

**CAMPING EQUIPMENT  
ACCIDENTS**

**January 1997**

**Consumer Safety Research  
Department of Trade and Industry  
1 Victoria Street  
London, SW1H 0ET**

**Produced under contract by the**

**Consumer Safety Group  
Laboratory of the Government Chemist  
Queens Road  
Teddington  
Middlesex, TW11 0LY**

**URN 97/**

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# CAMPING EQUIPMENT ACCIDENTS

## 1. Introduction

This study is concerned with an assessment of all accidents involving camping equipment which appear in Home Accident Surveillance Systems (HASS) and Leisure Accident Surveillance Systems (LASS) statistics. Additionally, a comparison is made of the HASS/LASS and Home Office data on tent fire with the interpretation of this data cited in a report produced by South Glamorgan County Council Trading Standards Department<sup>1</sup>. The study was commissioned by the Consumer Safety Unit because certain consumer organisations and Trading Standards Departments (TSDs) have called for a flammability requirement for tents and there is a need to establish whether accident data support this.

## 2. Review of HASS/LASS Data for All Accidents involving Camping Equipment

### 2.1 Standard Reports

HASS/LASS Standard Reports for the years 1985-1994 on accidents involving tents, camping and caravanning sites were studied to establish any trends. The articles considered are in the "leisure/hobby equipment" category, namely, picnic/primus stove; tent/pole/peg; other camping equipment; and unspecified. The accidents that occur are those to be expected from the following activities:

- erecting and striking a tent;
- the use of the tent as a temporary home; and
- moving around on a grassy site and engaging in leisure/sports activities

The following is an illustrative list of accident descriptions:

- (a) falls on wet grass
- (b) falls from climbing frames
- (c) dog bites
- (d) falls caused by potholes/uneven ground
- (e) falls from bicycles
- (f) falls from caravan steps
- (g) cuts caused by broken glass
- (h) hands/limbs trapped in car doors on site
- (i) hitting hand with mallet
- (j) cuts from tentpoles and other equipment
- (k) tripping over tent line, peg or pole
- (l) overexposure to the sun
- (m) cuts from food cans
- (n) insect bites

All these accidents fall into the expected pattern for individuals engaged in normal leisure activities on a camping site in a rural environment.

## 2.2 Annual Trend Data

HASS/LASS tables of article-by-mechanism were obtained for 1985-1994. A table of national estimates of the number of accidents *per annum* was compiled from this data (Table 1).

**TABLE 1 : NATIONAL ESTIMATES FOR ACCIDENTS INVOLVING CAMPING EQUIPMENT**

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Total	216 <sup>1</sup>	362 <sup>1</sup>	196 <sup>1</sup>	1102	1387	1463	1502	1058	1466	1665

1. Prior to 1988, LASS statistics were not compiled: the data is not comparable with later years.

There has been a steady increase in the number of accidents between 1988 and 1994 with a dip in 1992 and 1993. The overall increase is in line with the increase in accidents as a whole over this period. The accident rate for the “leisure/hobby equipment” category is the lowest of all categories surveyed.

## 2.3 Mechanism of the Accidents

New mechanisms were added in 1990 onwards and so it is difficult to tabulate the key mechanisms meaningfully. The most likely mechanisms are:

- fall on same level;
- struck (moving object);
- struck by static object; and
- cut/tear (sharp)

These findings are in line with the standard-reports data discussed earlier (2.1).

Certain articles are associated with specific mechanisms, viz. there is a significant number of accidents associated with fires (or flame) and picnic/primus stoves. As expected from the earlier statistics, data in the later years (1992 onwards) appear to link tent/pole/peg articles with being struck by a static or moving object.

## 2.4 Body Part Affected by Accidents

HASS/LASS tables of article-by-body part were obtained for 1985-1994. A table of national estimates was compiled from this data (Table 2).

**TABLE 2 : TOTAL ACCIDENTS INVOLVING CAMPING EQUIPMENT FOR ALL YEARS 1985-1994 BY BODY PART\***

<b>Body Part</b>	Other Face Part	Unspec. Head Part	Wrist	Hand	Finger/Thumb	Lower Leg	Ankle	Foot
<b>Total All Years</b>	705	533	443	705	820	538	524	566

\* Only those body parts most frequently affected by the accidents are included.

Data show that the parts of the body affected are consistent with accidents involving manipulation of equipment using the hands, and falling or tripping accidents. Thus wrist, hand and finger/thumb combined accounts for 25% of all these accidents; and lower leg, ankle and foot account for 21%.

### **2.5 Age of Accident Victims**

HASS/LASS tables of article-by-age were obtained for 1985-1994. A table of national estimates was compiled from this data (Table 3).

**TABLE 3 : TOTAL ACCIDENTS INVOLVING CAMPING EQUIPMENT FOR ALL YEARS 1985-1994 BY AGE**

<b>Age in Years</b>	0-4	5-14	15-24	25-44	45-64	65-74	75+
<b>Total All Years</b>	633	3786	1811	2472	1325	260	115

There is a concentration of accidents in the 5-14 age-range. This is consistent with the text given in the Standard Reports discussed in Section 2.1. Children of this age are likely to be freely roaming the campsite engaging in cycling, sports and various leisure activities. Individuals involved in setting up the temporary home, cooking, etc. account for the next highest accident age-range (25-44 year-olds).

### **2.6 Patient Outcome**

HASS/LASS tables of article-by-patient outcome were obtained for 1985-1994. A table of national estimates was compiled from this data (Table 4).

**TABLE 4 : TOTAL ACCIDENTS INVOLVING CAMPING EQUIPMENT FOR ALL YEARS 1985-1994 BY OUTCOME**

<b>Outcome</b>	No Further Treatment	Referred to OP or GP	All Other Outcomes
<b>Total All Years</b>	4354	5325	735

The most likely outcome is “referral to out-patients or GP”, but “no further treatment” is almost as likely. The low admission rate to hospital reflects the relatively minor nature of most accidents which involve cuts and sprains. The small proportion of young children under 5-years-old involved in camping accidents reduces admission rates because young children are more likely to be admitted for observation. There does not appear to be any link between the article and the outcome. The Standard Reports discussed in Section 2.1 show that those accidents involving a fire are the most serious, with an increased likelihood of the patient’s admission to a specialist hospital when burns are severe.

### **2.7 In-Patient Days**

HASS/LASS tables of article-by-in-patient days were obtained for 1985-1994. Most patients (94%) are not admitted, even those who have accidents involving picnic/primus stoves. The data in 1993 and 1994 are not comprehensive as the number of in-patient days is unknown.

## **3. HASS/LASS, Home Office and South Glamorgan TSD Data for Tent Fires**

### **3.1 HASS/LASS Data**

HASS/LASS Standard Reports were inspected to identify any camping accidents involving fires (Table 5).

It is not possible, without unacceptably wide confidence limits, to produce national estimates extrapolated from the data sample per year because the annual frequency of accidents is so low.

People involved in these accidents are predominantly young adults with no particular bias towards male or female. A high proportion of these accidents occur when gas cylinders are being changed. In a few instances, gas stoves ignite adjacent tent fabric. The most common injuries are burns to the hands and lower arms. Patients are likely to be referred to outpatients or their GP, and in more serious cases may be transferred to a specialist burns unit, but clearly all such accidents have the potential to require hospital in-patient treatment.

**TABLE 5 : CAMPING ACCIDENTS INVOLVING FIRES**

Date	1993	1993	1993	1993	1993	1993	1992	1991	1991	1990
Age & Sex of Victim	40M	55F	64M	20M	34M 38F	13F	16F	18M	26F	28F
Description	Gas lamp caught against tent, fire	Butane gas cylinder knocked over in tent, fire	Changing gas cylinder in tent, fire	Connecting gas cylinder blew off under pressure, fire	Overcome by propane gas fumes in caravan	Lit gas burner grill - burnt face	Tent caught fire	Changing gas cylinder in tent, exploded	Tent caught fire	Changing gas cylinder when cooking, explosion
Body Part Affected	Burns to hand and leg	Burn to hand	Burn to hand	Burn to lower arm	Lungs	Burn to face	Burn to lower tibia	Burn to lower arm	Burn to hands and legs	Burns to hand, feet and face
Outcome	Ref to OP	Ref to OP	Ref to OP	Ref to OP	Discharged IP Ref to OP	Treated, no more treatment	Ref OP or GP	Admitted to specialist hospital	Ref to OP or GB	Admitted to specialist hospital

Date	1990	1990	1990	1989	1989	1989	1989	1989	1988
Age & Sex of Victim	20M	17M	16M	34F	7F	11F	33F	42M	25M
Description	Changing gas cylinder, explosion	Butane gas cylinder exploded	Butane gas cylinder exploded	Burning tent fell on to patients hands	Burning tent cloth fell on to patients hands	Burning tent	Burning tent	Changing Calor gas cylinder, gas escaped ignited by hurricane lamp	Walking past tent, explosion
Body Part Affected	Burn to arms	Burn to fingers	Burn to face	Burn to hand	Burn to toes	Burn to hands	Burn to hands	Burn to hands	Burn to lower arm
Out-come	Ref to OP or GP	Ref to OP or GP	No treatment required	Ref to OP or GP	Ref to OP or GP	Ref to OP or GP	Ref to OP or GP	Admitted to specialist hospital	Ref to OP or GP

### 3.2 Home Office Data

The Fire Statistics & Research Section of the Home Office Research & Statistics Directorate provided data on fires and casualties from fires in tents by source of ignition and cause for the years 1987, 1990, 1991 and 1992. Summary data were provided for 1985 and 1986. No data on tent fires were provided by the Home Office for 1988 and 1989. It should be noted that the Home Office definition of tents includes marquees and Punch & Judy displays. A summary of the data provided is given in Table 6.

**TABLE 6 : HOME OFFICE DATA FOR FIRES AND CASUALTIES FROM FIRES IN TENTS**

<b>Year</b>	1985	1986	1987	1990	1991	1992
<b>Number of Fires</b>	55	48	45	58	39	63
<b>Non-Fatal Casualties</b>	28	15	23	17	20	33
<b>Fatal Casualties</b>	–	–	–	1	–	1

There does not appear to be any annual trend to the data. The likelihood of there being a casualty in a tent fire is in the range 31-53%, expressed as Number of Fires / Number of Casualties x 100%. The Home Office data indicate that the number of fatalities is no more than one per year. These figures may be compared with total UK fatalities of approximately 800 *per annum* from all fires, and 14,000 non-fatal casualties from all fires<sup>2</sup>. Fatal casualties of fires occurring “outdoors” (i.e. not in dwellings, other occupied buildings or in road vehicles) are about 40–80 *per annum*, and non-fatal fire casualties “outdoors” are 600–800 *per annum*<sup>2</sup>.

The Home Office collect detailed information on the sources of ignition of each fire. A summary of the principal sources for the years 1987, 1990, 1991 and 1992, expressed as a percentage of the total tent fires and casualties, is given in Table 7.

**TABLE 7 : ANNUAL PERCENTAGE TREND DATA FOR PRINCIPAL SOURCES OF IGNITION**

Source of Ignition	1987		1990		1991		1992	
	Fires	Casualties	Fires	Casualties	Fires	Casualties	Fires	Casualties
Liquefied Petroleum Gas	36	52	33	67	33	80	33	47
Smokers' Materials	4	4	16	11	–	–	3	0
Matches	16	26	21	0	26	0	17	6

Note that the data for each year does not total 100 per cent because there are other less significant sources of ignition not included in the table. Data for smokers' materials was not provided for 1991.

Liquefied Petroleum Gas (LPG) is by far the most significant source of ignition followed by matches and smokers' materials. The percentage of fires attributed to LPG has remained remarkably stable throughout this latter part of this period (1990-92). A fire caused by LPG is more likely to result in a casualty than other sources of ignition. Excluding deliberate causes, the Home Office attributes the main causes to faults in equipment and misuse of equipment.

### **3.3 South Glamorgan Trading Standards Department Data**

The data presented in the South Glamorgan report<sup>1</sup> was obtained from the Home Office; it is presented in Table 8.

**TABLE 8 : SOUTH GLAMORGAN TSD INTERPRETATION OF HOME OFFICE DATA FOR FIRES AND CASUALTIES FROM FIRES IN TENTS**

Year	1987	1990	1991	1992
<b>Fires</b>	112	137	98	152
<b>Non-fatal injuries</b>	60	48	58	86
<b>Fatal injuries</b>	–	2	–	2

The incidence of fires in the South Glamorgan report is about 2.5 times that given in the Home Office statistics (Table 6). The incidence of non-fatal injuries is 2.6–2.9 times that given in the Home Office statistics (Table 6). The Home Office register one death in both 1990 and 1992; South Glamorgan report two deaths in each of these years. At the time of writing, it has not been possible to resolve these differences with South Glamorgan TSD.

#### **4. Discussion and Recommendations**

Analysis of the HASS/LASS data for all camping accidents indicates that there is a low incidence of accidents and in most cases the outcome is a relatively minor injury.

Safety features of camping tents, awnings, trailer tents and caravan awnings are covered by BS 5576<sup>3</sup>. This Standard specifies requirements for safety features in relation to materials used; provision of means of escape; and advice to users on fire safety. Reference to other Standards (BS 5438<sup>4</sup>, BS 6341<sup>5</sup>) is made for the flammability requirements and methods of test.

The South Glamorgan Trading Standards Department report includes results of tests on a range of low-cost tents against BS 5576. These tests were carried out by Fire Technology Service, British Technology Group. The majority of samples tested failed the flammability section of BS 6341.

Although the incidence of tent fires and casualties from tent fires is relatively low, there is merit in making consumers more aware that tent fabric is likely to be flammable, and alerting them to precautions that can be taken to reduce the risk of an accident.

It is recommended that the fire precaution notice required by BS 5576 be amended to include a more explicit reference to the flammability of tent fabric and the likelihood of accidents from LPG appliances occurring. Warning on LPG appliances could be strengthened for those tent fabrics which do not comply with the flammability requirement – the fire precautions notice should state that the tent will burn if exposed to a naked flame.

The Camping & Outdoor Leisure Association might consider including a more explicit reference to the flammability of tent fabric in the Camping Equipment section of their equipment-care leaflet.

#### **5. References**

1. South Glamorgan Trading Standards Department “Camping Tent Flammability, A Survey of Safety Features, May 1995”, BSI Document 95/126028, dated November 1995.
2. Fire Statistics UK, ISBN 1858934451, Home Office, 1993.
3. BS 5576 : 1985, British Standard Specification for Safety features of camping tents, awnings, trailer tents and caravan awnings.
4. BS 5438 : 1989, British Standard Methods of test for Flammability of textile fabrics when subjected to a small igniting flame applied to the face of bottom edge of vertically orientated specimens.
5. BS 6341 : 1983, British Standard Specification for Fabrics for camping tents.