continue inspection and testing after the July 2006 deadline. If not, fire and rescue services should make alternative arrangements to ensure the continued availability of BA cylinders that have been periodically inspected and tested by an approved Inspection Body after this deadline.
- 7.3** In addition they should establish from the manufacturer whether or not any carbon composite cylinders they use have had their re-test period extended and confirm that they are being inspected in accordance with both the manufacturer's guidelines and with HSE-AL-FW2 'Specification for Fully-Wrapped Carbon Composite Containers' Appendix 1.
- 7.4** Fire and rescue services should also ensure that the requirements of BS EN 1920:2000 are being met when inspecting cylinders at the time of fill.

8.0 Further information

- 8.1** This circular has been prepared in collaboration with HSE.
- 8.2** As a consequence of this circular, Item E of DCOL 2/2001 and Item C of DCOL 2/1999 are now revoked.
- 8.3** For further information please contact:

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