

Circular number	7/2009	Date issued	16 February 2009
This circular is	For information	No response required	
This circular is	Relevant to the National Framework		
Status	This circular announces the publication of a research report which seeks to understand the effect of providing venting to basement fires.		

Publication of research reports – Computer modelling of basement fires

Issued by:

Brian Hume

Research and Statistics Division

Addressed to:

**The Chair of the Fire and Rescue Authority
The Chief Executive of the County Council
The Clerk to the Fire and Rescue Authority
The Clerk to the Combined Fire and Rescue
Authority
The Commissioner of the London Fire and
Emergency Planning Authority
The Chief Fire Officer**

Please forward to:

Summary

This circular announces two research reports which investigate the effect of providing venting to a basement fire such as by breaking a pavement light. The research provides evidence that venting of basements using pavement lights cannot be relied on as a safe practice for fire and rescue services to use during firefighting. The research used a combination of computer modelling and full-scale fire test data.

For further information, contact:

Brian Hume
Communities and Local Government
Research and Statistics Division
Fire and Resilience Directorate
Ashdown House
Victoria Street
London SW1E 6DE

Direct line **020 7944 5676**
Fax **020 7944 5664**
E-mail [**Brian.hume@communities.gsi.gov.uk**](mailto:Brian.hume@communities.gsi.gov.uk)

Website [**www.communities.gov.uk**](http://www.communities.gov.uk)

1.0 Background

- 1.1 Fires in compartments with limited ventilation, such as basements, are a particular hazard for firefighters as there is a danger of rapid fire growth or even a backdraught or flashover when firefighters enter. The basement is a common type of compartment with limited ventilation owing to the lack of windows.
- 1.2 The Building Regulations currently require certain buildings to have breakable ventilators at ground level to allow firefighters to ventilate basements. However, the guidance in the Fire Service Manual and associated Generic Risk Assessments, and for the Building Regulations does not make clear the circumstances under which these breakable ventilators (known as pavement lights) should be used by firefighters.
- 1.3 This research was undertaken to examine the effect on a fire in a basement and the danger to firefighters who are in the basement when a pavement light is broken. The research included computer modelling and full-scale fire tests.
- 1.4 Part 1 of the research undertook practical fire tests and used computer modelling to simulate fire behaviour and growth. Part 2 of the work undertook further computer modelling of specific factors such as the effect of positive pressure ventilation.
- 1.5 The full reports (parts 1 and 2) can be found at:
<http://www.communities.gov.uk/fire/researchandstatistics/researchpublications/fulltechnicalreports/>

2.0 Findings

- 2.1 The research provides evidence that venting of basements using pavement lights cannot be relied on as a safe practice for fire and rescue services to use during firefighting. The research recommends that pavement lights should not be used by firefighters during firefighting and that venting of a basement compartment via a second compartment is not advisable.
- 2.2 Fire and rescue services should take account of the findings of this research for their own operational procedures and practices.

3.0 Next Steps

- 3.1 The research recommends that consideration be given to revision of the existing guidance in the Fire Service Manual to address the findings. This will be considered as part of the ongoing development of an operational guidance framework by the Chief Fire and Rescue Adviser.
- 3.2 These findings will also be fed into any future revisions of Building Regulations and associated design standards for consideration.

Brian Hume

Research and Statistics Division