Office of the Deputy Prime Minister
Creating sustainable communities

Fire and Rescue Service
Circular

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This circular is	**For guidance**	No response required	
This circular is	**Not relevant to the National Framework**		
Status	**This circular concerns potential safety issues regarding underground fire hydrants conforming to BS 750 that are fitted with bolted plastic/nylon outlets.**		

Underground Fire Hydrants - bolted plastic/nylon outlets

Issued by:

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Addressed to:	Please forward to:
The Commissioner of the London Fire and Emergency Planning Authority **Chief Fire Officers**	**Water Officers** **Health and Safety Officers**

Summary

This circular advises Chief Fire Officers of the potential of a safety event occurring with fire hydrants that are equipped with bolted plastic/nylon outlets and the action fire and rescue services can take to reduce the hazard and the risk of injury to firefighters and members of the public.

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1.0 Background

1.1 Since the early 1990s, a growing number of hydrants, designated as both fire hydrants and washouts, have been fitted with bolted plastic/nylon outlets. It is believed that many thousands of hydrants around the country are fitted with these outlets. It is however known that areas served by Severn Trent Water have not installed this type of outlet.

1.2 The reasons for their installation are twofold. Initially they were installed in certain areas to overcome the theft of gun-metal outlets for their scrap value, which renders the hydrant operationally unavailable. In addition the cost of a plastic outlet is less than one manufactured from gun-metal and thus considerable savings can also be made on the production of large quantities.

1.3 Since the installation of bolted plastic/nylon outlets, which conform to British Standard 750:1984, there have been a significant number of catastrophic failures, with the most recent incident occurring on 1 February 2005.

1.4 All these incidents have resulted in the plastic outlet shearing away from its bolted flange, resulting in the standpipe and hose line, when connected, being projected into the air with considerable force.

1.5 Whilst the number of failures is very small compared to the total number of plastic outlets that have been fitted over the years, the nature of the failure poses a significant hazard with the potential of causing serious injury to both fire fighters and members of the public.

2.0 Circumstances leading to failure

2.1 From information received about the incidents that have occurred, there appears to be two causes that can lead to failures.

2.2 The first involves air in the water main, which has been hydraulically compressed and when suddenly released by opening a hydrant, causes debris and water to travel at extremely high velocity, causing the head of the standpipe to deflect with violent force and in turn ripping the outlet from its flanged base.

2.3 The second cause appears to be due to the force of water hammer travelling back through hose lines to the standpipe where it causes violent deflection and, again, rips the outlet away from its bolted flange. Instances can be due to suddenly shutting down branches, the closing of water tank gate valves and vehicles crossing over hose lines

3.0 Recommended action for Fire and Rescue Services

3.1 For those fire and rescue services that have plastic/nylon outlet fire hydrants in their area, it is recommended that discussion takes place with their respective water providers to determine a way forward to reduce this hazard.

3.2 The risk can be eliminated by replacing plastic with metal alloy outlets, however, it must it must be borne in mind that there are thousands of hydrants fitted with plastic outlets and there will be logistical, operational and financial issues that will need to be addressed.

3.3 The water providers may be in a position to highlight areas of their water mains network that may be prone to a build up of hydraulically compressed air. It is recommended that the outlets on these hydrants should be converted to a metal alloy type.

3.4 In addition, hydrants that are frequently used e.g. in fire station yards, or that are known to operate at high pressures, should similarly be converted to metal alloy outlets.

3.5 It is further recommended that the attention of firefighters is drawn to Fire Service Manual, Volume 1 Fire Service Technology Equipment and Media covering Hydraulics, Pumps and Water Supplies, which describes safe working practices on opening and closing hydrants and how to prevent water hammer, which will assist in reducing the risk.

3.6 In addition, this circular further advises that members of the public should be kept away from hydrants that are in operation.

4.0 Further information

4.1 This Circular has been prepared with the support and assistance of CFOA and Water UK.

4.2 Whilst at this time there is no implication or evidence to indicate that the outlets have not met or exceeded the requirements of BS 750, the failure of some of these outlets has been reported to the relevant BSI committee.

4.3 For further information please contact:

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