

HOME OFFICE
HORSEFERRY HOUSE, DEAN RYLE STREET
LONDON SW1P 2AW

To: All Chief Fire Officers

21 July 1994

Dear Sir

DEAR CHIEF OFFICER LETTER 5/1994

This letter deals with a number of matters which are summarised below. More detailed information is contained in the relevant items attached to this letter.

A EMERGENCY EVACUATION PROCEDURES

The Joint Committee on Fire Brigade Operations set up a Working Group to review emergency evacuation procedures within the fire service. The Working Group has now completed its work and this item provides revised guidance to Chief Fire Officers about the procedures for emergency evacuation.

B SPECIFICATION FOR A MANUALLY OPERATED EVACUATION SIGNAL UNIT (ESU)

This item informs Chief Fire Officers about a new Home Office specification for a manually operated evacuation signal unit which could be operated by firefighters wearing breathing apparatus. The specification was requested by the Working Group set up to review emergency evacuation procedures. The development of a new signal unit is intended to complement the Acme Thunderer Whistle, not replace it.

C PERSONAL PROTECTIVE EQUIPMENT DIRECTIVES - IMPLEMENTATION

This item advises Chief Fire Officers about the introduction of Personal Protective Equipment (PPE) Directive 89/656/EEC and PPE Product Directive 89/686/EEC. The purpose of the first Directive, which came into force on 1st January 1993, is to ensure that employers provide their employees with suitable PPE where health and safety risks exist. The second Directive applies to the marking of PPE. From 1st July 1995, PPE should only be purchased if it carries a "CE" marking.

D SAFETY AT STREET WORKS AND ROAD WORKS WHEN UNDERTAKING HYDRANT TESTING AND INSPECTIONS

This item informs Chief Fire Officers about a Code of Practice on the subject of "Safety at Street Works and Road Works" which came into effect on 1 April 1993. The regulations will apply to Fire Service personnel when they are undertaking hydrant testing and inspection duties.

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E USE OF LPG CYLINDERS

This item advises Chief Fire Officers that the LP Gas Association has issued two Codes of Practice covering the use of propane and butane gas cylinders in residential premises. The Codes replace the Home Departments' Fire Prevention Guide No 4, "Safe use and storage of liquefied petroleum gas in residential premises", which was published in 1976.

F FIRE HAZARDS ASSOCIATED WITH THE USE AND STORAGE OF CELLULAR FOAM IN SPORTS AND RECREATIONAL FACILITIES

This item updates guidance on fire hazards associated with the use of cellular foam in sports and recreational facilities contained in Fire Service Circular No1/1988, in particular to take account of British Standard 1892. The usual organisations have been consulted. The guidance is uncontroversial and there are no resource implications.

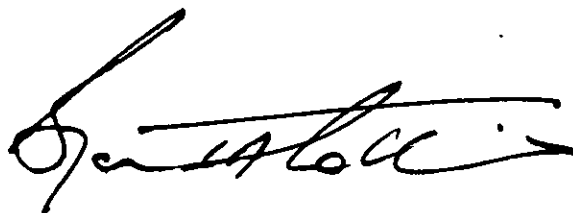
G DATA COLLECTION SYSTEM - FIRES AND INCIDENTS OF SPECIAL INTEREST

This item advises Chief Fire Officers of the revised arrangements for reporting fires and incidents of special interest. In future brigades will notify the Home Office by fax of fires and incidents which fall into the criteria as being of special interest. A member of the Fire Service Inspectorate will then decide what additional information, if any, will be required and notify the brigade accordingly. The new procedures will simplify arrangements and avoid brigades collecting unnecessary information.

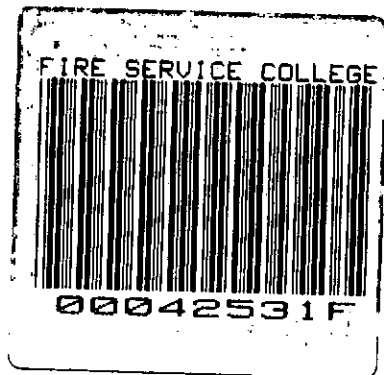
H STORAGE OF RUBBER TYRES PROJECT - RESEARCH REPORT NO 59

This item advises Chief Fire Officers about the results of a research project which has been carried out in connection with the production of guidance on the storage of rubber tyres in the open air.

Yours faithfully



BRYAN T A COLLINS
Her Majesty's Chief Inspector
of Fire Services



EMERGENCY EVACUATION PROCEDURES

1. Introduction

1.1 The following guidance is the result of the work of a Working Group established by the Joint Committee on Fire Brigade Operations to review emergency evacuation procedures within the fire service. The guidance is intended to be applied equally to the Acme Thunderer Whistle (the only current means of initiating the evacuation signal) and to any other device which is likely to be introduced in the foreseeable future as an additional means of initiating the evacuation signal.

1.2 The evacuation signal should only be used as a last resort in unforeseen circumstances; it should not be used for roll calls or tactical withdrawals.

1.3 As far as possible the fire service response to all operational incidents should be managed in such a manner as to mitigate or eliminate all foreseeable risks/hazards to personnel and therefore to avoid the need for emergency evacuations.

1.4 However, there remains the need to prepare for unforeseeable eventualities that may not be possible to control or contain and to provide for circumstances where there might be a need to put into operation emergency evacuation procedures in order to protect personnel and ensure their safety.

1.5 The fire service needs to have a shared understanding of the issues and the principles involved in instigating emergency evacuation and brigades need to have a common approach to the procedures and practices required.

1.6 The operation of emergency evacuation procedures should not be confused with the concept of tactical withdrawal and it is important that personnel have an understanding of the difference. Local training should cover both procedures so that personnel understand the differences between them and know how to apply the two procedures.

2. Overall objectives of Emergency Evacuation Procedures

A Create awareness amongst operational personnel of what circumstances are likely to create a need for emergency evacuation and what to do in the event of initiation of the process;

B Authorise and enable appropriate personnel to initiate the procedure as soon as they become aware of the need, using nationally recognisable methods of raising the alarm, in such a manner that it can be received and understood by all, particularly those at risk;

- C Manage an emergency evacuation as far as practicable in such a manner as to withdraw initially those personnel at greatest risk whilst protecting their route of withdrawal; and
- D Remove remaining personnel from areas of unacceptably high risk, in a controlled and safe manner, having due regard to the ongoing risks posed by the incident to the public at large.

3. Elements of Objective A

- A Create awareness amongst operational personnel of what circumstances are likely to create a need for emergency evacuation and what to do in the event of initiation of the process;

3.1 There are a range of scenarios that may occur in incidents which may give rise to consideration of initiating an emergency evacuation. The following examples are indicative of the type of situation which might give rise to the consideration of putting emergency evacuation procedures into operation.

a) A gradually worsening situation should be reported to the officer in charge of the incident but may not necessitate tactical withdrawal or an emergency evacuation.

b) A sudden and/or violent deterioration may warrant immediate controlled tactical withdrawal of the team(s) in the immediate vicinity, initiated locally by team leaders or safety officers, but not necessarily warranting activation of the emergency evacuation procedure.

c) Developments of so serious a nature or an indication of imminent potential hazard might lead to the immediate initiation of the emergency evacuation procedure to remove personnel at serious risk. This could be localised (if practicable) or cover a wide area of the incident ground.

3.2 Consideration should be given to the possible circumstances which might give rise to the initiation of the emergency evacuation procedure. The following examples are indicative of circumstances which might give rise to such consideration, but the list is not intended to be exhaustive:

a) rate of spread of fire, or its products, threatening the ability of personnel to withdraw from a rapidly deteriorating situation;

b) obvious structural damage as a precursor to collapse;

c) the presence of toxic or potentially explosive substances, the release or detonation of which could seriously endanger team members; or

d) notification by informed or qualified people on site of other immediate hazards to lives of personnel.

3.3 A continual process of assessment of risk should be carried out. This process might be limited to a small area or might be extensive, possibly involving the whole incident ground. During the process of risk assessment the nature and importance of the tasks and objectives of particular teams must be considered and balanced against the level and imminence of the threat to the safety of personnel.

3.4 The evacuation signal recommended for the fire service remains repeated short blasts on a whistle of the Acme Thunderer type. The sound should be relayed as necessary. It is intended to introduce other devices in addition to the whistle in the future but any such devices will emit the same sound as the whistle. This guidance is applicable to the whistle and any other device which might be introduced in the future.

3.5 The following procedures should result from the initiation of the emergency evacuation signal.

- a) Those nearest the hazard should immediately withdraw;
- b) Escape routes for those within dangerous areas in premises or on the incident ground should be protected to ensure safe withdrawal of personnel;
- c) Where possible a controlled, phased evacuation should be conducted to remove those at greatest risk followed progressively by those further from the threat;
- d) Everybody becoming aware of the process should withdraw unless specifically tasked, for example, as in b) or c) above;
- e) A roll call should be taken to confirm that all personnel involved in the emergency evacuation have been accounted for; and
- f) Personnel should be re-committed only when the officer in charge is satisfied that it is safe.

3.6 Team leaders and their members should respond to the evacuation signal or to specific or general instructions to withdraw.

3.7 Where officers in charge of incidents, sector commanders or safety officers can communicate directly with team leaders of specific teams, localised controlled tactical withdrawals may be achievable. Detailed instructions may be passed on giving the reason for withdrawal, (for example, the nature of the risk), precautions to be taken and route to be followed to avoid greatest risk.

3.8 If such communication is not possible, the response to an emergency evacuation signal should be determined, in the first instance, by following any predetermined withdrawal process laid down during briefings of officers or teams prior to entering the incident area. Prior training in these procedures will also be important.

3.9 If the predetermined withdrawal process becomes inappropriate due to the circumstances of the incident, or if no such process has been predetermined, then team leaders should direct their team's withdrawal as speedily as circumstances permit by the route which appears to be the safest. If possible, this should be the route traversed on entering the risk area, as the team will be familiar with the layout and their point of exit will be adjacent to the relevant BA entry control point.

4. Elements of Objective B

B Authorise and enable appropriate personnel to initiate the procedure as soon as they become aware of the need, using nationally recognisable methods of raising the alarm, in such a manner that it can be received and understood by all, particularly those at risk;

4.1 In determining "appropriate" personnel, Chief Fire Officers will need to consider who, at each incident, is:

a) adequately trained;

b) sufficiently experienced and knowledgeable in operational activities;

c) being kept fully updated of the operational developments and potential risks;

d) able to communicate and/or discuss any decision with more senior management if necessary and to make the most appropriate judgment from the point of view of the safety of personnel as to when and where emergency evacuation at an incident should be initiated;

e) well informed of the location of teams in a sector or the whole incident ground; and

f) likely to be most appropriately located at an incident to initiate the signal(s) and ensure that all at risk can be made aware of the evacuation.

4.2 Nothing will ever be allowed to constrain the right or duty of team leaders or team members to remove themselves, by the safest and most expeditious means possible, from extremely dangerous or adverse conditions as and when they believe it essential to do so for safety reasons.

4.3 However, a larger scale emergency evacuation will need wider knowledge and consideration should be given as to when and how crews should be withdrawn (see C below).

4.4 Nominations of "appropriate" personnel may be better related to particular functions at an incident rather than related to rank, dependent on the size of the incident.

4.5 In the event of a firefighter who was not considered to be competent to initiate an evacuation signal at a particular incident seeing or witnessing something which the firefighter felt warranted the initiation of an emergency evacuation, the correct course of action would be to alert an officer.

4.6 When the method of indicating the emergency evacuation has been activated, it must be nationally recognisable to ensure that personnel from brigades working together at cross border incidents will all identify it and respond appropriately.

5. Elements of Objective C

C Manage an emergency evacuation as far as practicable in such a manner as to withdraw initially those personnel at greatest risk whilst protecting their route of withdrawal;

5.1 The general sequence of events described in paragraph 3.5 above can only be managed in a safe and controlled manner if the following elements are in place:

a) Briefing

All teams entering risk areas should as far as is practicable be briefed as to their team objective and how that relates to overall incident management. They should in particular be reminded of the need to communicate as far as possible on progress, difficulties encountered and changes of team positions.

b) Command chains

A clear command chain consisting of for example, officer in charge, sector commanders, sub sector officers and team leaders should be established, each exercising authority within their area of control.

c) Communications

Full use should be made of any available communication facilities for sharing information on the developments of the incident and its changing nature or status.

d) Safety Officers

Selected officers should be detailed to monitor specific or general safety concerns.

e) Safety

Teams should be nominated where necessary to protect the escape route of others committed to areas of known or anticipated higher risk areas, such as deep penetration firefighting or rescue teams.

6. Elements of Objective D

D Remove remaining personnel from areas of unacceptably high risk, in a controlled and safe manner, having due regard to the ongoing risks posed by the incident to the public at large.

6.1 This process flows naturally from the procedures outlined above.

File reference: FEP 94 337/1500/1

Telephone contact number: 071 217 8746

**SPECIFICATION FOR A MANUALLY OPERATED EVACUATION SIGNAL UNIT
(ESU)**

1. This item informs Chief Officers of the publication of a new Home Office specification for a manually operated evacuation signal unit.

Background

2. A Working Group was set up by the Joint Committee on Fire Brigade Operations to review emergency evacuation procedures within the fire service. As a result of the discussions of that Working Group, a request was made for a specification for a manually operated evacuation signal unit that could be operated by firefighters wearing breathing apparatus. The attached Specification (JCDD/39) has been prepared as a result of that request and has received the approval of The Joint Committee on Appliances, Equipment and Uniform and The Joint Committee on Fire Brigade Operations.

Use

3. Manually operated evacuation signal units conforming to this specification should not be seen as replacements for, but as complementary to the Acme Thunderer Whistles.

4. Specification JCDD/39 should be regarded as a development specification and might, therefore, be subject to changes once manufacturers begin to produce the units.

5. Guidance on evacuation procedures can be found under item A of this letter.

Financial and Manpower Implications

6. Since equipment conforming to this Specification is not yet in production it is difficult to provide an accurate idea of the cost of the Units. However, it is anticipated that these units should cost approximately £40 each. The cost of the units may, however, be reduced if larger numbers are ordered.

Telephone number of contacts:	Administrative	071 217 8745
	Technical	071 217 8720

**CENTRAL FIRE BRIGADES ADVISORY COUNCIL
SCOTTISH CENTRAL FIRE BRIGADES ADVISORY COUNCIL**

JOINT COMMITTEE ON APPLIANCES EQUIPMENT AND UNIFORM

**SPECIFICATION FOR A MANUALLY OPERATED
EVACUATION SIGNAL UNIT (ESU)**

JCDD/39

**Fire Services Division
Home Office
Horseferry House
Dean Ryle Street
London SW1P 2AW**

July 1994

SPECIFICATION JCDD/39

SPECIFICATION FOR A MANUALLY OPERATED EVACUATION SIGNAL UNIT (ESU)

NOTE: The requirements of this Specification are to be regarded as minima (or maxima as the case may be) and nothing herein is to be construed as preventing a purchaser from specifying stricter or additional requirements to meet special circumstances.

1. GENERAL

The ESU is intended to perform the same operational function and to produce a similar whistle sound to that of the Acme Thunderer whistle; but in addition shall be able to be operated by personnel wearing breathing apparatus.

The ESU shall be designed to be carried in a pocket but if required it may be designed to be carried externally.

2. METHOD OF OPERATION

A push button shall be provided in a readily accessible position to enable the ESU to be operated manually by a gloved hand and the button shall be so designed so as to prevent accidental operation.

The force required to operate the push button shall be between 10 and 20 Newtons.

Immediately the push button is operated, the whistle sound shall commence and continue to operate, producing short sharp bursts of sound as described at Clause 3 below, until the button is operated again when the whistle shall stop.

3. SOUND EMITTING DEVICE

The ESU shall have a sound emitting device(s) such that it complies with the following requirements;

3.1 Sound Pressure Level

3.1.1 The equivalent continuous A-weighted sound pressure level, LAeq, of the signal emitted by the ESU, measured at a point in a free field environment, 2 metres in front of the unit shall be between 90 and 96 dB(A) over a 30 second period. Each "whistle blast" shall last for 2 seconds, with an interval of 3 seconds between each blast.

3.2 Description of Whistle Sound

3.2.1 The signal shall begin with a rapid rise in sound level and frequency, rising to a peak of 97 ± 3 dB(A) and to a frequency of $2600\text{Hz} \pm 100\text{Hz}$ after 200ms. The sound level shall remain constant over the next 1200ms at 97 ± 3 dB(A). The signal shall decay by 30 ± 3 dB(A) over the next 200ms followed

by a further steady decay over the remaining 400ms of the signal.

3.2.2 During the 1200ms period, the sound shall consist of a signal cycle rapidly spanning a frequency range from 2600Hz to 2100Hz \pm 100Hz with major peaks occurring at 2400Hz and 2200Hz \pm 50Hz at sound levels of 93dB(A) and 87dB(A) \pm 2dB(A) respectively. This cycle shall be repeated 80 \pm 5 times per second.

4. BATTERY

The ESU shall normally be designed to be powered by a non-rechargeable battery.

The battery used shall be capable of sounding the ESU at the sound pressure level indicated at Clause 3 for a minimum of one hour.

5. LOW BATTERY WARNING

The ESU shall incorporate an audible and/or a visual low battery warning facility. Any audible low battery warning shall be of a different noise characteristic to that of the whistle noise specified at Clause 3.

When the low battery warning has initially activated, the ESU shall be capable of operating at the sound pressure level indicated at Clause 3 for a minimum of 30 minutes.

6. CONSTRUCTION

The construction of the ESU shall be such that it is robust and capable of withstanding general rough usage.

The shape and size of the casing shall be such that it may be easily carried in the pocket but if designed to be carried externally shall be designed to reduce the risk of snagging.

7. ELECTRICAL SAFETY

The ESU shall be certified as Intrinsically Safe in accordance with BS5501:Part7:1977(EN50020) for use in flammable atmospheres.

The minimum level of intrinsic safety required shall be EEx ia IIC T4.

If the certification is only in respect of a particular type of battery those batteries which are acceptable shall be permanently marked on the outside of the casing or inside the battery compartment.

8. WEIGHT

The ESU shall be as light as possible and shall not exceed 200 grams when complete and in working order.

9. OPERATING TEMPERATURE RANGE

9.1 The ESU shall be placed in still air at a temperature of $75^{\circ} \pm 2^{\circ}$ C for a period of one hour and on removal shall operate in accordance with this Specification.

9.2 The ESU shall be placed in still air at a temperature of $-15^{\circ} \pm 2^{\circ}$ C for a period of one hour and on removal shall operate in accordance with this Specification.

10. WATERTIGHTNESS

The ESU shall meet the requirements of this Specification after being submerged in water to a depth of two metres for one hour.

11. IMPACT

The ESU shall meet the requirements of this Specification after six subsequent drops from a height of 2 metres onto a concrete surface.

12. RADIO INTERFERENCE

The ESU shall not cause interference to any radio or similar equipment and shall not itself be affected by such signals under normal operating conditions.

13. ATTESTATION

The supplier of the ESU shall provide evidence that the unit conforms to this Specification.

July 1994

PERSONAL PROTECTIVE EQUIPMENT DIRECTIVES - IMPLEMENTATION

1. This item informs Chief Fire Officers of developments relating to the introduction of the Personal Protective Equipment (PPE) Directive 89/656/EEC and the Personal Protective Equipment Product Directive 89/686/EEC.

Directive 89/656/EEC

2. The Health and Safety Executive is responsible for implementing the Personal Protective Equipment Directive 89/656/EEC in the United Kingdom. The Directive has been implemented in the United Kingdom, by the Personal Protective Equipment at Work Regulations 1992, which came into force on 1 January 1993 and covers almost all employers, including fire authorities. These Regulations require that suitable PPE is to be provided to employees by their employer where there are risks to health and safety that have not been alternatively controlled by other means. The Home Office considers that existing provisions of safety protective equipment for fire brigade operational staff should satisfy the requirements of the Regulations.

3. Further guidance on these regulations can be found in "Personal protective equipment at work - Guidance on regulations" which is available price £5 from:

HSE Books
PO Box 1999
Sudbury
Suffolk
CO10 6FS
Tel: 0787 881165

Directive 89/686/EEC

4. The Department of Trade & Industry is responsible for the implementation of the Personal Protective Equipment Product Directive 89/686/EEC in the United Kingdom. The Directive was adopted on 21 December 1989 and came into force in the United Kingdom on 1 January 1993.

5. The enforcement provisions are set out in the principal Regulations (SI 1992/3139). An Amendment Regulation (SI 1993/3074) gives manufacturers until 30 June 1995 before compliance is mandatory and removed "motorcycle helmets and visors" from the scope of the Directive. This will mean that, as from 1 July 1995, all PPE purchased will need to be "CE" marked. Where no European harmonised standards have been agreed or if the manufacturer so prefers, the alternative conformity assessment procedure "with other verified technical specifications", as set out on page 11 of the DTI Guidance Document, may be used.

6. These Regulations will be enforced in the United Kingdom by the Trading Standards Departments.

7. A copy of the Guidance Document on the implementation of these regulations may be obtained from:

Standards Policy Unit 4
Department of Trade and Industry
151 Buckingham Palace Road
London SW1W 9SS

Telephone: 071 215 1427

Financial and Manpower Implications

8. The implementation of these regulations is unlikely to have any financial or manpower implications for the fire service.

Telephone contact: 071 217 8745

SAFETY AT STREET WORKS AND ROAD WORKS WHEN UNDERTAKING HYDRANT TESTING AND INSPECTIONS

Background

1. With effect from 1 April 1993 the "Safety at Street Works and Road Works" - A Code of Practice issued by the Secretaries of State for Transport, Scotland and Wales under sections 65 and 124 of the New Roads and Street Works Act 1991 came into force.
2. Sections 65 and 124 of the New Roads and Street Works Act 1991 require anyone carrying out work under the Act to do so in a safe manner as regards the signing, lighting and guarding of the works. This will, therefore, have implications for the fire service when undertaking hydrant testing and inspections, or in some cases minor works by arrangement with water authorities.
3. The regulations emphasise the importance of making sure that all workers engaged in street and road works are safe and that drivers and pedestrians are made aware of any obstructions well in advance.
4. Details of how to comply with the regulations are explained fully in "Safety at Street Works and Road Works" - A Code of Practice, copies of which can be obtained from HMSO, ISBN 0-11-551144-X for £3.95 per copy.
5. It is recommended that those carrying out hydrant work should familiarise themselves with the Code of Practice.
6. These regulations will not apply where hydrants are being used for operational use during emergencies.

General

7. Brigades should be aware that the new regulations governing the repair and reinstatement of roads etc are now in force. These regulations are particularly relevant to those brigades who employ hydrant maintenance operatives/technicians whose work goes beyond that of simply inspection or testing of a hydrant. It is, therefore, necessary in these circumstances for the brigade to comply with the regulations appertaining to the repair of roads.

Financial and Manpower Implications

8. It will be necessary for brigades to ensure that non-emergency vehicles used for the carrying out of hydrant testing and inspections are fitted with amber beacons and that brigades hold stocks of the relevant road signs. It should not be necessary for appliances to carry these as a matter of course and a stock held at each fire station should be sufficient. It will also be necessary for brigades to ensure staff are adequately trained in the new regulations. There will, therefore, be some financial and, possible, manpower implications for brigades. These will, however, vary according to the particular circumstances of each brigade.

Telephone number of contact: 071 217 8745

USE OF LPG CYLINDERS

1. This item is to advise Chief Fire Officers that the LP Gas Association has issued two codes of practice on the use of LPG cylinders. The full titles are Code of practice 24, Part 1 Use of Propane in Cylinders at Residential Premises (ISBN 1 873891 05 9 price £19.60) and Part 2 Use of Butane in Cylinders at Residential Premises (ISBN 1 873891 06 7 price £19.60).

2. The Codes have been produced in consultation with the Health and Safety Executive and the Home Office. These two separate documents set out recommended safe practice for using propane and butane in cylinders in premises used for residential purposes. They are aimed primarily at LPG dealers, installers and enforcing authorities.

3. The new codes replace Home Office guidance which was contained in Fire Prevention Guide No 4 "Safe use and storage of liquefied petroleum gas in residential premises" published in 1976.

4. A technical point which is not covered by the codes relates to cylinders in the open air. Where such cylinders are sited against the wall of a building, the wall (or structure) should be imperforate and afford a minimum fire resistance of not less than 30 minutes.

5. Copies of the Codes may be obtained from:-

William Culross & Son Ltd
9 Queen Street
Coupar Angus
Perthshire PH13 9DF

Telephone 0828 27266 Fax 0828 27146

Home Office contact telephone number: 071-217 8693

FIRE HAZARDS ASSOCIATED WITH THE USE AND STORAGE OF CELLULAR FOAM IN SPORTS AND RECREATIONAL FACILITIES

1. This guidance updates that contained in Fire Service Circular 1/1988 the purpose of which was to alert fire authorities to the potential fire hazards arising from the use of cellular foam in sports and other recreational facilities and to give advice on the use and safe storage of such material.

2. Cellular foam is used extensively in gymnasia, sports halls and other recreational facilities in the form of various types of floor coverings, mats and foam-filled pits. It is also popular as a soft play environment for children, particularly those with disabilities. In recent years the fire safety hazards of foam have become well known, as have the particular dangers arising from use of the material in sports and other recreational premises.

3. Cellular foam may be flame retarded (ie "combustion modified heat resistant" and therefore able to resist a predetermined ignition source for a given period) or untreated in which case it can be ignited more easily by a small ignition source (eg matches, cigarette butts). Varying amounts of foam may also be found in trampolines, diving nets, etc and while these add to the fire loading, generally speaking they are not easily ignited and do not present a particularly high fire risk.

4. On the other hand, pits filled with raw, uncovered and generally untreated foam present an extremely high fire risk because of the ease with which such foam can be ignited, the rapidity with which the fire would develop and the large amounts of heat, smoke and toxic gases which would be generated. Tests carried out by the Fire Research Station involving an above ground pit 3m x 3m x 1.7m constructed of steel and filled with cellular foam, was ignited by a single match and produced sufficient smoke to fill a hall of 8,000 cubic metres reducing visibility to 1m in about 3 minutes.

5. Cellular foam gymnastic and judo mats and athletics landing areas present a particular risk when stacked in piles or when kept together with similar materials, especially if the raw cellular foam interior of the mats is exposed. Various kinds of cellular foam sports mats are in use, ranging from those with a low density, generally referred to as "crash mats", to those having a high density, used for judo and similar sports. The low density cellular foams present the highest risks because of the ease with which the materials can be ignited.

6. Fire authorities should take account of this updated guidance when providing advice on fire safety in new and existing buildings where foam-filled sports or recreational equipment is used. Fire authorities will be involved with premises subject to licensing legislation where boxing and wrestling matches are

held or where other public entertainment is provided or where alcohol is sold. Many premises where cellular foam equipment is used will also be subject to the Health and Safety at Work Act 1974. Updated guidance on liaison between fire authorities and HSE is in preparation and should be issued shortly but in the meantime existing arrangements continue to apply.

7. Cellular foam-filled equipment is also found in other types of premises subject to other legislation where fire authority advice may be sought. These include health care premises, those used for residential and day care in the statutory and voluntary personal social services, and educational establishments. In this context, fire authorities will wish to note that the former Department of Health and Social Security drew the attention of local health authorities to the possible fire hazard of soft play equipment through:

- (a) Safety Information Bulletin No 32/1987: Totally Soft Play Environment: Fire Precautions
- (b) Safety Information Bulletin No 38/1988: Cellular Foam in Sports, Recreational and Play Use: Fire Hazards
- (c) Safety Information Bulletin No 40/1988: Totally Soft Play Environment: Fire Precautions (amendment)

In 1991 responsibility for fire precautions in National Health Service premises passed to NHS Estates.

8. The former Department of Education and Science also included reference to the hazards associated with the use of cellular foam in their Safety Bulletins No 4 of 1986 and No 5 of 1987.

9. Fire authorities will also wish to be aware of HSE Guidance Note GS/3 on "Fire risk in the storage and industrial use of cellular plastics" and HS(G) 64 on "Assessment of fire hazards from solid materials and the precautions required for their safe storage and use".

10. A major concern is the effect of magnesium carbonate contamination of foam from the grip enhancing chalk used by gymnasts. The Rubber and Plastics Research Association has found that combustion modified foam subjected to chalk contamination loses some of its fire retardant properties after about 6 months. However, HSE research has found that even contaminated combustion modified foam continues to be resistant to ignition by match.

11. In the light of these findings the Sports Council expressed concern that combustion modified foam offered only a short term advantage over non-modified foam which might not justify the higher purchase cost. However, the Home Office view is that in ordinary use contamination can be minimised by good housekeeping measures and that combustion modified heat resistant foam should be used in all new applications and should also be used when the time comes to replace existing equipment.

12. This guidance cannot, of course, take into account all the

fire safety requirements which may be necessary because of the particular circumstances which prevail in different premises. It is intended to be used as an aid in evaluating the fire precautions needed where cellular foam products are in use. But in individual cases which require a specific assessment of the effects of a fully developed fire in cellular foam, ie rate of heat release, smoke production etc, expert advice may be necessary.

13. Fire authorities should be particularly aware of the high risk of malicious ignition. The Sports Council estimates malicious ignition to be the cause of over 75% of fires in recreational facilities.

14. Where fire authorities are unable to secure necessary improvements in standards of fire safety in premises which are not subject to specific legislative controls, but where they consider that there is an excessive risk to persons in the event of fire, it will be necessary to consider exercising the powers available to them under section 10 of the Fire Precautions Act 1971.

15. It is intended that fire authorities should take account of this advice in the course of their normal fire prevention activities. It should not therefore give rise to significant additional cost or manpower implications. However, they may wish to give priority to inspecting premises which have foam-filled pits because of the particular hazards which the presence of such facilities present.

16. Brigades may be interested in a video produced in 1988 by the Sports Council entitled "Getting the feel for foam". It runs for about 15 minutes and is available from the Sports Council, Publication Department, 16 Upper Woburn Place, London WC1H 0QP, Tel: 071-388-1277, price £20 + VAT or on loan free of charge from the Home Office, Fire Safety Division, Room 748, Horseferry House, Dean Ryle Street, London SW1P 2AW (Contact Mark Walker, Tel: 071-217-8294).

17. The following paragraphs cover the risks associated with the use, storage and location within a building of cellular foam materials and the appropriate safety standards.

STANDARDS

18. In October 1990 the British Standards Institute published S 1892, Part 2, section 2.10 of which specifies the safety requirements for mats, mattresses and landing areas, and includes both performance testing requirements and ignition resistance criteria. The Standard requires that ideally, all such foam equipment should be capable of withstanding ignition sources 0 and 5 of BS 5852. However, the foreword to section 2.10 of BS 1892 acknowledges that for some applications it has not yet proved possible to produce equipment which fulfils its purpose satisfactorily and meets the 0 and 5 ignition criteria. In certain circumstances therefore, slightly lower ignition resistance criteria may be acceptable. BS 1892 describes four levels of risk and specifies the ignition resistance criteria

which must be met in each case:

IGNITION CRITERIA ¹ WHICH MUST BE MET BY MATS, MATTRESSES AND LANDING AREAS FOR A GIVEN LEVEL OF RISK				
Construction of test specimen	Level of Risk			
	Low	Medium	High	Very High
Composite	0 and 3	0 and 5	0 and 5	0 and 5
Cut test	-	-	0 and 3	0 and 5

19. Account must be taken of BS 5588; Fire Precautions in the Design, Construction and Use of Buildings: Part 6; Code of Practice for Places of Assembly.

ASSESSMENT OF RISK

20. Many interrelating criteria will need to be considered when assessing the risk in premises in order to establish the classification of equipment that can be used. Consideration must also be given to the portability of foam-filled equipment: if it is able or intended to be moved around within premises then the assessment should be based on the highest risk situation that is likely to be encountered.

21. An assessment of the premises by a joint survey of the management, the local fire authority, and the licensing authority where appropriate, is a basic starting point to allowing a lower ignition resistance than the higher 0 and 5 standard.

22. Paragraph 4.2 of BS 1892 outlines some of the factors which should be considered when making the risk assessment. These include the type of construction of the premises, the fire precautions in place, and the management of the building. It gives an example of a low risk area as being small premises where the public is not admitted as spectators and where the management exercises a high level of direct control. A very high risk situation, on the other hand, would be found in multi-occupied premises where large numbers of spectators are admitted and management has no direct control.

TESTING OF EQUIPMENT

23. The testing of equipment must be carried out by an accredited laboratory. Equipment which passes the test must be clearly labelled in accordance with paragraph 7 of section 2.10 of BS 1892.

CELLULAR FOAM FILLED PITS

24. The size and location of a cellular foam-filled pit will depend upon the type of activity it is designed to facilitate, the limitations imposed by the building in which it is situated

¹ As defined in BS 5852.

and the numbers of persons expected to use it. Foam-filled pits can range from an adapted swimming pool filled with blocks of raw cellular foam with protection on the surrounding areas provided by a similar material, to purpose built pits in existing gymnasias which can be below floor level or above.

25. Sizes of pits vary but the risk remains very high. Ideally the size of a pit should be no larger than necessary to achieve satisfactory and safe usage. Careful consideration should be given to the type of material used to fill the pit in determining the risk that will be presented to those using the facilities and to others who may be in the building should a fire occur. At present, cellular foam filling for pits may be untreated or flame retarded (but see below). Pits above ground level present the greatest danger - unless they are completely sealed and made of fire resisting construction there is a possibility that in a fire molten foam will leak from them.

26. Because the combustion resistance of foam can be adversely affected by magnesium carbonate (chalk) contamination, such contamination should be kept to a minimum by good housekeeping measures including the regular vacuum cleaning and redistribution of the foam in the pit.

27. When pits are in use, the risk of accidental ignition is reduced if proper controls are exercised. No smoking or naked lights, and no heat sources likely to ignite the foam, should be permitted in the area.

28. A serious risk is presented when a pit is not in use but adjoining areas are being used by members of the public. Access to the room or hall in which a pit is located should be strictly controlled to prevent unauthorised access or the possibility of accidental or malicious ignition. Ideally the pit should be covered with a close fitting flame resistant cover when not in use. It is recognised, however, that this is not always practicable with large pits and those over which apparatus is permanently fixed.

29. If a balcony overlooks a hall/gymnasium in which there is a cellular foam-filled pit and the balcony forms part of the escape route from any other part of the building, the balcony will need to be enclosed to afford protection to the escape route. If the balcony is not part of the escape route from any other part of the premises, some protection may still be necessary to ensure a satisfactory evacuation to a protected area at either end of the balcony.

30. If a foam filled pit is situated in a hall or gymnasium in which there is tiered seating or is in a room adjacent to the hall or gymnasium, special consideration needs to be given to provisions to ensure spectators using the tiered seating can evacuate safely and that they are protected from the effects of a fire involving the cellular foam. In assessing the measures to be taken, the fire growth potential in the risk area needs to be calculated. Ideally, steps should be taken to remove the risk entirely or to ensure its safe separation from the spectator area.

31. A sports hall or gymnasium in which there is a foam-filled pit should not connect directly to any corridor which forms part of the main means of escape route from any other part of the premises.

32. Where physical separation cannot be achieved, consideration should be given to requiring fixed fire fighting installations, for example, fast response sprinklers capable of controlling a fire in this type of risk (see BS 5306). In many cases, adequate protection may be provided by local applications.

33. Effective warning to all occupants of the building in case of fire should be installed in accordance with BS 5839 Part 1 (Fire detection and alarm systems) and should, where practicable, include automatic fire detectors.

34. Mechanical systems of air circulation and ventilation in premises should incorporate adequate safeguards to ensure that smoke is not circulated within the building. Reference should be made to BS 5720 (Code of practice for mechanical ventilation and air conditioning in buildings) and BS 7346 (components for heat and smoke control systems) where appropriate.

FOAM MATS

35. Mats used in sports and recreational facilities vary according to the use to which they are put and range from low density 16kg per cubic metre (safety/crash mats) to high density 224kg per cubic metre (judo mats). These mats are covered with a variety of materials, eg nylon, carpet, PVC coated fabrics, cotton, nylon woven fabrics, flame retarded PVC fabrics and latex, flame retarded canvas and plain canvas.

36. The ease of ignition will depend upon:

- (i) the type of cover (whether flame retarded or not);
- (ii) the density of the infill (the lower the density of the infill, the easier it may be to ignite);
- (iii) the properties of the foam used;
- (iv) the method of mat construction; and
- (v) the condition of the equipment.

37. When the mats are in normal use, ie laid flat, they do not usually present a serious fire hazard, although over a period of time the covers often deteriorate through use, exposing the raw foam. At this point the mats present an increased risk as the foam is more easily ignited by the application of a single match. It is therefore important that damaged or worn mats should be repaired or replaced as quickly as possible.

STORAGE OF FOAM MATS

38. Stored mats present a particular hazard and it is important that they are stored so that a fire occurring in them will not

jeopardise means of escape from elsewhere in the premises. Therefore the following precautions should be observed:

- (i) mats should be stored flat to present the minimum surface area over which flame can travel vertically,
- (ii) they should be stored separately from any other easily ignited materials,
- (iii) storage should be tidy, with access being maintained both to the store and within it,
- (iv) there should be no source of heat within the store, which is likely to ignite material,
- (v) lighting within the store should be of the protected type (eg bulkhead or enclosed),
- (vi) the store should not form part of a general circulation area.
- (vii) the store should normally be kept locked.

39. In addition to the precautions already mentioned, where a gymnasium or sports hall has access to a corridor either by a door or other opening forming an escape route from the hall or any other part of the building, mats should be kept in a separate store that is secured against unauthorised access or use.

40. The store should not have direct access from the corridor and should be separated from it by imperforate and fire resisting construction of 1 hour duration in accordance with BS 476 Parts 20 to 22 (Fire tests on building materials and structures).

41. Automatic smoke detection should be provided within the store linked to the main fire alarm system in the building. Ideally stores should be ventilated to the open air to the maximum area practicable, with ventilators operated by smoke detectors. Care should be taken to site the ventilation away from vertical surfaces and combustible materials, and to ensure that smoke cannot reenter the building to endanger escape routes.

42. Gaps around the door(s) will usually fulfil air inlet requirements.

43. Where small numbers of mats are to be used, the risk of vandalism is low and an outbreak of fire would present no risk to other occupants of the building, the provision of a purpose built store may not be warranted. In such cases mats may be stored in containers of robust construction made from non-combustible materials.

SOFT PLAY EQUIPMENT

44. Cellular foam has become popular in providing a totally soft play environment for children, especially those with disabilities. But as with other cellular foam products the potential hazards from fire must not be overlooked.

45. The play shapes of this material are sometimes covered with flame retarded PVC but may not have any covering. When covered the hazards are similar to gymnastic mats and precautions similar to those mentioned above should be observed. When uncovered and non-flame retarded, the material presents the same level of risk as foam-filled pits. Therefore, the fire safety measures specified for foam-filled pits should be applied.

46. Because the hazards associated with play shapes are similar to those of gymnasium equipment containing cellular foam, the ignition criteria should be the same. However, due to the varied shapes encountered in soft play items there is at present no approved method of testing and tests have to be of an ad hoc nature. Because of the sort of people who will use soft play areas (eg children, people with disabilities) the starting assumption should be that all such facilities are very high risk. It is therefore recommended that all cellular foam soft play equipment should meet standards of ignition resistance equivalent to 0 and 5 of BS 5852, as required for very high risk premises by BS 1892.

47. Soft play areas may be found in buildings which are put to a variety of uses, eg schools, hospitals, shopping precincts and community centres. When considering the precautions to be taken, the risk of malicious ignition as well as the effect of a fire in this material on the escape routes within the building, must be taken into account.

48. Persons using these facilities may have mobility problems and the play areas allow a wide range of children to play without harm. Typical users are children who are mentally and/or physically disabled. When assessing the adequacy of means of escape, due regard must be paid to the range of users.

NEW BUILDINGS

49. All the aforementioned fire safety measures apply equally to new and existing buildings. However, in the case of new buildings, additional measures should be incorporated into the design. The following advice is intended to ensure that adequate means of escape are provided at the design stage in buildings where the risk of fire involving cellular foam may be present. This includes premises which not only provide facilities for sports or gymnastic activities but also provide spectator accommodation and are likely to be used for other activities involving large numbers of persons, eg discos and other social events.

50. Guidance is available in BS 5588: Part 6 and this should be taken into account at the planning stage of new premises.

51. Halls and gymnasias containing cellular foam should not constitute an escape route or part of an escape route, nor should they have direct access to corridors that constitute escape routes from other parts of the building.

52. Travel distance from other parts of the building to a protected route or final exit should be as short as possible.

Actual distances and travel times will depend on an assessment of all the factors that apply to a building at the feasibility study stage of the planning process. The following criteria should be considered:

- (a) the dimensions, number of floors and compartmentation of the building; and
- (b) the intended use of the building:
 - (i) the numbers of spectators that could be accommodated in each area;
 - (ii) the types of people using the facilities, eg young people with disabilities;
 - (iii) the amount of cellular foam, the types of materials that will be used and the way in which they will be stored;
 - (iv) the presence of cellular foam-filled pits, their location, construction, size and type of foam etc;
 - (v) the possible need for a fixed firefighting installation, water spray etc;
 - (vi) the possible need for the provision of automatic fire detection linked to a fire alarm system for the building;
 - (vii) where the quantities of mats are sufficient to warrant it, the provision of a store.

ADVICE TO MANAGEMENT

53. Adequate procedures should be formulated to ensure safe evacuation of the premises in the case of fire or other emergency:

- (a) Efficient arrangements should be made for calling the fire brigade and for ensuring that a member of staff who has knowledge of:
 - (i) the premises;
 - (ii) the use of the fire warning system;
 - (iii) the evacuation arrangements; and
 - (iv) the location of the incident

is available to liaise with the fire brigade on its arrival.

- (b) A senior member of staff should be responsible for fire precautions on the premises, and for the training of staff in the emergency procedures to be adopted.

- (c) Staff should be allocated to specific duties as follows:
- (i) Evacuation: Members of staff should be allocated to specific areas and should be responsible for ensuring that in the event of an emergency their area is evacuated.
 - (ii) First-aid fire fighting: Adequate numbers of staff should be trained in the use of the first-aid firefighting equipment provided. Wherever possible such staff should not have other duties in a fire emergency but any duties they have must not conflict with the overriding necessity to evacuate the premises promptly in a safe and orderly manner. A plan should be formulated so that, when safe to do so, a fire is dealt with in its early stages. Staff should not attempt to extinguish a spreading fire involving cellular foam and where a fire involves such material the priority is prompt evacuation.
 - (iii) Other essential duties: The staff responsible for maintenance and building services should be made responsible for any specific tasks that may be required, eg the closing down of services that have been detailed in a prearranged plan.
- (d) To ensure that the arrangements made are comprehensive and adequate, there should be:
- (i) planned training of all staff in evacuation procedures;
 - (ii) regular involvement of the fire brigade in routine visits and the giving of advice as necessary; and
 - (iii) arrangements for dealing with events involving large numbers of the public.
- (e) Regular inspections of the building should be undertaken to ensure that passive and active fire precautions arrangements are maintained in good working order and escape routes are kept clear at all times.
- (f) Exposed foam in pits and other locations should be redistributed and vacuum cleaned regularly to remove foreign materials which could increase the risk of ignition. This is particularly important where there is chalk contamination.
- (g) Good standards of house-keeping should be maintained throughout the premises at all times.
- (h) A drawing showing the layout of the building should be available at the reception areas.

DATA COLLECTION SYSTEM - FIRES AND INCIDENTS OF SPECIAL INTEREST

1. The purpose of this item is to advise Chief Officers of the new arrangements and revised criteria for reporting fires and incidents of special interest. The information will be used by the Home Office to identify and monitor trends, inadequacies and particular successes in the operational and fire safety fields. It may also be used for the purpose of briefing Ministers and senior officials and in the preparation of reports. The list of criteria, covering operational and fire safety matters, is at Appendix 1.

New arrangements

2. When a fire or incident falls within the new criteria the brigade should notify:-

the Home Office, Fire Safety Division, Room 711, Horseferry House, Dean Ryle Street, London SW1P 2AW by fax on 071-217 8722 or 071-217 8731 without taking further action. The fax should provide the following information :-

- (a) name and address of the premises/incident;
- (b) date and time of call;
- (c) the criterion number (see Appendix 1);
- (d) brief details; and
- (e) brigade contact point (ie name and telephone number).

3. The brigade will be contacted by a member of the Fire Service Inspectorate and advised whether further details are required and the form these should take. Follow up information should be provided as soon as possible.

4. There may be occasions, particularly in multi-death fires but also where a fire or incident attracts media interest, when information may be required urgently. In such instances the brigade will be contacted by telephone.

5. If a multi-death fire or other incident attracting media interest occurs at the weekend or on a public holiday, details should be telephoned immediately to the Home Office Duty Officer, Queen Anne's Gate, London SW1H 9AT (telephone 071-222 8561) who will alert an Inspector from the Fire Service Inspectorate. A brigade contact point should be given and enquiries may be expected from the appropriate policy division, a member of the Fire Service Inspectorate or the Home Office Duty Officer. The Fire Safety Division should also be informed on the next working day in accordance with the procedure laid down in paragraph 2.

Completion of the form FDR1

6. When it has been confirmed by the Home Office that the fire will be recorded as one of special interest the form FDR1 should be ticked in section 7.1 and a copy sent to the Fire Safety Division. The original FDR1 should continue to be included with the FDR1 returns for the appropriate month and passed to the Home Office, Fire Statistics Section. FDR1 forms should only be completed in respect of reportable primary fires and not for other incidents. If it is decided that the fire is not of special interest, the FDR1 should not be signalled even if the fire falls within the criteria.

Requests for information

7. Occasionally requests from other organisations such as the Fire Protection Association, the Fire Research Station and the Health and Safety Executive may be made direct to the brigade. Information may also be required for statistical purposes, to assist research or to aid investigation of a fire or incident. It will be for the fire authority to decide what information and assistance can be provided.

General

8. DCOL 17/1980 and the FINDS message issued on 4 March 1994 are cancelled by the issuing of this item.

9. There should be no additional cost or manpower implications arising from the publication of this item.

Contact points:	(Policy	Mrs J Noakes	071-217 8693
	(Operations)	HMI E Pearn	071-217 8689
	(Fire Safety)	Staff Officer to Senior Fire Safety Inspector	071-217 8081

FEP/93 25/335/2

**DATA COLLECTION SYSTEM - FIRES AND INCIDENTS OF SPECIAL INTEREST
CRITERIA TO BE APPLIED**

Operational matters

1. The use of 10 or more main jets or large amounts of specialised extinguishants.
2. Seriously inadequate water supplies.
3. Fires or incidents with serious operational difficulties eg difficulty of access, serious problems with breathing apparatus, problems over communication, lack of suitable equipment etc.
4. Standards of fire cover not met because of factors such as difficult road traffic conditions which have a significant effect on the development of the fire or incident.
5. Any protracted operations which are unusually hazardous or have environmental implications. (Incidents of a routine nature, eg damping down, should be excluded).
6. Explosions, radioactive or other dangerous substances, resulting in death, serious injury, large scale evacuations or release of radioactive or other substances causing serious contamination.
7. (a) Five or more fatalities (including fire brigade personnel); or
(b) Five or more seriously injured casualties (including fire brigade personnel)

(Deaths of firefighters in service are required to be reported separately under DCOL 4/1988.)

Fire Safety matters

8. Premises or places to which the public resort in large numbers (eg places of entertainment, shopping complexes etc) or institutional premises where there has been any loss of life or where occupants have needed to be evacuated due to an outbreak of fire.
9. Premises designated under section 1 of the Fire Precautions Act 1971 or falling within the scope of Regulations under section 12 where there has been any loss of life or where people had to be rescued because fire precautions or the means of escape did not fulfil their designed purpose.

10. Extensive spread or abnormally fast spread of fire, smoke or heat caused or assisted by the structure of the building (including linings, voids or other constructional features) or mechanical plant installed within the building.

11. The failure of automatic fire detection, fire suppression or smoke ventilation system (either individually or when incorporated with other systems into a fire engineered fire safety package for a building) where there is serious fire spread or extensive damage, any loss of life or seriously injured casualties.

12. Fires in historic (or listed) buildings involving extensive damage, loss of life or seriously injured casualties.

13. Notable success of fire safety measures in saving life or preventing serious spread of fire.

STORAGE OF RUBBER TYRES

1. This item advises Chief Fire Officers about the results of research into separation distances between stacks of tyres in the open air.

Background

2. As a result of the tyre dump fire at Hagersville, Ontario, Canada on 12 February 1990, and public concern over the method of storage of used tyres it was decided to produce new guidance on tyre storage in the open air to replace Fire Prevention Note No 3/54. The document entitled "GUIDE TO FIRE SAFETY FOR USED TYRE STORAGE IN THE OPEN AIR" has now been issued on a limited consultation exercise to other Government departments, the fire service and other interested parties, including the tyre trade.

Research

3. Following the Hagersville fire the Canadian authorities re-issued guidance on separation distances, recommending that 6 metres should be allowed between stacks. To establish whether this distance had a scientific basis, the Fire Safety Division commissioned the Fire Research Station (FRS) to carry out appropriate research. The project also examined the chemical composition of smoke and effluent from tyre fires to assess the quantities of pollutants produced and also assessed the risk to both people and property.

4. A summary report of the project, including its main conclusions, is attached. A video has also been produced which shows the programme of tests carried out. It demonstrates how fire is spread, heat released, and smoke dispersed from a stack of tyres and the effects of a tyre fire on the environment. A copy of the video is enclosed for Chief Fire Officers only. Further copies may be obtained from the Fire Experimental Unit, Moreton-in-Marsh, Gloucestershire, GL56 ORH, telephone 0608-650004/5.

Home Office contact for this item: Mrs J Noakes 071-217 8693