



G o v e r n m e n t C o n s u m e r S a f e t y R e s e a r c h

Burns and scalds accidents in the home

dti

Department of Trade and Industry

CONTENTS		PAGE
1. SUMMARY OVERVIEW - BURNS/SCALDS ACCIDENTS IN THE HOME		1
1.1 OVERVIEW OF BURNS AND SCALDS ACCIDENTS IN THE HOME		1
1.1.1 Total number of burns/scalds		1
1.1.2 Key age groups at risk - severe injuries		1
1.1.3 Key products involved in burns and scalds accidents		2
1.1.4 Key location for accidents causing burns and scalds		3
1.1.5 Key accident mechanisms - severe injuries		4
1.1.6 How typical burns vary by type of product and age of victim		5
1.1.7 Implications of medical treatment and psychological affects		6
1.1.8 Socio-economic trends of burns and scalds accidents		6
1.1.9 Key product already available which could be better promoted		7
1.1.10 Opportunities for innovation and improvements in safety design		7
1.1.11 Main safety messages for key target group - parents/carers of children under 5		8
1.1.12 Safety awareness campaign		9
2. RESEARCH OBJECTIVES, METHOD AND SAMPLE		10
2.1 BACKGROUND, OBJECTIVES, RESEARCH METHOD AND SAMPLE		10
2.1.1 Background		10
2.1.2 Main objectives of the research		10
2.1.3 Research method		11
2.1.4 Sample achieved		11
2.1.5 A note on the report findings		12
2.1.6 Definitions		12
3. AN OVERVIEW OF NON-FATAL/FATAL ACCIDENTS		13
3.1 TOTAL MINOR, SEVERE AND FATAL INJURIES BY MAIN PRODUCT		13
3.1.1 Total number of minor, severe and fatal injuries by main product		13
3.1.2 Number of minor injuries requiring visits to GP surgeries		15
3.2 MATRIX OF THE SEVERITY OF BURNS AND SCALDS INJURIES BY AGE		15
3.2.1 Matrix of severe and fatal burns and scalds injuries by age group		15
3.3 SEVERE/FATAL OF BURNS AND SCALDS BY AGE AND TIME OF YEAR		17
3.3.1 Severe and fatal injuries per million population by age and sex		17
3.3.2 How accidents levels vary throughout the year		18

CONTENTS	PAGE
4. BURNS AND SCALDS - ANALYSIS OF THE MAIN CAUSES	19
4.1 CUPS AND MUGS	19
4.1.1 Total accidents	19
4.1.2 Seasonal variations (severe injuries only)	19
4.1.3 Age and sex of victim (severe injuries only)	20
4.1.4 Accident mechanisms (severe injuries only)	20
4.1.5 Nature of typical burns and implications of required medical treatment	22
4.1.6 Product design ideas emerging from the research	23
4.1.7 Key safety messages	23
4.2 BATHS	24
4.2.1 Total accidents	24
4.2.2 Seasonal variations (severe injuries only)	24
4.2.3 Age and sex of victim (severe and fatal injuries only)	25
4.2.4 Accident mechanisms (severe and fatal injuries only)	26
4.2.5 Nature of typical burns and implications of required medical treatment	27
4.2.6 Product design ideas emerging from the research	28
4.2.7 Key safety messages	29
4.3 KETTLES	31
4.3.1 Total accidents	31
4.3.2 Seasonal variations (severe injuries only)	31
4.3.3 Age and sex of victim (severe injuries only)	32
4.3.4 Accident mechanisms (severe injuries only)	33
4.3.5 Nature of typical burns and implications of required medical treatment	35
4.3.6 Product design ideas emerging from the research	36
4.3.7 Key safety messages	37
4.4 FIRE HEATERS ALL TYPES	38
4.4.1 Total accidents	38
4.4.2 Secondary ignition sources	38
4.4.3 Seasonal variations (severe injuries only)	39
4.4.4 Age and sex of victim (severe and fatal injuries only)	39
4.4.5 Accident mechanisms (severe and fatal injuries only)	40
4.4.6 Nature of typical burns and implications of required medical treatment	43
4.4.7 Product design ideas emerging from the research	44
4.4.8 Key safety messages	44

CONTENTS	PAGE
4.5 CHIP PAN/DEEP FAT FRYER	45
4.5.1 Total accidents	45
4.5.2 Seasonal variations (severe injuries only)	45
4.5.3 Age and sex of victim (severe injuries only)	46
4.5.4 Accident mechanisms (severe injuries only)	47
4.5.5 Nature of typical burns and implications of required medical treatment	49
4.5.6 Product design ideas emerging from the research	49
4.5.7 Key safety messages	50
4.6 SAUCEPANS	52
4.6.1 Total accidents	52
4.6.2 Seasonal variations (severe injuries only)	52
4.6.3 Age and sex of victim (severe injuries only)	46
4.6.4 Accident mechanisms (severe and fatal injuries only)	54
4.6.5 Nature of typical burns and implications of required medical treatment	55
4.6.6 Product design ideas emerging from the research	55
4.6.7 Key safety messages	56
4.7 COOKERS ALL TYPES	57
4.7.1 Total accidents	57
4.7.2 Secondary ignition sources	57
4.7.3 Seasonal variations (severe injuries only)	57
4.7.4 Age and sex of victim (severe and fatal injuries only)	58
4.7.5 Accident mechanisms (severe and fatal injuries only)	59
4.7.6 Nature of typical burns and implications of required medical treatment	60
4.7.7 Product design ideas emerging from the research	61
4.7.8 Key safety messages	61
4.8 CARS/MOTORCYCLES	63
4.8.1 Total accidents	63
4.8.2 Seasonal variations (severe injuries only)	63
4.8.3 Age and sex of victim (severe and fatal injuries only)	64
4.8.4 Accident mechanisms (severe and fatal injuries only)	64
4.9 PETROL	66
4.9.1 Total accidents	66
4.9.2 Secondary ignition sources	66
4.9.3 Seasonal variations (severe injuries only)	66
4.9.4 Age and sex of victim (severe and fatal injuries only)	67
4.9.5 Accident mechanisms (severe and fatal injuries only)	68

CONTENTS	PAGE
4.10 TEAPOTS/COFFEEPOTS	69
4.10.1 Total accidents	69
4.10.2 Seasonal variations (severe injuries only)	69
4.10.3 Age and sex of victim (several injuries only)	70
4.10.4 Accident mechanisms (severe injuries only)	70
4.10.5 Nature of typical burns and implications of required medical treatment	71
4.10.6 Product design ideas emerging from the research	72
4.10.7 Key safety messages	72
4.11 CIGARETTES/SMOKING	73
4.11.1 Total accidents	73
4.11.2 Secondary ignition sources	73
4.11.3 Seasonal variations (severe injuries only)	73
4.11.4 Age and sex of victim (severe and fatal injuries only)	74
4.11.5 Accident mechanisms (severe and fatal injuries only)	74
4.12 RADIATORS/HOT PIPES	76
4.12.1 Total accidents	76
4.12.2 Seasonal variations (severe injuries only)	76
4.12.3 Age and sex of victim (severe and fatal injuries only)	77
4.12.4 Accident mechanisms (severe injuries only)	77
4.13 JUGS OF HOT WATER	79
4.13.1 Total accidents	79
4.13.2 Seasonal variations (severe injuries only)	79
4.13.3 Age and sex of victim (severe injuries only)	80
4.13.4 Accident mechanisms (severe injuries only)	80
4.13.5 Nature of typical burns and implications of required medical treatment	81
4.13.6 Product design ideas emerging from the research	81
4.13.7 Key safety messages	82
4.14 GARDEN FIRE/BONFIRE	83
4.14.1 Total accidents	83
4.14.2 Seasonal variations (severe injuries only)	83
4.14.3 Age and sex of victim (severe injuries only)	84
4.14.4 Accident mechanisms (severe injuries only)	84

CONTENTS	PAGE
4.15 IRONS	87
4.15.1 Total accidents	87
4.15.2 Seasonal variations (severe injuries only)	87
4.15.3 Age and sex of victim (severe and fatal injuries only)	88
4.15.4 Accident mechanisms (severe injuries only)	88
4.15.5 Nature of typical burns and implications of required medical treatment	89
4.15.6 Product design ideas emerging from the research	89
4.15.7 Key safety messages	90
4.16 HOT FOODS/HOT SAUCES	91
4.16.1 Total accidents	91
4.16.2 Seasonal variations (severe injuries only)	91
4.16.3 Age and sex of victim (severe injuries only)	92
4.16.4 Accident mechanisms (severe injuries only)	92
4.17 GAS CYLINDERS/GAS LEAKS	94
4.17.1 Total accidents	94
4.17.2 Seasonal variations (severe injuries only)	94
4.17.3 Age and sex of victim (severe injuries only)	95
4.17.4 Accident mechanisms (severe injuries only)	95
4.18 LIGHTERS	97
4.18.1 Total accidents	97
4.18.2 Secondary ignition sources	97
4.18.3 Seasonal variations (severe injuries only)	98
4.18.4 Age and sex of victim (severe and fatal injuries only)	98
4.18.5 Accident mechanisms (severe and fatal injuries only)	99
4.19 BOWLS/BUCKETS OF HOT WATER	101
4.19.1 Total accidents	101
4.19.2 Seasonal variations (severe injuries only)	101
4.19.3 Age and sex of victim (severe injuries only)	102
4.19.4 Accident mechanisms (severe and fatal injuries only)	102
4.20 FRYING PANS	104
4.20.1 Total accidents	104
4.20.2 Seasonal variations (severe injuries only)	104
4.20.3 Age and sex of victim (severe injuries only)	105
4.20.4 Accident mechanisms (severe injuries only)	105

CONTENTS	PAGE
4.21 FIREWORKS	107
4.21.1 Total accidents	107
4.21.2 Seasonal variations (severe injuries only)	107
4.21.3 Age and sex of victim (severe injuries only)	108
4.21.4 Accident mechanisms (severe injuries only)	108
4.22 SUN	109
4.22.1 Total accidents	109
4.22.2 Seasonal variations (severe injuries only)	109
4.22.3 Age and sex of victim (severe injuries only)	110
4.22.4 Accident mechanisms (severe injuries only)	110
4.23 BABY BOTTLES	111
4.23.1 Total accidents	111
4.23.2 Seasonal variations (severe injuries only)	111
4.23.3 Age and sex of victim (severe injuries only)	112
4.23.4 Accident mechanisms (severe injuries only)	112
4.24 MATCHES	113
4.24.1 Total accidents	113
4.24.2 Secondary ignition sources	113
4.24.3 Seasonal variations (severe injuries only)	113
4.24.4 Age and sex of victim (severe and fatal injuries only)	114
4.24.5 Accident mechanisms (severe and fatal injuries only)	114
4.25 WELDING	116
4.25.1 Total accidents	116
4.25.2 Seasonal variations (severe injuries only)	116
4.25.3 Age and sex of victim (severe injuries only)	117
4.25.4 Accident mechanisms (severe injuries only)	117
4.26 BARBECUE	118
4.26.1 Total accidents	118
4.26.2 Seasonal variations (severe injuries only)	118
4.26.3 Age and sex of victim (severe only)	119
4.26.4 Accident mechanisms (severe injuries only)	119
4.27 CANDLES	120
4.27.1 Total accidents	120
4.27.2 Secondary ignition sources	120
4.27.3 Seasonal variations (severe injuries only)	121
4.27.4 Age and sex of victim (severe and fatal injuries only)	121
4.27.5 Accident mechanisms (severe and fatal injuries only)	122

CONTENTS	PAGE
4.28 HOT WATER BOTTLES	123
4.28.1 Total accidents	123
4.28.2 Seasonal variations (severe injuries only)	123
4.28.3 Age and sex of victim (severe and fatal injuries only)	124
4.28.4 Accident mechanisms (severe injuries only)	124
4.29 OTHER MINOR GROUPS	125
4.29.1 Total accidents	125
4.29.2 Age and sex of victim (severe and fatal injuries only)	126
4.30 UNKNOWN CAUSES	127
4.30.1 Total accidents	127
4.30.2 Age and sex of victim (severe and fatal injuries only)	127
5. APPENDICES	128
5.1 HOW FATAL AND NON-FATAL INJURIES WERE CALCULATED	128
5.1.1 Fatal injuries	128
5.1.2 Non-fatal injuries	128
5.2 SOCIO ECONOMIC TRENDS IN BURNS/SCALDS	130
5.2.1 Segmentation by socio-economic groupings	130
5.2.2 Reasons for a higher incidence of burns/scalds in lower socio-economic groups	131
5.3 MINOR BURNS AND SCALDS VICTIMS - GP SURGERIES	132
5.3.1 Estimate of the number of GP treated minor burns and scald injuries	132
5.4 HOW BURNS AND SCALDS ARE ADDRESSED OVERSEAS	133
5.4.1 How a campaign can best succeed in reducing burns/scalds injuries	133
5.4.2 Experience of tackling burns & scalds injuries in Norway, USA and Australia	136
5.4.3 Reports on burns and scalds extracted from the literature search	142
5.5 RESPONDENTS INTERVIEWED, REPORTS/LITERATURE CONSULTED	145
5.5.1 Details of respondents interviewed during the programme of research	145
5.5.2 Details of reports, articles and other material used as reference material	147

1. SUMMARY OVERVIEW - BURNS/SCALDS ACCIDENTS IN THE HOME

Key target group is children under 5 years old who suffer nearly 45% of all severe burns and scalds accidents. About 50% of these accidents happen in the kitchen.

1.1 OVERVIEW OF BURNS AND SCALDS ACCIDENTS IN THE HOME

1.1.1 Total number of burns/scalds

Table 1.1-1

Fatal	Severe (Hospital in-patient)	Minor (A&E visits)	Minor (GP visits)	Total
211	7,765	104,000	250,000	362,000

- Every 1½ minutes someone in the UK is burnt or scalded in an accident.
- 112,000 people visit Accident and Emergency units each year suffering from the effects of burns or scalds incurred in the home or leisure activities. At least a further 250,000 people visit GP surgeries for burns and scalds injuries.
- 7,765 people each year (21 people each day) are admitted as in-patients to A&E departments or specialist burns units suffering severe injuries from accidents involving burns and scalds. 211 people each year (4 a week) die as a result of these injuries.
- An estimated 58% of all severe injuries (ie 4,500 a year or over 12 a day) involve victims being admitted for 5 or more days as in-patients at hospitals or specialist burns units. Many of these victims suffer extensive full thickness burns and require plastic surgery, often for many years following the accident. Apart from the obvious physical pain, many victims (and also parents of children that are burnt or scalded) suffer acute psychological distress for many years.

1.1.2 Key age groups at risk - severe injuries

Table 1.1-2

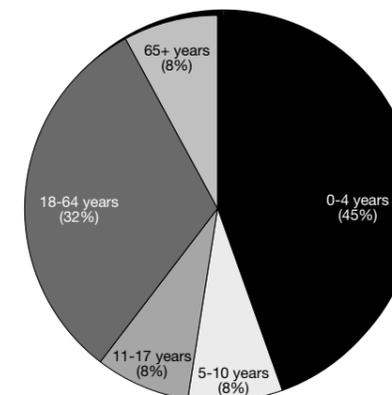
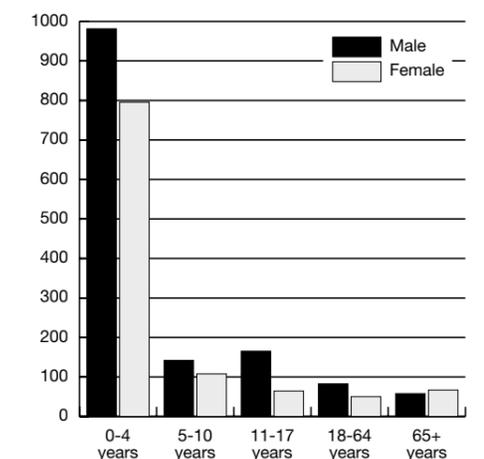


Table 1.1-2



- 4,675 children under 18 years of age (1 every 2 hours) are admitted each year as in-patients to A&E departments or specialist burns units.
- However, pre-school children (under 5 years of age) is the age group at greatest risk, accounting for 75% of all severe child injuries - 3,500 (almost 10 a day) - requiring admission to A&E departments or specialist burns units, many of whom require extensive plastic surgery, sometimes throughout their entire lives.
- The relatively small body area (especially when hot liquids are involved), the more sensitive nature of young children's skin, and their low position in relation to hot objects (ie usually at floor level) means that young children are particularly at risk of suffering severe injuries when involved in scald or burn injuries.
- Children aged under 5 are also at high risk levels of fatal accidents compared to most other age groups, apart from people aged 65 or more. These elderly people are at 4-5 times greater risk for fatal injuries than the average level for the population as a whole (3.6 fatal injuries pa per million population.)
- Medical experts interviewed, and literature, clearly indicate that a large number of these deaths in the elderly are a function of the age of the patients. Pre-existing conditions, especially respiratory and cardiovascular problems, together with the time taken before being found or being able to raise the alarm, often contribute. If they become cold, hypothermia develops, and they are often not found for some considerable time.
- It is extremely difficult to give accurate figures for the cost of burns and scalds in terms of the cost of lives lost and the cost of treating burns and scalds injuries. However, a preliminary estimate indicates that it is at least £250m per annum.

1.1.3 Key products involved in burns and scalds accidents

From this section onwards, the summary concentrates on the age group most at risk - children under 5 years of age - which will form the key target group for the recommended safety promotion campaign. The products most commonly involved in severe and fatal burns and scalds among children aged under 5 years are outlined in the table below.

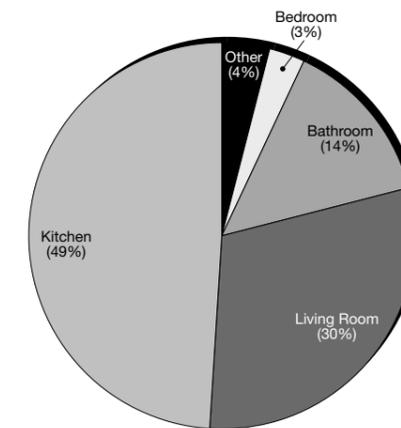
Table 1.1-3

	Children 0-4 years	Severe injuries (A&E in-patient)	Fatal
1	Cups/mugs	1094	0
2	Baths	437	2.3
3	Kettles	367	0
4	Teapots/coffee pots	151	0
5	Jugs of hot water	133	0
6	Saucepans	122	0
7	Irons	121	0
8	Cookers	112	0.3
9	Fires/heaters	318	2
10	Chip pans/deep fat fryers	59	0
	Total severe injuries/fatalities	2914	4.6

1.1.4 Key location for accidents causing burns and scalds

Table 1.1-4

Location of burns and scalds - children under 5



Where known, nearly 50% of the severe burns/scalds injuries (ie 1550 a year or 4 a day) to children under 5 years of age happen in the kitchen. The most common items involved in these accidents are cups/mugs of hot drinks, kettles, teapots/coffeepots, saucepans, cookers and chip pans/deep fryers.

1.1.5 Key accident mechanisms - severe injuries

- *Cups/mugs of hot drinks* are involved in about 1,265 severe injuries a year (requiring admission as in-patients), of which 1,100 happen to children under 5 years (ie 3 a day). Most involve a child reaching up and pulling a mug or cup of hot drink onto themselves.
- *Baths* are involved in over 570 severe injuries a year (requiring admission as in-patients), of which over 430 a year happen to children under 5 years old (ie over 1 a day). Most involve the child being left unsupervised and they fall or climb into a bath of very hot water. 2 children in this age group die each year as a result of their injuries, and many of the children under 3 suffer 20-50% body burns, as they submerge in the hot water. Extensive plastic surgery is common.
- *Kettles* are involved in over 570 severe injuries a year (requiring admission as in-patients), of which over 360 a year happen to children under 5 years old (ie 1 a day). Most involve the child grabbing the kettle and/or a trailing flex and pulling the contents of a kettle of boiling hot water onto themselves. Many suffer extensive burns to their head, shoulders, arms and upper body.
- *Teapots and coffeepots* are involved in over 210 severe injuries a year (requiring admission as in-patients), of which over 150 happen to children under 5 years old (ie almost 1 every 2 days). Most involve the child reaching up and pulling a teapot or coffee pot onto themselves.
- *Jugs of hot water* are involved in over 150 severe injuries a year (requiring admission as in-patients), of which over 130 happen to children under 5 years old (ie just over 1 every 3 days). Most involve young babies who knock or pull jugs of boiling water onto themselves, the jugs usually being used to heat the baby's milk bottles.
- *Saucepans* are involved in about 320 severe injuries a year (requiring admission as in-patients), of which over 120 happen to children under 5 years old (ie 1 every 3 days). Most involve a child reaching up and pulling a saucepan of hot liquid or food over itself.
- *Irons* are involved in over 130 severe injuries a year (requiring admission as in-patients), of which over 120 happen to children under 5 years old (ie 1 every 3 days). In most cases the child touches a hot iron or pulls the hot iron (or its flex) off the ironing board or a work surface onto themselves.
- *Cookers* are involved in about 290 severe injuries a year (requiring admission as in-patients) and 13 deaths a year (most deaths involve the elderly). 112 severe injuries a year happen to children under 5 years old - usually a child touches a hot plate/ring or

cooker grill. Adult injuries (160 severe injuries and 13 deaths) mostly involve items of clothing igniting when leaning over the cooker.

- *Fires and heaters* are involved in 420 severe injuries a year (over 1 a day) requiring admission as in-patients (affecting all age groups) and 30 deaths a year (mainly the elderly). Children under 5 tend to fall onto or touch a fire. Many adults and older children suffer burns when their clothes catch alight.
- *Chip pans and deep fat fryers* are involved in over 400 severe injuries (requiring admission as in-patients), ie over 1 a day. (300 of these severe injuries happen to adults, most of the accidents involving the chip pan/deep fat pan catching fire.) 59 of the severe injuries happen to children under 5 years of age, where the child pulls the flex of a deep fat fryer or the fryer itself off the work surface, or pulls a chip pan off the cooker. The hot oil usually causes deep dermal burns with burns to 20-40% of the total body surface area of a small child, requiring extensive treatment over many years as the child grows.

1.1.6 How typical burns vary by type of product and age of victim

Table 1.1-5

Product	Age	Typical % Burns tbsa (severe cases)	Comments
Cup	0-1½ years	15-20%	Extensive facial/upper body burns
Cup	1½-4 years	5-10%	Neck/shoulder/upper body burns
Bath	0-2½ years	20-50%	Fall in the bath/multibody burns
Bath	2½ up	10-12%	Most stand in bath, some fall in
Kettle	0-4 years	10-20%	From above - facial/upper body burns
Tea/coffee pot	0-4 years	8-15%	Upper/lower body burns
Jug hot water	0-4 years	20-40%	Body burns if young baby lies in it
Jug hot water	0-4 years	5-15%	Feet/legs when kick/knock jug
Saucepan	0-4 years	10-20%	From above facial/upper body burns
Saucepan	0-4 years	8-10%	Access elsewhere, foot/hand burns
Iron	0-4 years	1½-2½%	Localised deep dermal burns hands
Iron	0-4 years	< 1%	Finger where touched iron
Cooker	0-4 years	20% and over	Clothing caught fire or sat on cooker
Cooker	0-4 years	1-5%	Fingers, hands where touched cooker
Fire heaters	0-4 years	5-20%	Fall on fire, legs, arm, part of torso
Fire heaters	0-4 years	1-2½%	Fingers/hand if touch fire
Chip/fryer	0-4 years	20-40%	From above, multibody burns
Chip/fryer	0-4 years	1-5%	Small spillage, feet, arm

The nature of the burn or scald is dependent on the severity of the burn, ie its depth, and the area it covers. The depth is a function of i) the temperature of the hot object or liquid which caused the burn or scald, ii) the length of time of the exposure to the hot object or liquid, iii) the time taken before corrective actions are taken, and iv) the length of time that cool water is applied (preferably for 30 minutes for maximum effect).

Baths cause the most serious scald injuries, particularly in children under 2 as they often submerge under the water. They can suffer 50% total body surface area (tbsa) burns, with deep dermal/full thickness burns, often requiring skin grafts.

Kettles, saucepans, teapots, jugs of hot water and hot fat spillages are the next group in terms of severity, typically 10-20% tbsa burns. Skin grafts of parts of the burn/scald area are often required because of the large volume of liquid involved and its high temperature at or near boiling point, or higher for hot oil.

Cookers, fires and heaters cause variable injuries as there are a mixture of contact burns involving 1-5% tbsa where the child touches the appliance, and 20%+ tbsa burns where the child falls on the appliance and/or their clothing catches alight, albeit less common.

Most iron injuries appear to be less than 1% tbsa burns as a finger touches the iron, although there are also some deep burns to the hand and fingers, which can require grafting, further operations to release tight skin and may limit mobility in the hand.

1.1.7 Implications of medical treatment and psychological affects

The critical areas in terms of visual appearance are the face, neck, arms, hands and legs as these cannot be hidden by clothing. Girls are considered to find it even more difficult to handle than boys as it can mean that they feel less confident in skirts, dresses and short tops.

Victims of severe burns usually have to return to hospital on a regular basis for up to 2 years initially for assessment, changes in pressure garments and physiotherapy. As the child grows, skin graft areas tighten, and further treatment is required to release the tight skin. Puberty can bring additional problems for girls as the breasts develop, and in pregnancy the abdomen stretches (if these areas require skin grafts). The scarring of burns and scalds changes the skin colour of the area, and this is noticeable in people with darker skins, who can find the change in appearance to a white/pink colour particularly traumatic.

The burns' units endeavour to help patients with physical and psychological problems throughout their lives, although there are very few formal arrangements for psychological support in place.

1.1.8 Socio-economic trends of burns and scalds accidents

Qualitative estimates by respondents in burns units and GP surgeries suggest that people from lower socio-economic backgrounds, C2DEs, experience a higher number of burns

and scalds injuries, about 50% more injuries per million population, compared to people from higher socio-economic backgrounds, ABC1s. Similar trends for above average numbers of accidents in lower socio-economic groups is also reported in the USA and Australia.

1.1.9 Key products already available which could be better promoted

There are already products on the market which can assist in preventing burns and scalds. For example:

Kitchen

- Short and/or curly flexes on kettles (as required by safety standards).
- Cordless irons and kettles.
- Lockable lids for kettles and deep fat fryers.
- Cooker guards to prevent young children from pulling pans off the cooker.
- Automatic ignitions on gas cookers.
- Safety release buttons for hot liquid containers such as kettles, teapots/coffee pots.
- Bottle warmers for babies' bottles and food in place of jugs.

Bathroom

- Child resistant taps.
- Thermostatic controlled mixers.
- Thermometer fixed to the bath to test water temperature.
- Dual hot water systems (to deliver different temperatures to the bathroom and other outlets such as the kitchen sink).
- Anti scald devices which will shut off or reduce water flow when the temperature passes a pre-set maximum.

1.1.10 Opportunities for innovation and improvements in safety design

There seems to be opportunities for innovators and designers to further develop safety features in products for the mass consumer market. Examples might include:

- Stable ironing boards and a means to secure the irons and/or remove the flex out of reach of young children so that the iron cannot be pulled down.
- Coffee and teapots with heavy bases to increase stability and locking lids.
- Safety mugs with broad stable slip resistant bases or mugs with a special lid (these are currently used in the USA and Australia by drivers to avoid spillage).

1.1.11 Main safety messages for key target group - parents/carers of children under 5

Consumers need to i) recognise the danger, ii) take action to avoid the danger, iii) change their behaviour, to reduce or eliminate burns and scalds accidents and iv) take the correct action to minimise the severity of the injury if burnt or scalded. The key messages for accidents to the parents and carers of children under 5 years of age are:-

- *Hot water burns like fire.* A child exposed to hot water at 60°C (140°F) for 3 seconds can sustain a 3rd degree burn, an injury requiring hospitalisation and possibly a skin graft.
- *If you are burnt or scalded, ACT IMMEDIATELY* - a) remove clothing from the burn/scald area, b) run the burnt/scalded area under cold running water preferably for 30 minutes, c) cover the burn with a dry sterile dressing or cling film, d) seek medical attention if the scald or burn is serious. DO NOT apply creams/greases or ice.
- *Keep the kitchen safe.*
 - ▶ Keep children safely out of the kitchen when cooking, making hot drinks or ironing, otherwise put very small children into a playpen.
 - ▶ Ensure that flexes on kettles and deep fat fryers are not hanging down and that the flex is as short as is practical (use a short curly cord or a food bag tie to shorten long leads).
 - ▶ Place hot cooking vessels (kettles, teapots, coffee pots, saucepans deep fat fryers, etc) well away from the reach of young children, to the back of the work surface or cooker.
 - ▶ Place cups/mugs containing hot drinks such as tea and coffee in the centre of a table or at the back of the work surface.
 - ▶ Do not hold a young child in your arms or on your lap when you are having or carrying a cup/mug of hot drink or when carrying a teapot or coffeepot, etc.
 - ▶ Turn pan handles inwards and cook on back burners first rather than front burners.
 - ▶ Ensure that the cooker is well secured and cannot topple over.
 - ▶ Use a fixed cooker guard to prevent young children from pulling pans off the cooker.
 - ▶ Use an electric bottle warmer rather than jugs of hot water to heat feeding bottles.
 - ▶ Don't place the baby near jugs of hot water that are heating feeding bottles.
 - ▶ Iron when the children are being looked after, or secured within a playpen, or when they are asleep.
 - ▶ Remove a hot iron out of reach of children when leaving it to cool down.

- *Keep the bathroom safe.*

- ▶ Fit safety devices such as childproof hot water taps, thermostatic mixing valves (TMVs) or thermostatic mixing shower valves.
- ▶ Always check the temperature of the bath water before placing a child in it.
- ▶ Never leave a child alone in the bathroom or the bath, even for a short time.

1.1.12 Safety awareness campaign

The initial findings of the research provided the Department with enough information to launch a safety campaign on burns and scalds in February 1998. The campaign particularly focused on vulnerable groups such as pre-school children and drew attention to the kitchen as a key potential hazard area.

The campaign entailed a three pronged initiative which involved:

- Distributing two million free safety advice leaflets which provided top ten safety tips and included first aid advice. The leaflets were made available in high street stores and GP surgeries.
- Televising a new series of safety adverts dramatising the risks faced by toddlers at home and what parents can do to prevent accidents; and
- Magazine articles showing where hazards can occur in the home and how to deal with them.

The campaign urged all parents and carers of young children to follow these key safety tips:

- Keep handles of pots and pans turned away from the edges of cookers and work surfaces.
- Teach toddlers not to play in the kitchen or bathroom.
- Don't leave kettle and other flexes for toddlers to reach.
- Always check the temperature of water before bathing children. When filling a bath, run the cold tap first.
- Try and keep toddlers occupied and out of harm's way when you are cooking.
- Always keep hot drinks out of reach of toddlers.

The campaign was supported by the Child Accident Prevention Trust, St John Ambulance and many parts of industry.

2. RESEARCH OBJECTIVES, METHOD AND SAMPLE

2.1 BACKGROUND, OBJECTIVES, RESEARCH METHOD AND SAMPLE

The Consumer Safety Unit of the Department of Trade and Industry commissioned an independent market research study to provide a clear understanding of the main causes of accidents leading to burns and scalds, highlighting key target groups at risk.

2.1.1 Background

The DTI Consumer Safety Unit (CSU) is responsible for ensuring that consumer products purchased by consumers are safe to use and do not cause any undue accidents.

Every year over 100,000 people need to visit hospitals because they are injured by burns and scalds. Incidents are caused by a wide variety of causes, and can vary from minor to fatal.

However, although some types of accident have been extensively researched by the CSU, it lacks a detailed understanding of many of the different types of accidents which result in burns and scalds to consumers, and in particular how these accidents happen and hence how they could be reduced, in frequency and/or severity.

2.1.2 Main objectives of the research

The main objective of the research is to provide the CSU with a better understanding of the nature and causes of accidents involving burns and scalds injuries and the trends which are influencing the accident rate. The report aims:

1. To determine the main products which are involved (directly or indirectly) in burns and scalds accidents, whether these involve new or established products, and highlighting any trends where accident rates are increasing (or decreasing) significantly.
2. To provide an analysis of the above information by age, sex, socio-economic grouping and severity of accidents, and to identify the key target audiences for future safety strategies.
3. To establish the different types of accidents involving burns and scalds, the main mechanisms of how each type of accident occurs, and to highlight common behavioural problems which lead to accidents and any problems inherent in products which may contribute to accidents.
4. To provide policy options for the basis of an accident prevention strategy, including messages for promoting safety awareness and the key target audiences at whom these messages should be directed.

2.1.3 Research method

A key element of this project is the careful analysis of the statistical data (based on the detailed analysis of relevant accident data taken from the Home Accident Surveillance System (HASS), the Leisure Accident Surveillance System (LASS) and the Home Accident Death Database (HADD) over a five year period - 1992-1996), reports gathered by the research team, and discussions with experts that are active in the field of burns and scalds injuries in the UK, USA, Australia and Norway.

In-depth face-to-face interviews were carried out for a focused analysis of serious burns and scalds cases, the treatment and outcome of accidents with Regional Burns Units. Face-to-face interviews with GP surgeries were needed to obtain an estimate of the additional number of minor injuries which were seen in the local practice and did not require hospital treatment, and also the nature and treatment of these injuries. These interviews also addressed the key safety messages and the methods of best reaching the target audiences. They lasted 1-3 hours.

Telephone interviews were an essential method of gathering and checking information. Some of the telephone contacts consisted of short discussions (5-15 minutes) to identify, for example, if cases studies were available, usually requiring personal letters and faxes to be sent formally requesting information. Longer interviews (30-60 minutes) were carried out, particularly with product manufacturers/suppliers to discuss aspects of product design, and follow-up calls were also conducted, covering a wide range of issues.

An Internet search on burns and scalds was also undertaken, which yielded a high level of information, particularly on the nature of burn and scald safety promotional campaigns in the USA, Canada and Australia.

2.1.4 Sample achieved

Table 2.1-1 shows the number of respondents who were contacted. (See appendices for details of respondents.)

Table 2.1-1

	In-depth face-to-face interviews	Telephone interviews/telephone contacts	Total contacts/interviews
Burns Units	8	9	17
GPs	9	2	11
Manufacturers	0	12	12
Other UK organisations	0	15	15
Overseas organisations	22	7	29
Total	39	45	84

2.1.5 A note on the report findings

The first section of the report gives a broad overview of the scale of burns and scalds injuries, covering visits to A&E departments as well as GP surgeries. Thereafter, the report focuses on fatal injuries and ‘severe’ injuries (ie injuries where the victim is admitted to hospital and/or transferred to a burns unit or specialist hospital), since these cases are serious in nature and cause high levels of pain and trauma both to the victims and their families.

Furthermore, the research shows that one particular age group is at very high risk for severe (non-fatal) injuries compared to other age groups, ie children under 5 years old. Therefore, an additional focus of the study was to highlight the 10 key products involved in accidents to children in this age group in order to throw additional light on the nature of the accidents and the injuries incurred, as well as seeking product solutions to eliminate or reduce the severity of such injuries and the key safety messages that would have greatest impact on parents and carers of the young children at risk.

2.1.6 Definitions

Burns - are injuries caused by a hot flame/fire, contact with a hot object or hot liquid other than water, such as from a cooker, fire heater, chip pan fire or hot oil spillage. It excludes chemical burns and injuries and those caused by electric shocks.

Scalds - are injuries caused by contact with hot water, such as from a hot drink, bath, kettle or saucepan.

A & E - is the Accident and Emergency Department of hospitals.

Age groups - The age group 0-4 years is used to mean from birth up to but not including the 5th birthday. 5-10 years includes children from their fifth birthday up to but not including the 11th birthday. 11-17 years is all older children who have not yet reached their 18th birthday and adulthood. The age group 18-64 years includes all adults up to their 65th birthday. 65+ years is used to mean adults aged 65 years and older.

Minor injuries - Injuries which are sufficient to require a visit to the Accident and Emergency Department of a hospital but do not require admission as an in-patient are described as minor throughout the report.

Severe injuries - Injuries which require admission to hospital, transfer to specialist hospital or burn unit are classified as severe injuries. An estimate is given for each type of severe burn and scald injury by ‘Category A’ injuries, involving 1-4 in-patient days, and ‘Category B’ injuries, involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit.

Tbsa - is used throughout the report to signify ‘total body surface area’ and refers to the percentage of the body suffering from burn or scald injuries.

3. AN OVERVIEW OF NON-FATAL/FATAL ACCIDENTS

3.1 TOTAL MINOR, SEVERE AND FATAL INJURIES BY MAIN PRODUCT

There are an estimated average of 360,000 injuries caused per annum caused by burns and scalds, of which 112,000 require A & E visits.

The most common causes are cups/mugs of hot drink and kettles, followed by fires/heaters, cookers, saucepans, irons and chip pans.

3.1.1 Total number of minor, severe and fatal injuries by main product

Table 3.1-1

	Total injuries (fatal + non fatal)	Minor injuries (A & E visits)	Severe injuries (A & E visits)	Fatal injuries
Cups/mugs	15807	14542	1265	0
Kettles	10657	10084	573	0
Fires/heaters	8036	7586	420	30
Cookers	6233	5932	288	13
Saucepans	5695	5375	318	2
Irons	5530	5393	137	0
Chip pans	5102	4692	408	2
Sun	4711.3	4656	55	0.3
Hot food/meals/sauces	4336	4206	130	0
Cars/motorcycles	3988	3739	248	1
Frying pan	3889.3	3793	96	0.3
Radiators/hot pipes	2861	2696	163	2
Welding	2706	2660	46	0
Baths	2698	2103	574	21
Baking tin	2627	2606	21	0
Tea/coffee pots	2302	2085	217	0
Garden fires/bonfires	1499.7	1356	143	0.7
Fireworks	1436	1348	88	0
Sunbed/lamp	1295	1258	37	0
Hot water bottles	1210	1168	42	0
Cigarettes/smoking	1159	971	165	23
Petrol/paraffin	1061.3	809	246	6.3
Microwave	961	953	8	0
Jugs of hot water	873	719	154	0
Lighters	868	755	110	3
Curling tongs	762	737	25	0
Bowls of hot water	755.3	647	108	0.3
Candles	726.6	683	42	1.6
Electric lamps	615	611	4	0
Barbeque	583.3	539	44	0.3
Gas cylinders/leaks	521	395	125	1.0

Table 3.1-1

	Total injuries (fatal + non fatal)	Minor injuries (A & E visits)	Severe injuries (A & E visits)	Fatal injuries
Flask/thermos	506	485	21	0
Baby bottles	467	413	54	0
Matches	464.3	413	48	3.3
Shower	340	324	16	0
Taps	331	306	25	0
Glue	252	252	0	0
Wall paper stripper	250	234	16	0
Plastic	238	234	4	0
Hot dishes/plates	234	234	0	0
Blow lamps	198	198	0	0
Lighter fuel	194.3	180	14	0.3
Toaster	188	180	8	0
Meths/other accelerants	163	162	0	1.0
Sauna	108	108	0	0
Electric blanket	90.7	72	16	2.7
Aerosol	84	72	12	0
Other infrequent articles	1439.3	1222	179	14.4
Unknown/no details	4947.6	3838	1052	81.5
	112000	104024	7765	211

Source - HASS/LASS/HADD

Notes on the above table

- The estimates for non-fatal injuries are derived from the HASS/LASS database for the 5-year period 1992-1996, and fatal injuries are derived from the HADD database for the 3-year period 1993-1995.
- The following articles cause large numbers of minor injuries (ie > 500 per annum) but relatively few severe/fatal injuries.
 - Sun 4656 minor injuries 55 severe/fatal injuries
 - Welding 2660 minor injuries 46 severe/fatal injuries
 - Baking tins 2606 minor injuries 21 severe/fatal injuries
 - Microwaves 953 minor injuries 8 severe/fatal injuries
 - Curling tongs 737 minor injuries 25 severe/fatal injuries
 - Electric lamps 615 minor injuries 4 severe/fatal injuries

3. Unknown causes account for 3.5% of all minor injuries, and 13.4% of severe injuries.

The main reason for the higher level of unknown causes for severe injuries is that many interviews were terminated, due to the extreme distress of the parents being interviewed, especially where young children had been very badly burnt or scalded.

4. Unknown causes also account for 38.6% of all fatal injuries, mainly because the victims were alone at the time, and died in a major house fire, the cause of which was not identified in the HADD database.

3.1.2 Number of minor injuries requiring visits to GP surgeries

Qualitative estimates from GP surgeries and medical specialists in burns units indicate that there are a further 250,000 minor burns/scalds injuries which are seen at GP surgeries, excluding referrals from hospital. Most reflect the causes of A & E visits, ie mainly cups and mugs upset, contact burns with irons, cookers and heaters. Bath injuries were rarely mentioned as these tend to be severe and go directly to hospital.

3.2 MATRIX OF THE SEVERITY OF BURNS AND SCALDS INJURIES BY AGE

The age group at highest risk for injuries involving burns and scalds are children under 5 for most product categories.

3.2.1 Matrix of severe and fatal burns and scalds injuries by age group

There are an estimated 112,000 injuries per annum involving burns and scalds, of which about 104,000 cause minor injuries, 7,765 severe injuries involving victims being admitted as in-patients, and 211 fatal accidents. Severe and fatal injuries are analysed in the matrix below to show how they vary by the dominant article involved in the accident mechanism.

Table 3.2-1

Population (Injuries pa)	Total 58.39m		0-4 years 3.88m		5-10 years 4.57m		11-17 years 5.16m		18-64 years 35.59m		65+ years 9.19m	
	Severe	Fatal	Severe	Fatal	Severe	Fatal	Severe	Fatal	Severe	Fatal	Severe	Fatal
Cups/mugs	1265	0	1094	0	58	0	33	0	53	0	27	0
Baths	574	21	437	2.3	46	0	25	0	25	3.5	41	15.2
Kettles	573	0	367	0	87	0	5	0	92	0	21	0
Fires/heaters (all)	420	30	90	0.3	37	0.3	36	0	150	2.3	106	27
Chip pan/deep fryer	408	2	59	0	33	0	20	0	244	1.7	53	0.3
Saucepans	318	2	122	0	41	0	5	0	114	1.7	36	0.3
Cookers (all)	288	13	112	0.3	4	0	8	0	115	2.3	48	10.7
Cars/motorcycles	248	1	4	0	0	0	64	0	180	1	0	0
Petrol	246	5.3	0	0.3	17	0.3	41	0	188	3.3	0	1.3
Teapot/coffee pot	217	0	151	0	13	0	7	0	39	0	7	0
Cigarettes/smoking	165	23	65	0.3	12	0.3	8	0	67	7.3	12	15

Table 3.2-1

Population (Injuries pa)	Total 58.39m		0-4 years 3.88m		5-10 years 4.57m		11-17 years 5.16m		18-64 years 35.59m		65+ years 9.19m	
	Severe	Fatal	Severe	Fatal	Severe	Fatal	Severe	Fatal	Severe	Fatal	Severe	Fatal
Radiator/hot pipes	163	2	90	0	4	0	0	0	40	0.3	29	2
Jugs of hot water	154	0	133	0	0	0	0	0	14	0	7	0
Garden fire/bonfire	143	0.7	4	0	17	0	71	0	46	0.3	4	0.3
Irons	137	0	121	0	4	0	0	0	8	0	4	0
Hot food/sauces	130	0	73	0	17	0	8	0	27	0	4	0
Gas cylinder/leak	125	0	0	0	0	0	40	0	59	0	26	0
Lighters	110	3	17	1.7	27	0	17	0	44	0.7	4	0.7
Bowl/bucket water	108	0	65	0	22	0	4	0	13	0	4	0
Frying pans	96	0.3	0	0	13	0	6	0	76	0	0	0.3
Fireworks	88	0	0	0	6	0	54	0	28	0	0	0
Sun	55	0.3	15	0.3	0	0	6	0	28	0	6	0
Baby bottles	54	0	54	0	0	0	0	0	0	0	0	0
Matches	48	3.3	17	1.0	11	0	0	0	12	0	8	2.3
Welding	46	0	0	0	0	0	0	0	46	0	0	0
BBQ	44	0.3	12	0	0	0	8	0	23	0.3	0	0
Candles	42	1.6	4	0	0	0.3	8	0	29	0.3	0	1.0
Hot water bottles	42	0	4	0	0	0	4	0	29	0	4	0
Other minor groups	406	20.7	94	0.3	53	0	12	0.3	223	6.3	23	13.7
Unknown cause	1044	81.5	264	4.2	87	2.8	103	0	472	31.8	119	42.7
Total	7765	211	3476	11	609	4	593	0.3	2484	63.1	593	132.8

The age groups that are shaded in the table are those where the level of severe and/or fatal each year is sufficiently high for that age group to be selected as a high risk group. In broad terms, the high risk groups are as follows.

Table 3.2-2

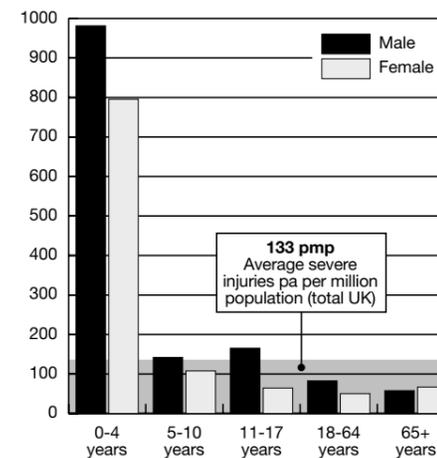
	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	64+ yrs
Severe injuries per year	> 5	> 10	> 12	> 30	>50
Fatal injuries per year	> 1	> 5	> 12	> 30	> 50

3.3 SEVERE/FATAL OF BURNS AND SCALDS BY AGE AND TIME OF YEAR

The age group at highest risk for accidents involving burns and scalds is children aged 0-4 years for severe injuries and adults aged 65 years and above for fatal injuries.

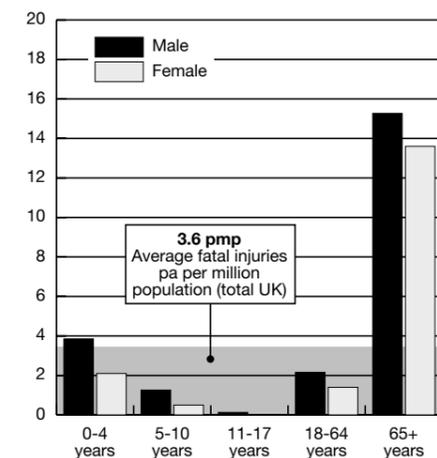
3.3.1 Severe and fatal injuries per million population by age and sex

Table 3.3-1



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	981.3	142.1	165.2	82.6	57.9
Female	795.5	107.9	64.5	50.2	67

Table 3.3-2



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	3.85	1.26	0.13	2.16	15.27
Female	2.1	0.5	0	1.4	13.6

The above charts show the number of severe and fatal accidents normalised to show how many accidents occur per million population (pmp) within each age/sex group. The average risk level for the population as a whole is 133 severe accidents pmp and 3.6 fatal accidents pmp.

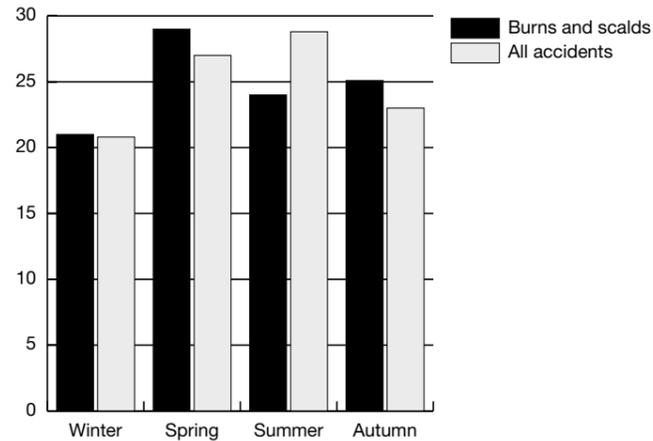
Children under five are at high risk levels for severe accidents, 6-7 times greater than the average level for the population as a whole, with boys at slightly higher risk than girls.

Elderly people aged 65 and over are at greatest risk for fatal injuries, 4-5 times greater than the average level for the population as a whole. However, medical experts interviewed and literature on burns/scalds accidents involving elderly people clearly indicates that a large number of these deaths in the elderly are a function of the age of the patients. Pre-existing conditions often contribute, especially respiratory and cardiovascular problems, together with the time taken before found or being able to raise the alarm. If they become cold, hypothermia develops, and they are often not found for some considerable time.

Children under five are also at higher risk of fatal injuries compared to most other age groups, with boys at higher risk than girls.

3.3.2 How accidents levels vary throughout the year

Table 3.3-3



The chart shows how severe accidents vary by time of year. Severe injuries caused by burns and scalds are fairly evenly spread throughout the year, with 20-25% of the accidents happening in each season apart from the spring, which accounts for about 29% of the burns and scalds accidents.

However, these accidents are caused by many different consumer products, and the seasonal distribution varies for each one.

4. BURNS AND SCALDS - ANALYSIS OF THE MAIN CAUSES

4.1 CUPS AND MUGS

Key target group is children under 5 years old who tend to reach up and pull down a hot cup of tea or coffee, spilling it over themselves.

4.1.1 Total accidents

Table 4.1-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	14542	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	1265	1094	58	33	53	27
Fatal injuries	0	0	0	0	0	0

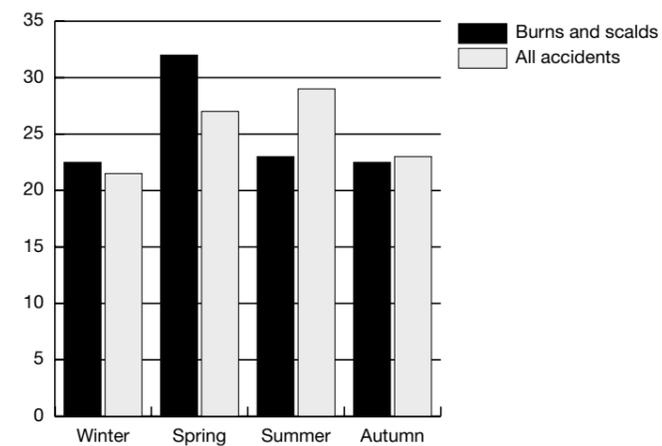
This section includes cups and mugs of tea, coffee, milk, chocolate, hot drinks and hot water.

An estimated 50% (633) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 50% (632) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.1.2 Seasonal variations (severe injuries only)

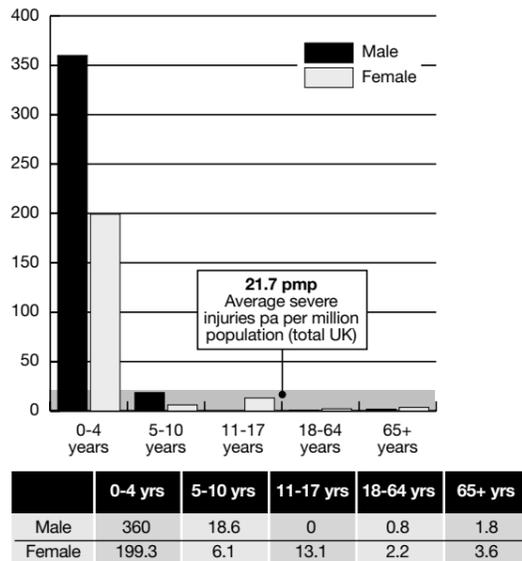
Table 4.1-2



The peak time of year for severe burns and scalds from cups and mugs is during the spring, although the data provided no apparent reason for the trend.

4.1.3 Age and sex of victim (severe injuries only)

Table 4.1-3



Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 1094 severe injuries pa). 50% of the severe injuries to children 0-4 years (ie 547 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Boys aged 0-4 years are involved in nearly twice as many accidents per million population than girls aged 0-4 years.

Target risk group 2. A secondary group at risk is children aged 5-10 years (involving 58 severe injuries pa). There is insufficient data to differentiate between cases Category A and B.

Target risk group 3. A third risk group is children aged 11-17 years (involving 33 severe injuries pa). There is insufficient data to differentiate between cases Category A and B.

4.1.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (1094 severe injuries pa)

Table 4.1-4

Accident mechanisms	% of cases	Main time when occurs
Reached/pulled cup or mug of hot drink	59%	throughout the day with peaks at 7am, noon, 4pm and 8pm
Poured/spilt drink on himself/herself	19%	early evening
Adult knocked and/or spilt hot drink over child	8%	insufficient data
Other infrequent mechanisms	2%	insufficient data
No details of mechanism	12%	insufficient data

There was little information about the location of the accident, probably due to the distress of parents and child on arrival at the accident and emergency unit. Where specified, the living room was the main location, followed by the kitchen. Examples of typical accidents are given below.

‘3rd September 1993. A 1 year old boy pulled a very hot cup of tea over which spilt over his chest and upper arms at 11.30 in the morning. Patient was transferred to the burns unit.’

‘17th May 1993. An 11 month old baby boy in the living room in the early evening pulled a cup of hot coffee onto his chest. He pulled it off a shelf. He was an in-patient for 7 days.’

‘Six years ago, 4 year old boy, now aged 10. His mother said - “I found it quite traumatic at the time. I was shocked to see in hospital so many children who had had similar accidents. He was 10 months old and pulled a cup of coffee down onto himself. My husband had just made me a cup of coffee and put it on the highchair (empty) for me as I was wrapping Christmas presents. He crawled and pulled the leg of the highchair. The coffee fell on his arm, luckily not on his face. I know since the accident that I should have put cold water on it. He had skin grafts at the time and another operation when he was 6, but it is now worse. The doctors told us that sometimes that can happen as the skin swells up. It is up to him when he is older if he wants another operation. He was in hospital for 2 weeks. He was dehydrated and quite poorly. He was 2 years in a pressure jacket. He had just started school so it has not been easy. Now he asks, “will it go altogether?”’

‘July 1997. A 2 year old boy pulled a mug of hot chocolate over himself. He suffered 13½% burns to his chest, abdomen and arm. He was in the burns unit for 2 days, and then moved to the paediatric ward.’

Target group 2 - Children aged 5-10 years (58 severe injuries pa)

Table 4.1-5

Accident mechanisms	% of cases	Main time when occurs
Knocked hot drink on self	50%	insufficient data
Other infrequent mechanisms	50%	insufficient data

‘2nd June 1995. A 10 year old girl knocked a freshly made boiling Lemsip over herself in the early evening and was referred to another hospital with burns to the lower arm.’

Target group 3 - Children aged 11-17 years (33 severe injuries pa)

Table 4.1-6

Accident mechanisms	% of cases	Main time when occurs
Spilt hot drink on self	75%	mid evening (8pm)
Other infrequent mechanisms	25%	insufficient data

‘21st September 1992. An 11 year old girl accidentally spilt a cup of Lemsip on herself at 8 o’clock in the evening. She was an in-patient for 5 days.’

4.1.5 Nature of typical burns and implications of required medical treatment

Cup and mug scalds are often caused by the cup being pulled or knocked down from a level higher than the child. Injuries can vary from a splash burn on the chin and neck to extensive scalds on the face, shoulders, chest and arms, often with 10-15% mixed level burns, depending on the temperature of the liquid and how quickly the clothes are pulled off the patient. (Adult cup and mug scald injuries tend to be on the genital area as the cup is rested or held in the lap of the adult.)

The table below shows how the typical average percentage burns on the total body surface area caused by a cup/mug scald varies by age of the child under 2 years.

Table 4.1-7

Accident mechanisms	% of cases	Main time when occurs
0-18 months	15-20%	face, neck, shoulder, chest and arms
18 months - 4 years	5-10%	face, neck, shoulder, chest and arms

Source: medical respondents. literature.

Minor - these include patients seen by the practice nurse of a GP practice or by the A & E unit. The burn is assessed, covered with a clean Flamazin dressing, and the patient returns several times to the nurse or outpatients clinic to ensure that the wound is not infected and to change the dressings.

Severe/very severe - On admission as an in-patient, the child is monitored for 48 hours to review the wound. If the burn is superficial, the patient is often released and treated as an outpatient. If the burns are healing well, the patient is usually in hospital for up to 5 days.

If the burn is partial thickness or deeper, the injury may require a skin graft, and 5-10% deep dermal burns in relatively small areas often require grafting. If one skin graft operation is required, 11 in-patient days is typical, followed by visits to the burns unit for treatment every other day initially then twice a week for up to a month. If the burns are fully healed at that stage, the patient is then fitted with pressure garments which are worn for 12-18 months or until the burn area has fully settled down. Every 3-4 months, new pressure garments are made, taking into account the growth of the child. The patient is seen by the occupational therapist for 3 months, then visits the treatment unit every 3-6 months to monitor progress. The child may need further operations to release the skin which has grown tight, following a skin graft, until adulthood.

In addition to the physical damage caused by burns, victims may also suffer emotional and psychological problems which can last a lifetime.

4.1.6 Product design ideas emerging from the research

1. Lid similar to that used on takeaway hot drinks with small opening for drinking without removing the lid. This is one potentially effective method of keeping hot liquid in a cup if it is upset, providing it is a firm fit.
2. Experts believe that broad based slip resistant mugs are less likely to tip over than a cup which has a small base.
3. Heat indicators are available in terms of adapting the technology used in heat reactive mugs as a positive indicator of the heat of the liquid in the mug, changing as the liquid cools. This would be effective in reminding parents to be careful.
4. Warning sticker on cup when purchased to advise consumer of the danger of scalds. One manufacturer said that they put a warning on the packaging for heat reactive mugs that these products are not suitable for children under 5 years of age. This is because they were considered particularly attractive to children and need to contain hot liquid to activate the heat reaction.

4.1.7 Key safety messages

Target audience 1 - children aged 0-5 years

Primary message:-

- Place cups and mugs containing hot drinks such as tea and coffee in the centre of a table or at the back of the work surface.

Remember young children can reach places that are considered out of harm's way.

- Do not hold a young child in your arms or on your lap when you are having or carrying a hot drink.

The child may turn suddenly, knocking the cup out of your hands and be scalded. You cannot hold both safely.

Secondary messages:-

- Do not use a tablecloth when the children are young.

Small children can easily pull a tablecloth, upsetting anything, such as hot drinks, on it.

- Put the child in a playpen, before you have a cup of coffee.

4.2 BATHS

*All children, particularly those under 5 years old, are target groups.
The elderly are also a target group.*

4.2.1 Total accidents

Table 4.2-1

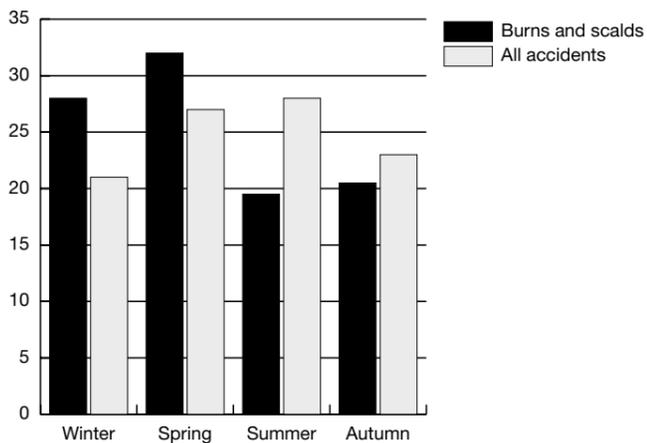
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	2103	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	574	437	46	25	25	41
Fatal injuries 21	2.3	0	0	3.5	15.2	

An estimated 59% (339) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 41% (235) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.2.2 Seasonal variations (severe injuries only)

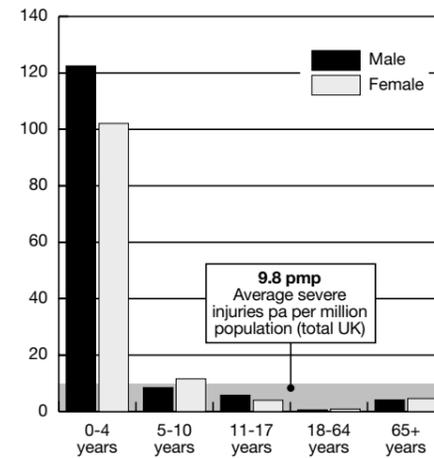
Table 4.2-2



The peak time of year for severe burns and scalds from baths is during the spring, although the data provided no apparent reason for this trend.

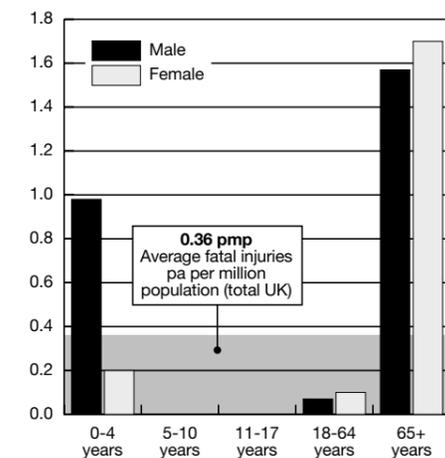
4.2.3 Age and sex of victim (severe and fatal injuries only)

Table 4.2-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	122.5	8.5	5.8	0.6	4.1
Female	102.1	11.6	4	0.9	4.6

Table 4.2-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.98	0	0	0.07	1.57
Female	0.2	0	0	0.1	1.7

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 437 severe injuries and 2.3 deaths per year). 67% of the severe injuries to children aged 0-4 years (ie 249 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Boys aged 0-4 are involved in 1.2 times more accidents per million population than girls aged 0-4 years.

Target risk group 2. A secondary group at risk is children aged 5-10 years (involving 46 severe injuries per year). 33% of the severe injuries to children aged 5-10 years (ie 15 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 3. A third group at risk is children aged 11-17 years (involving 25 severe injuries per year). There are insufficient cases to differentiate between Category A and B injuries.

Target risk group 4. A fourth group at risk are the elderly, aged 65 years and over (involving 41 severe injuries and 15.2 deaths per year). 75% of the severe injuries among the elderly (ie 31 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.2.4 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children 0-4 years (437 severe injuries pa + 2.3 fatal injuries pa)

Table 4.2-5

Accident mechanisms	% of cases	Main time when occurs
Fell into water	37%	morning and early evening
Climbed into hot bath (usually unsupervised)	29%	throughout the day
Put into hot bath by sibling or parent	7%	insufficient data
Baby/young child turned on hot tap	7%	insufficient data
Sibling turned on hot tap	7%	insufficient data
Other infrequent/no details of mechanisms	13%	insufficient data

'5th December 1995. A 14 month old baby boy was placed on a ledge close to a bath which had hot water running into it. The mother left the room to get undressed, heard a splash and on returning found her baby standing in the bath. He died the next day from burns.'

'27th December 1992. A 2 year old girl, while father ran bath for himself at 11.45 in the morning and went into bedroom to fetch clothes - she was playing in hallway with dogs - child ran into bathroom - playing - fell into bath. Burns to the whole body and outcome unknown.'

'14th February 1993. A 3 year old girl was put into bath of boiling water by brother in the morning. She had scalds to both feet and buttock and was an in-patient for 18 days.'

'Early 1998. A 2 year old child climbed into the bath when the water was running and has mixed thickness whole body burns. He will be in hospital for at least 10 days and will have to go back into theatre if the skin grafting is not fully healed. The child will have to wear pressure garments for 18 months, maybe more.'

Target group 2 - Children 5-10 years (46 severe injuries pa)

Table 4.2-6

Accident mechanisms	% of cases	Main time when occurs
Fell into water	56%	evening
Other infrequent/no details of mechanisms	44%	insufficient data

'22nd January 1992. An 8 year old girl standing on side of bath as water ran for bath, fell & scalded her legs and abdomen. She was an in-patient for 5 days.'

'Around 1985/6. A girl aged 6, who is now 14-15 years old, suffered severe scalds in the bath. Her Mum was running the bath and told her that she was just going to fetch some towels. The next thing she knew the child had toppled in. All the family are still traumatised by the accident. She has bad body scarring, although an excellent psyche and personality.'

Her parents have found it soul-destroying. She was in hospital for a long time - a couple of months - and needed a lot of operations. She had to return to hospital for several years. Every two years the hospital has a management day about paediatric burns, and one of the last speakers at the last management day were her parents.'

Target group 3 - Children 11-17 years (25 severe injuries pa)

Table 4.2-7

Accident mechanisms	% of cases	Main time when occurs
Fell into water	40%	insufficient data
Sibling turned on tap	40%	insufficient data
Other infrequent/no details of mechanisms	20%	insufficient data

'20th September 1992. An 11 year old boy fell into bath at 4 o'clock in the afternoon and had scalds over body. He was transferred to specialist hospital.'

Target group 4 - Adults aged 65 years and over (41 severe injuries and 15.2 deaths pa)

Table 4.2-8

Accident mechanisms	% of cases	Main time when occurs
Turned on hot water tap	26%	insufficient data
Fell/collapsed in bath	11%	insufficient data
Couldn't turn off hot tap	11%	insufficient data
No details of mechanisms	52%	insufficient data

'30th November 1994. A 75 year old woman was in the bath at about half past nine in the evening. She turned on the hot water tap by mistake and was unable to turn it off - burns to body. She was an in-patient for 33 days.'

'Late 1997. An elderly lady in her 70s filled the bath and tested the water by putting her leg in. The water was too hot, and she suffered toe to knee mixed thickness burns, 9-10%. She was in hospital for a month. She comes back as an outpatient for dressing changes and will need pressure garments for her leg. She will need care in the community for the rest of her life.'

'July 1997. A lady aged 97 burnt her back on the hot water from the tap in her bath. She suffered 7% burns and died 21 days later in hospital.'

4.2.5 Nature of typical burns and implications of required medical treatment

The sensitive skin of a young child burns more easily than that of an adult. A young child falling into a very hot bath is likely to be extensively scalded - often with body burns of 20-50% burns, and occasionally 70%. The child is often quiet initially on arrival at hospital

due to the severity of the burns, which destroy the nerve endings in full thickness burns, and the parents are usually very distressed.

The table below shows how the typical average percentage burns total body surface area caused by a bath scald varies by age of the child under 5 years.

Table 4.2-9

Age of child	% tbsa	Body part
under 2-2½ years	20-50%	whole body as falling in and cannot get out
2½-3 years upwards	10-25%	feet and ankles if standing, body if prone

Source: medical respondents, literature.

The following tables show the temperature at which discomfort is noticed, and the time taken for burns to develop.

Table 4.2-10

Average bath temperature for individuals	40.5°C
Average shower temperature for individuals	40.0°C
Discomfort noticed at	43.0°C

Source: Lawrence & Bull

Table 4.2-11

Exposure		
10 seconds	at 50°C	redness
10 seconds	at 60°C	very superficial burn
10 seconds	at 70°C	full thickness burn
1 second	at > 70°C	partial thickness burn
1 minute	at 55-65°C	partial thickness burn
5 minutes	at 50°C	full thickness burn

Sources: J P Bull, Public Health Association of Australia

The child is usually heavily sedated and is dehydrated. After 48 hours the medical staff are able to decide the severity of the burns and treatment required. Full body pressure jackets are often required to be worn for several years. Further operations are needed as the child gets older, and often the body image can distress the child as they grow older.

4.2.6 Product design ideas emerging from the research

1. *Thermostatic mixing valves (TMVs) or thermostatic mixing shower valves* is an effective method of reducing the likelihood of bath scald accidents among all age groups. This allows the storage temperature to remain the same, while mixing hot and cold water to

the desired temperature at the water outlet. TMVs can also be installed in specific parts of the house, eg the bathroom, rather than throughout. This method is mainly effective in new houses, due to the cost and difficulties of installation with existing plumbing. Showers installed within the past 6-7 years have either dedicated pipework fitted or a thermostat valve so that the water does not go hotter when someone uses water elsewhere in the house, for example when flushing the lavatory. Contact a member of a professional body, such as The Institute of Plumbing for further advice.

2. *Liquid crystal display (LCD) thermometer*, fixed to the bath, would float in the water and indicate the temperature of the water. Colour gradation, such as orange to red as it becomes too hot, could be used as a visual guide.
3. *Child proof taps*, fitted to the bath, which can inhibit small children from turning on the hot water tap.

4.2.7 Key safety messages

Target audience 1 - children aged 0-4 and 5-10 years

Primary message:-

- Ensure that the temperature of the hot water delivered to the bath is below 50°C.

This gives a 5 minute margin before full thickness burns can develop in a child. The temperature of hot water in the home can be checked by means of an LCD thermometer, which changes colour and is similar to strip thermometers used to check human temperature.

- Never leave a child alone in the bathroom or the bath, even for a short time.

Take the child with you. Older children can turn the hot water on by themselves, scalding themselves or other child. If the telephone rings, take the child also whilst answering the phone or let it ring. Bring clothing and towels into the bathroom beforehand.

- Fit childproof hot water taps.
- Always check the temperature of the bath before placing the child in it.

Secondary messages:-

- Run the bath with cold water first then the hot.
- Place non slip mats, strips or other non slip designs in the bath to prevent the child slipping.

Target audience 2 - the elderly aged 65 years and over

Primary message:-

- Ensure that the temperature of the hot water delivered to the bath is below 50°C by fitting a thermostatic mixing valve or thermostatic mixing shower valve.

This gives a 5 minute margin before full thickness burns can develop. The temperature of hot water in the home can be checked by means of an LCD thermometer, which changes colour and are similar to strip thermometers used to check human temperature.

Secondary messages:-

- Mark cold and hot taps clearly.
- Run the bath with cold water first then the hot.
- If possible, bathe when help is available.
- Fit taps which are designed to be easier for the elderly or infirm to operate.
- Install grab rails to support the elderly climbing in and out of the bath to prevent falls.
- Place non slip mats, strips or other non slip designs in the bath to prevent the adult slipping.

4.3 KETTLES

Key target group is children under 5 years old. Children aged 5-10 years is a secondary target group. A third target group is adults aged 18-64 years.

4.3.1 Total accidents

Table 4.3-1

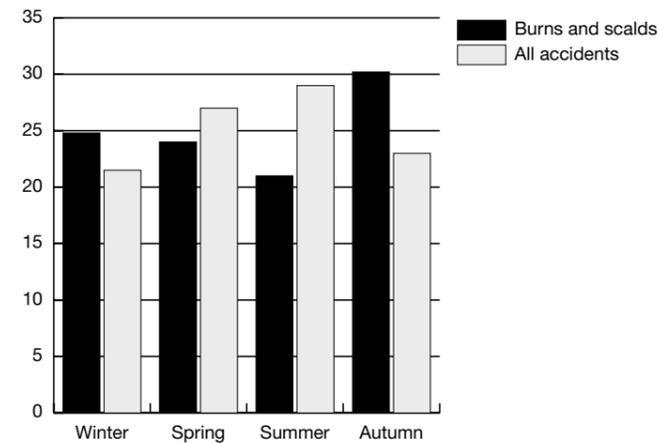
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	10,084	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	573	367	87	5	92	21
Fatal injuries	0	0	0	0	0	0

An estimated 58% (333) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 42% (240) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.3.2 Seasonal variations (severe injuries only)

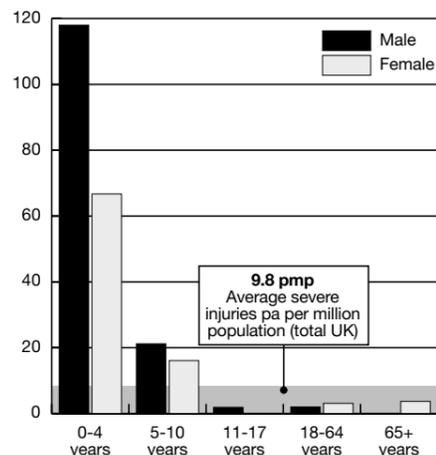
Table 4.3-2



The peak time of year for severe burns and scalds caused by kettles is during the autumn, followed by winter months, possibly reflecting the greater number of hot drinks being prepared, with young children (the age group at greatest risk) being indoors rather than outdoors.

4.3.3 Age and sex of victim (severe injuries only)

Table 4.3-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	118	21.2	1.9	2	0
Female	66.7	16.1	0	3.1	3.7

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 367 severe injuries pa), 69% of the severe injuries to children aged 0-4 years (ie 253 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Boys aged 0-4 years are involved in 70% more accidents per million population than girls aged 0-4 years.

Target risk group 2. A secondary age group at risk is children aged 5-10, involving 87 severe injuries per annum, with above average numbers of severe injuries compared to the total population. 47% of the severe injuries to children aged 5-10 years (ie 41) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment.

Target risk group 3. A third age group at risk is adults aged 18-64, involving 92 severe injuries per annum. 39% of the severe injuries (ie 36 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment.

4.3.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (367 severe injuries pa)

Table 4.3-4

Accident mechanisms	% of cases	Main time when occurs
Child grabbed or pulled kettle over itself	44%	morning (07.00-11.59)
Child pulled flex, hence kettle over itself	18%	Early evening (16.00-19.59)
Parent/adult holding kettle, and accidentally pulled by child or spilt hot water on child	3%	insufficient data
Adult splashed hot water from kettle onto child	4%	insufficient data
Other child pulled down kettle onto victim	3%	insufficient data
Other infrequent mechanisms	12%	insufficient data
No details of mechanism	16%	insufficient data

Nearly all accidents occur in the kitchen. Examples of typical accidents are given below.

‘23rd June 1996, during the afternoon between 12.00 and 15.59, a 10 month old baby girl was in the kitchen, when she pulled a boiling kettle onto herself. She received multiple scalds and spent 54 days in hospital.’

‘20th September 1993, at 10.00 in the morning, a 3 year old girl spilled boiling water from kettle over herself. She received severe scalds covering 24% of body. She was transferred immediately to a specialist hospital.’

‘27th July 1992, at about 7.00 am - a 10 month old baby boy pulled the flex from a kettle of boiling water, which went on abdomen and legs. He was an in-patient at the hospital for 38 days.’

‘1991. Kettle scald to boy when 4 years old, now aged 10. Mother - “He was playing in the lounge with his father and elder brother. He was running, trying to escape from them and ran into the kitchen where I was. He fell against the kitchen wall. As he did so, he looped his arm round the kettle flex and pulled the kettle down on top of him. The kettle had just boiled. Luckily my husband was there, otherwise I would have been in a such a panic. We were living in a terraced house at the time, and the bathroom was right next to the kitchen. My husband carried him to the bathroom and ripped off his clothes. The skin was just sliding off with the clothes. We called an ambulance, and they wrapped him in cling film.

He stayed in hospital for 3 weeks. The consultant treating him thought it would traumatise him further if he was moved to the regional burns unit. He was unrecognisable at first. They pumped liquids into him, and he went a terrible shape. Although the nurses and doctors told us that that was normal and he would be OK, you just don’t believe them. Luckily he didn’t need plastic surgery as, although he had quite a high percentage of burns, they were not in jointed areas. The scarring is quite minimal considering how bad it was. The kettle had a straight wire. We got a curled one straightaway after that. Not that it was

hanging down much. It was on top of the Formica unit, and on top of the microwave on that. It was just how he fell.

He had to have full body jackets with a thick neck. He couldn't just have a simple neck like a lot of children because his neck was burnt. He had to have a special roll neck which was very uncomfortable and full sleeves. The scar on his neck, 3 inches, is quite small now compared to what it was. The kettle went straight over one side of his face, his neck, shoulders and back. His back is badly scarred still. We don't notice it but other people do. We have kept his skin pretty supple. Luckily it has not gone tight. We treat it with various oils in the bath and creams. He has to be covered in total sunblock in the sun. His face has recovered well.

He doesn't get any teasing at school. It may bother him inside. He has started with psoriasis now, and we, and the doctors, don't know if that's because of the accident or whether he would have got it anyway. He is quieter and more sensitive than his younger sister and older brother, but his father is like that, and he may just take after him. He gets on well with most people. At his infant school they told everyone what had happened. He was not there a lot because of his treatment. His brother was there when it happened. When his brother was in the isolation ward and you had to be as sterile as possible to go in, someone left the door open, he looked in and ran away. He wouldn't go in to see him because he was so abnormal looking.

On the odd occasion he will say "Will it be bad when I'm older?" But we've been very lucky. The fluids they gave him in hospital made his eyes closed and he had to feel everything. He had a toy penguin with him which he could feel, and he's still got that. He loves swimming. It never bothers him. When we're on holiday abroad, I've heard him explain to someone what happened and then he goes off playing again. He hasn't grown much in height. Apparently everything slows down after an accident like that. All the internal organs go into shock."

Target group 2 - Children aged 5-10 years (87 severe injuries pa)

Table 4.3-5

Accident mechanisms	% of cases	Main time when occurs
Making a cup of tea for him/her self or for their parent, and spilt hot water over self	37%	insufficient data
Other infrequent (single mention) mechanisms	47%	insufficient data
No details of mechanism	16%	insufficient data

Nearly all accidents occur in the kitchen. Example of typical accidents is given below.

'29th April 1995, during the morning between 07:00 - 11:59 - a 7 year old boy was going to make Mum a cup of tea - he stood on skate board which slipped and kettle went up in

the air and went over patient. Mother had warned him before about standing on board. Went directly to treatment area. He was an in-patient for 2 days.'

Target group 3 - adults aged 18-64 years (92 severe injuries pa)

Table 4.3-6

Accident mechanisms	% of cases	Main time when occurs
Spilt hot water/poured hot water onto self	28%	18.00-22.00 and 07.00-10.00
Had seizure/epileptic fit and spilt hot water on self	17%	insufficient data
Dropped kettle	11%	insufficient data
Other infrequent (single mention) mechanisms	27%	insufficient data
No details of mechanism	17%	insufficient data

Nearly all accidents occur in the kitchen. Example of typical accidents is given below.

'4th August 1993, at 08.30 in the morning, a 34 year old male was in the kitchen boiling a kettle. He had changed his uncorded kettle recently to a corded one, and as he went to pour out the hot water, the resistance caused by cord made the hot water spill over his forearm. He received minor burns to his forearm, and was an in-patient for 1 day before being discharged and referred to the out-patient department for further treatment.'

'31st May 1993, at 21.15 in the evening, a 50 year female was in the kitchen making a cup of tea. She was about to pour the boiling water from the kettle into the teapot, when she thought someone was knocking at the window. She turned round and missed the teapot, and the boiling water went over her hand.'

'29th December 1996, a 62 year old female, was in the kitchen boiling a kettle to make a cup of tea. She took a seizure while holding kettle at the time, and spilled boiling water down her legs. She suffered burns to her upper legs, and spent 15 days in hospital as an in-patient.'

4.3.5 Nature of typical burns and implications of required medical treatment

Injuries caused by kettles are similar to saucepans and can include areas of deep dermal to full thickness burns.

The table shows the typical average percentage burns on the total body surface area caused by a kettle scald for a child under 5 years.

Table 4.3-7

Age of child	% tbsa	Body part
under 5 years	10-20%	face, neck, shoulder, chest, back and arms

Source: medical respondents.

Minor injuries are likely to be small splash and contact burns from kettles. Where necessary, these receive a Flamazin dressing and are reviewed two or three times to see how they are progressing. Respondents among general practitioners felt that most kettle scalds victims would go directly to A & E rather than visit their doctor.

Severe burns caused by a kettle can require between 10 days and 4 weeks as an in-patient in hospital, due to the need for plastic surgery. With burns greater than 10%, the child needs to be resuscitated with plasma.

Pressure garments are worn for 18 months to 2 years, and future surgery may be required as the child grows and the skin tightens in the scald areas, for example when a girl is developing breasts. In addition to the physical damage caused by the scald, victims may also suffer emotional and psychological problems which can last a lifetime. Starting or changing school, taking up a particular sport and puberty are all times which can be particularly difficult. Total sunblock is required if they wish to go out in the sun. Medical respondents interviewed also mentioned the psychological effect on the parents, who can never get over the guilt of what has happened. "One mother has not spoken to the father for two years now as he was there when it happened. Some end in divorce."

4.3.6 Product design ideas emerging from the research

1. *The nature of the flex* of the kettle is identified as a problem as it is pulled by the young child. Curly flexes have been available for some time as it is thought that this is less likely to dangle over the work surface, within the child's grasp.
2. *Shorter flexes* are less likely to dangle over the work surface and to necessitate the kettle being kept nearer the back of the work surface and therefore further away from the edge. There has been a general tendency to shorten kettle leads over the past 10 years to reduce the chance of it being pulled over, from 1 metre to about 0.75 metre. Some kettles are available with the facility to shorten the flex (without needing to cut the flex), particularly on cordless kettles.
3. *Fully lockable lids* are available on kettles, but tend to not be the cheapest models. Jug kettles tend to have lockable lids. These are considered an improvement on non locking or semi locking lids as they are designed to keep the lid in place. Manufacturers/suppliers interviewed mentioned a tip test, where the lid must stay on if the kettle is tipped up for 5 seconds.
4. *Traditional shape kettles* provide a larger base area, making the kettle more stable on the work surface than the smaller base of a jug kettle.
5. *Plastic kettles* when heated have a lower outer temperature than metal kettles, making them safer if the outside is accidentally touched, especially by a young child who does not

anticipate that it might be hot and will be slower to react to a hot contact temperature than older child or adult.

6. *A safety release button* is a safety option, known to be used by at least one manufacturer. A button has to be pressed to allow the water to be poured from the kettle. Without this action, the water remains sealed in the kettle.

4.3.7 Key safety messages

Target audience children aged 0-4 years

Primary messages:-

- Keep kettles well away from the edge of a work surface and that the flex is not hanging down.
- Ensure that the flex is as short as is practical. Use a short curly cord.

Secondary messages:-

- Never leave the kettle on the floor.
- Use plastic kettles with a lockable lid which have a large base area and short curly cord.
- Only boil enough water for your immediate needs and empty the kettle immediately after use.

4.4 FIRE HEATERS ALL TYPES

Key target groups - children 0-4 years and the elderly aged 65 years and over.

The remaining age groups are secondary targets.

4.4.1 Total accidents

Table 4.4-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	8036	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	420	90	38	36	150	106
Fatal injuries	30	0.3	0.3	0	2.3	27

This section includes controlled fires for heating, fuelled by coal, wood, gas, electricity, gas cylinders, and paraffin, and unspecified fire heaters.

An estimated 76% (319) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 24% (101) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.4.2 Secondary ignition sources

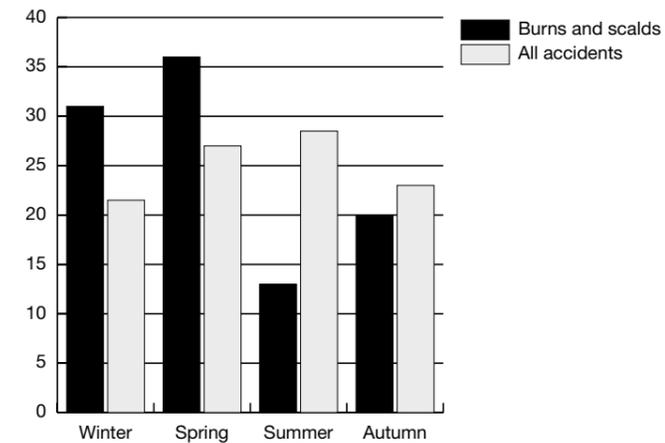
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing, furniture and bedding materials.

Table 4.4-2

	Severe injuries	Fatal injuries
Clothing	80 pa	7 pa
Furniture	0 pa	2 pa
Bedding/mattresses	4 pa	0 pa

4.4.3 Seasonal variations (severe injuries only)

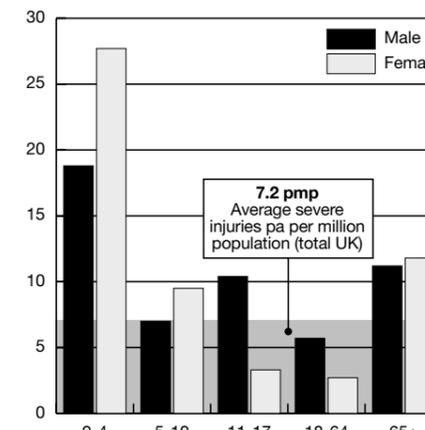
Table 4.4-3



The peak times of year for severe burns and scalds from all types of fire heaters are the winter and spring when heaters are likely to be used most often.

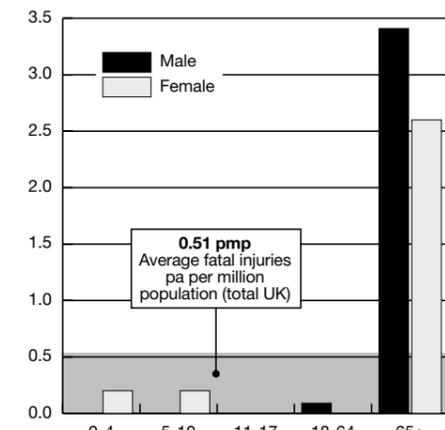
4.4.4 Age and sex of victim (severe and fatal injuries only)

Table 4.4-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	18.8	7	10.4	5.7	11.2
Female	27.7	9.5	3.3	2.7	11.8

Table 4.4-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	0.09	3.41
Female	0.2	0.2	0	0	2.6

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 90 severe injuries and 0.3 deaths per year). 57% of the severe injuries to children aged 0-4 years (ie 51 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. A second group at risk is the elderly aged 65 years and over (involving 106 severe injuries and 27 deaths per year). 88% of the severe injuries to the elderly (ie 93 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 3. A third group at risk are children aged 5-10 years (involving 38 severe injuries and 0.3 deaths per year). 100% of the severe injuries to children aged 5-10 years involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 4. A fourth risk group is children aged 11-17 years (involving 36 severe injuries per year). 62% of the severe injuries to children aged 11-17 years (ie 22 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Boys aged 11-17 years are involved in three times more accidents per million population than girls aged 11-17 years.

Target risk group 5. A fifth risk group is adults aged 18-64 years (involving 150 severe injuries and 2.3 deaths per year). 70% of the severe injuries to adults aged 18-64 years (ie 106 pa) involve 5 or more in-patient days and/or transfer to a specialist hospital/burns unit.

4.4.5 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children 0-4 years (90 severe injuries pa + 0.3 fatal injuries pa)

Table 4.4-6

Accident mechanisms	% of cases	Main time when occurs
Fell onto fire	27%	insufficient data
Touched fire	18%	insufficient data
Rolled/crawled into fire/ashes	9%	insufficient data
Stood too close, clothing caught fire	9%	insufficient data
Other infrequent mechanisms	14%	insufficient data
No details of mechanisms	23%	insufficient data

Most accidents happen in the living room.

‘17th January 1994. A 3 year old boy was playing with his dog in the garage and was naked from waist down (being potty trained). He fell onto paraffin heater which was on for dog, and burnt lower leg and buttocks. He was transferred to a specialist hospital.’

‘3rd April 1996. A 2 year old girl had a scarf around her neck. At 9 o’clock in the morning she stood too close to the gas fire, the scarf caught fire, and she had burns to the face and arms. She was an in-patient for 7 days.’

‘22nd April 1996. An 18 month old baby girl was transferred from New Cross Hospital with burns to the face from a fire. The patient had removed a fireguard from the living flame fire in the lounge. She was an in-patient for 19 days.’

‘A girl aged 4 was wearing a smart high street store dress and stood in front of the fire. The net of the dress caught fire, and the girl received full thickness burns from her waist to her knees.

‘1987-8. The boy aged 1-2 years, now 10, got hold of the gas fire. He burnt his hand which he lost and the side of his head. The surgeon had to use tissue expanders as he had lost so much of the side of his head. He won’t wear his false hand. One side of his face is perfect, the other is severely disfigured.

Target group 2 - Adults aged 65 years and over (106 severe injuries pa + 27 deaths pa)

Table 4.4-7

Accident mechanisms	% of cases	Main time when occurs
Clothes caught alight	21%	insufficient data
Fell/collapsed near fire	18%	insufficient data
Fell into/onto fire	16%	insufficient data
Sat too near fire - burnt limb, not clothing	4%	insufficient data
Other infrequent mechanisms	22%	insufficient data
No details of mechanisms	20%	insufficient data

Most accidents take place in the living room.

‘30th December 1995. An 81 year old man was "snoozing" in a chair in front of an unguarded coal fire in the morning. An ember spat out onto his lap and in confusion and panic the deceased tried to extinguish the flames from his clothes. He then collapsed in his kitchen. He suffered greater than 50% burns.’

‘20th May 1995. A 77 year old man has Parkinson’s disease which makes him unsteady. He fell in the lounge close to gas fire - lay for 24 hours found by friend this morning. He has burns from the fire and injured knee, and was an in-patient for 79 days.’

‘29th December 1995. An 89 year old woman was found collapsed at her home address having fallen over an electric heater. She was taken to hospital having sustained burns to her legs, feet and buttocks. She also suffered smoke inhalation and later died in hospital.’

‘December 1997. A man aged 85 years suffered burns when a newspaper caught alight on the electric fire. He suffered 12½% full thickness burns requiring skin grafting and was in hospital for 51 days.’

‘December 1997. An elderly lady aged 80 fainted in front of the electric fire. She suffered 5% burns to her knee and thigh which required skin grafting and was in hospital for 39 days.’

Target group 3 - Children aged 5-10 years (38 severe injuries pa + 0.3 fatal injuries pa)

Table 4.4-8

Accident mechanisms	% of cases	Main time when occurs
Too close to fire and clothing caught fire	67%	mid evening
Fell onto fire	22%	insufficient data
Other infrequent mechanisms	11%	insufficient data

Most accidents happen in the living room.

‘7th November 1996. A young girl aged 6 stood in front of the fire and her clothes were set on fire. She was an in-patient for 6 days and then referred to the outpatients clinic.’

‘9th September 1995. A young boy aged 5 fell onto the fire with his outstretched hand. He was transferred to a specialist hospital.’

Target group 4 - Children aged 11-17 years (36 severe injuries pa)

Table 4.4-9

Accident mechanisms	% of cases	Main time when occurs
Too close to fire and clothing caught fire	25%	insufficient data
Other infrequent mechanisms	75%	insufficient data

Most accidents take place in the living room.

‘7th May 1996. An 11 year old boy’s dressing gown caught fire on the fire in the lounge. He was burnt on the back and was an in-patient for 28 days before being referred to the outpatients clinic.’

Target group 5 - Adults aged 18-64 (150 severe injuries and 2.3 deaths pa)

Table 4.4-10

Accident mechanisms	% of cases	Main time when occurs
Trying to light gas fire	17%	insufficient data
Clothing caught fire	15%	insufficient data
Too close to fire - limbs burnt, not clothing	10%	insufficient data
Fell/collapsed close to the fire	7%	insufficient data
Fell/collapsed onto fire	7%	insufficient data
Mobile gas heater exploded	7%	insufficient data
Other infrequent mechanisms	27%	insufficient data
No details of mechanism	17%	insufficient data

Most accidents take place in the living room.

‘25th January 1993. A 52 year old woman was lighting the gas fire in the living room with match because pilot light was not working - flames blew back as she bent forward. Her hair was heavily lacquered and caught fire - burnt her scalp. She was transferred to a specialist hospital.’

‘12th December 1995. A 48 year old man sustained a burn to left leg on fire in the late evening - trousers caught fire on fire in living room - smells strongly of alcohol. He was transferred to a specialist hospital.’

‘29th December 1996. A 44 year old man fell asleep in front of the gas fire and burnt his leg. He was an in-patient for 7 days before being referred to the outpatients clinic.’

4.4.6 Nature of typical burns and implications of required medical treatment

The normal reaction time to heat is very fast - 0.2 seconds. However up to three years of age the reaction time is slower, and young children will burn their hands and fingers if they touch a fire, or have more extensive burns if they fall on a fire.

Medical respondents consistently agreed that many of the elderly involved in accidents are suffering from predispositions which make it more likely that they will have an accident than others in the population. Unsteadiness, alcoholic tendencies, Alzheimer’s, senile dementia, arthritis, epilepsy, declining eyesight were some of the factors mentioned. The burns can be extremely severe, as they often do not know what is happening.

The table below shows the typical average percentage burns of the total body surface area caused by a fire/heater burn.

Table 4.4-11

Age	% tbsa	Body part
under 5 years	1-2½%	fingers, hands if touch fire
under 5 years	5-20%	legs, hand, arm, if fall on fire
elderly	10-60+%	multi body parts, depending how long before found

Source: medical respondents, literature.

Minor - Superficial finger or leg burns are treated by a practice nurse at the GP surgery and seen by the A & E department but do not tend to require becoming an in-patient.

Severe - A hand with diminished function can be a handicap as the child grows older, particularly in terms of employment. The elderly often suffer deep dermal burns and require skin grafting.

4.4.7 Product design ideas emerging from the research

1. *Installation of central heating systems with thermostatic regulators* for radiators. This is easier for the elderly, and, provided thermostatic regulators are used properly, also helps to prevent accidents caused by contact burns with hot radiators.
2. *Promotion of fireguards* by industry to encourage the use of fireguards would support the promotion by other interested parties such as health visitors.

4.4.8 Key safety messages

Target audience 1 - children under 5 years of age

Primary message:-

- Use a fixed fireguard to prevent young children touching the fire or getting too close.

Fireguards are often available under a local community loan or reduced cost scheme.

Secondary messages:-

- Discourage children from playing near the fire or make it a no-go area.
- Ensure that young children do not touch the glass front of real effect fires.

These can be very hot and will burn the child.

Target audience 2 - the elderly aged 65 years and over

Primary message:-

- Do not sit too close to the fire.

At least three feet away is considered a safe distance. You may burn yourself or your clothes may catch fire, particularly if you fall asleep and are not aware of the danger.

- Ensure that your smoke alarm is working.

Ask a neighbour to check it for you if you find it difficult. Have one installed if you have not already got one in place.

- Use a fixed fireguard to prevent you from coming into contact with the fire.

Fireguards are often available under a local community loan or reduced cost scheme.

4.5 CHIP PAN/DEEP FAT FRYER

Key target group - is children under 5 years old.

All other age groups are also target groups.

4.5.1 Total accidents

Table 4.5-1

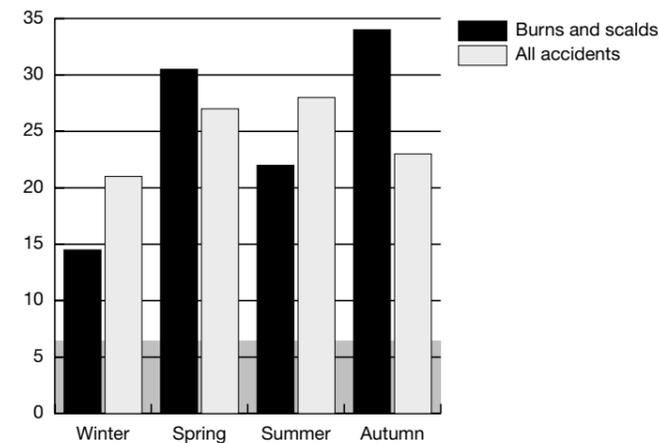
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	4692	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	408	59	33	20	244	53
Fatal injuries	2	0	0	0	1.7	3

An estimated 68% (277) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 32% (131) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.5.2 Seasonal variations (severe injuries only)

Table 4.5-2



The peak times for severe burns and scalds from chip pans and deep fat fryers are during the autumn and also the spring, although the data provided no apparent reason for the trend.

4.5.3 Age and sex of victim (severe injuries only)

Table 4.5-3

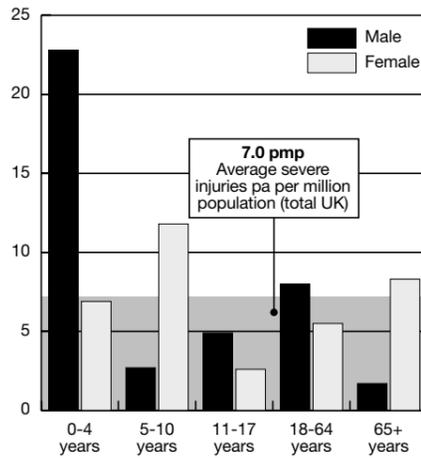
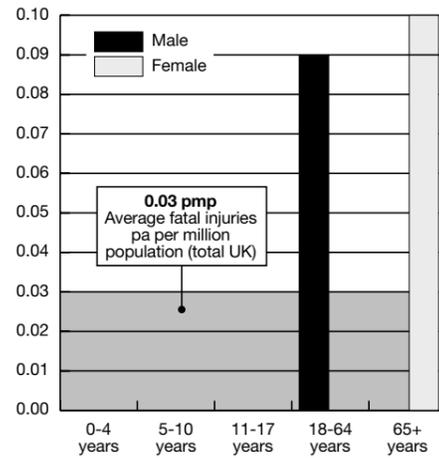


Table 4.5-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	22.8	2.7	4.9	8	1.7
Female	6.9	11.8	2.6	5.5	8.3

	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	0.09	0
Female	0	0	0	0	0.1

Target risk group 1. The key target group is children aged 0-4 years (involving 59 severe injuries per year). 78% of the severe injuries to children aged 0-4 years (ie 46 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Boys aged 0-4 years are involved in three times as many accidents per million population than girls aged 0-4 years.

Target risk group 2. The second target group is children aged 5-10 years (involving 33 severe injuries per year). There was insufficient data to differentiate between Category A and B injuries. Girls aged 5-10 years are involved in four times as many accidents per million population than boys aged 5-10 years.

Target risk group 3. The third target risk is adults aged 18-64 years (involving 244 severe injuries and 1.7 deaths pa). 54% of the severe injuries to adults aged 18-64 years (ie 132 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Men aged 18-64 years are 1.5 times as likely to be involved in accidents per million population than women aged 18-64 years, and 41% involved men aged 18-25 years.

Target risk group 4. The fourth target risk group is the elderly aged 65 years and over (involving 53 severe injuries and 0.3 deaths per year). 100% of the severe injuries to the elderly aged 65 years and over involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Women aged 65 years and over are involved in five times as many accidents per million population than men aged 65 years and over.

Target risk group 5. The fifth target risk group is children aged 11-17 years (involving 20 severe injuries per year). 67% of the severe injuries to children aged 11-17 years (ie 13 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Boys aged 11-17 years are nearly twice as likely to be involved in accidents per million population than girls aged 11-17 years.

4.5.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (59 severe injuries pa)

Table 4.5-5

Accident mechanisms	% of cases	Main time when occurs
Pulled flex of fryer or pulled deep fat fryer	33%	16.00-17.59
Pulled chip pan off cooker	33%	around 16.00
Other infrequent mechanisms	11%	insufficient data
No details of mechanism	23%	insufficient data

All accidents take place in the kitchen.

‘10th July 1992. A 20 month old baby girl was scalded at 4 o’clock in the afternoon. Mum distressed - patient pulled deep fat fryer off the kitchen unit and scalded the whole of her body with fat. She was transferred to a specialist hospital.’

‘16th September 1995. A 7 month old baby boy pulled hot chip pan fat over himself at 4 o’clock in the afternoon. He was transferred to a burns hospital.’

‘The baby girl was burnt as a baby when she pulled the deep fat fryer off the work surface. The hot oil went over her head and she lost her hair. The surgeon had to use tissue expanders to reconstruct her head.’

‘The chip pan had been put outside to cool down. The 4 year old girl received burns to her feet after treading on the pan. She needed a lot of grafting to 4% burns to her foot and ankle and was in hospital for 10 days. She will be closely monitored in the future as there is the risk of the skin tightening, pulling her toes up and causing malformation of the foot.’

Target group 2 - Children aged 5-10 years (33 severe injuries pa)

Table 4.5-6

Accident mechanisms	% of cases	Main time when occurs
Pulled chip pan/deep fat fryer on self	67%	insufficient data
Other infrequent mechanisms	23%	insufficient data

All accidents take place in the kitchen.

‘14th August 1996. An 8 year old girl pulled an electric hot fryer onto herself - hot fat burns to chest. She was an in-patient for 44 days before being referred to the outpatients clinic.’

Target group 3 - Adults aged 18-64 years (244 severe injuries and 1.7 deaths pa)

Table 4.5-7

Accident mechanisms	% of cases	Main time when occurs
Chip pan caught fire	60%	16.00 - 20.00
Spilt hot oil from chip pan on self	7%	insufficient data
Other infrequent mechanisms	7%	insufficient data
No details of mechanism	26%	insufficient data

Most accidents take place in the kitchen, although some happen as the chip pan is carried outside the house.

‘23rd June 1996. A 44 year old man had a chip pan fire around tea-time. He threw the chip pan outside - it blew back into his face. The man was an in-patient for 24 days before being referred to the outpatients clinic.’

‘11th July 1992. A 30 year old woman was cooking chips. She lifted the pan spilling hot oil over her hands, legs & foot. She was transferred to a specialist hospital.’

‘1995. A lady, in her late ’50s, did the wrong thing when her chip pan caught fire. She panicked, opened the back door, and the backdraft blew the flaming oil onto her chest and arms. She suffered mixed thickness burns to the chest and arms and was in hospital for 2 weeks. She had to wear pressure garments afterwards.’

Target group 4 - Adults aged 65 years and over (53 severe injuries and 0.3 deaths pa)

Table 4.5-8

Accident mechanisms	% of cases	Main time when occurs
Chip pan caught fire	100%	afternoon and evening

Most accidents take place in the kitchen, although some happen as the chip pan is carried outside the house.

‘23rd May 1994. An elderly man, aged 78, suffered burns when his chip pan caught fire, burning his forehead and arms. He was an in-patient for 36 days.’

‘August 1997. A lady aged 65 years spilt some hot oil from the chip pan and then slipped over on it. She suffered 8% burns to her back, knee and forearm, requiring skin grafting. She was an in-patient for 7 days.’

Target group 5 - Children aged 11-17 years (20 severe injuries pa)

Table 4.5-9

Accident mechanisms	% of cases	Main time when occurs
Infrequent mechanisms (insufficient data)	100%	insufficient data

Most accidents take place in the kitchen, although some happen as the chip pan is carried outside the house.

‘14th August 1996. A 12 year old boy was hurt in a chip pan fire around lunch-time. His Dad ran outside with the chip pan and threw the pan, not realising patient there, who suffered burns to his back, arm and foot. He was an in-patient for 54 days before being referred to the outpatients clinic.’

4.5.5 Nature of typical burns and implications of required medical treatment

Chip pan and deep fat fryers usually cause deep dermal burns as the fat is at a high temperature. Where the oil has spilled, the skin looks like ordinary skin as it does not char.

A small spillage of hot fat on an adult is considered the most moderate of burns involving chip pans and deep fat fryers, depending on the amount of oil spilt and its temperature. Deep dermal, full thickness burns typically require 1-30 days in hospital. Spillage of hot fat onto a child is usually more extensive due to the smaller surface area of the child compared to an adult. Chip pan fire injuries typically require 20-30 or more days in hospital due to the severity and increased body area covered than oil spillage.

The table below shows the typical average percentage burns of the total body surface area caused by deep fat fryer/chip pan burns.

Table 4.5-10

Age	% tbsa	Body part
child under 5 years	1-5%	hand, feet - small spillage
child under 5 years	20-40%	face, neck, chest, back - pan fires
adult	1-20%	feet, legs, hands - spillage
adult	30-40%	face, neck, shoulder, chest and arms - pan fires

Source: medical respondents, literature.

4.5.6 Product design ideas emerging from the research

1. *Deep fat fryers* are generally considered by respondents to be safer in use than traditional chip pans as the heat of the oil is thermostatically controlled, the lid prevents spillage. They have back-up thermoprotection, ie the oil will not reach ignition temperature as with a chip pan. They are also seen as more stable appliances than a chip pan on the

cooker as they have a large foot base.

2. Shorter flexes on deep fat fryers are less likely to dangle over the work surface and to necessitate the deep fat fryer being kept nearer the back of the work surface, and therefore further away from the edge.
3. The facility to shorten the flex has been available since the 1980s. However it is not known to what extent consumers are aware of this facility.
4. A safety release button would allow the lid of the deep fat fryer to open only when a release button is pressed.
5. Cool wall deep fat fryers are available to prevent the danger of contact burns, should people accidentally touch the wall of the fryers, and represent about 51% of current deep fat fryer sales.
6. Cooker guards can help prevent young children from pulling pans off the cooker.
7. Microwave and oven chips offer an alternative method of cooking chips, particularly for the elderly, which does not involve the use of hot oil.

4.5.7 Key safety messages

Target audience 1 - children under 5 years of age

Primary messages:-

- When using a deep fat fryer, ensure it is placed well back on the work surface and that the cord is short enough not to be accessible to children.
- Never leave a chip pan/deep fat fryer unattended while cooking and always make sure the cooker is switched off after use.

Secondary messages:-

- Discourage children from playing in the kitchen.

Ensure that young children are playing safely away from the chip pan or deep fat fryer, ie away from the cooker or work surface. If possible, they should be kept out of the kitchen during meal preparation, or in a high chair/playpen, but not in a baby walker.

- Use cooker guards to prevent young children from coming too close to the cooker.
- When using a chip pan, use the back burners of the cooker rather than the front.

Target audience - adults and the elderly

Primary messages:-

- Use a purpose designed thermostatically controlled deep fat fryer, rather than a chip pan.
- When using a chip pan, never leave a chip pan unattended while cooking and always make sure the cooker is switched off after use.
- In the event of a chip pan fire, follow the correct safety sequence:-
 - i) Do not try to move the chip pan or carry it outside.
 - ii) Turn off the heat.
 - iii) Cover it with a damp teacloth or towel or fire blanket.
 - iv) NEVER USE WATER.
 - v) Leave the pan to cool for at least 30 minutes.
- Keep a fire safety blanket handy in the kitchen

Secondary messages:-

- Do not fill the chip pan more than one-third full of oil.

4.6 SAUCEPANS

Key target group - is children under 5 years old.

Secondary target groups are children aged 5-10 years and adults aged 18-64.

4.6.1 Total accidents

Table 4.6-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	5375	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	318	122	41	5	114	36
Fatal injuries	2	00	00	00	1.7	0.3

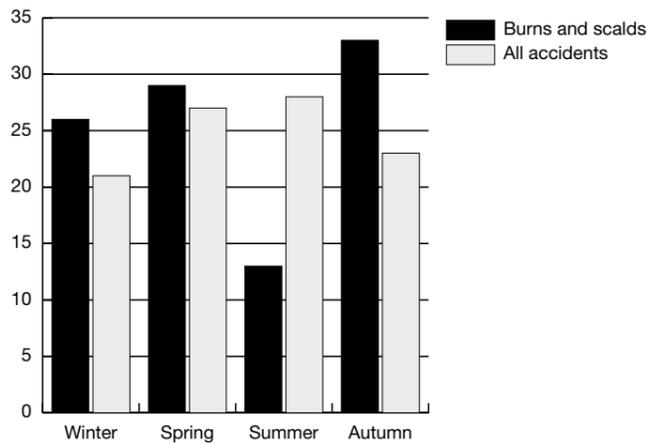
This section includes saucepans and pressure cookers.

An estimated 60% (216) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 40% (102) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.6.2 Seasonal variations (severe injuries only)

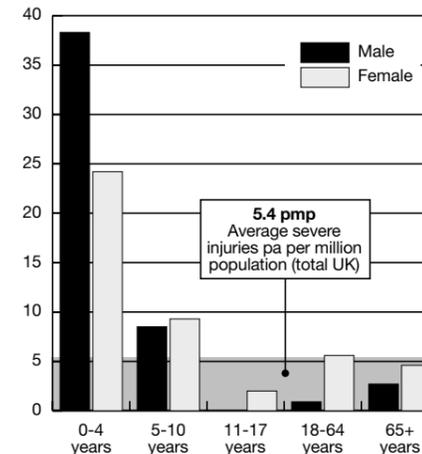
Table 4.6-2



The peak times of year for severe burns and scalds from saucepans is in the cooler months (during autumn, spring and winter) rather than the summer.

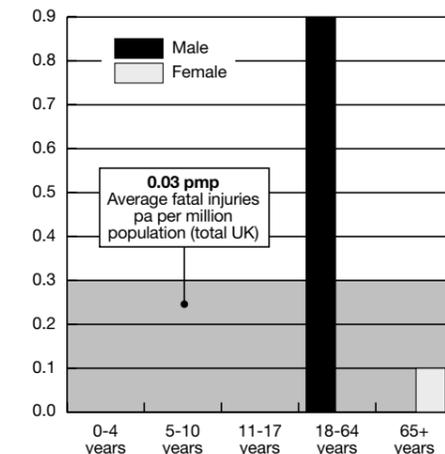
4.6.3 Age and sex of victim (severe and fatal injuries only)

Table 4.6-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	38.3	8.5	0	0.9	2.7
Female	24.2	9.3	2	5.6	4.6

Table 4.6-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	0.9	0
Female	0	0	0	0	0.1

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 122 severe injuries pa). 54% of the severe injuries to children 0-4 years (ie 66 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Boys aged 0-4 years are involved in 1.6 times as many accidents per million population than girls aged 0-4 years.

Target risk group 2. A secondary group at risk is children aged 5-10 years (involving 41 severe injuries pa). 50% of the severe injuries to children aged 5-10 years (ie 20 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment.

Target risk group 3. The third group at risk is adults aged 18-64 years (involving 114 severe injuries and 1.7 deaths pa). 70% of the severe injuries to adults aged 18-64 years (ie 80 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Women aged 18-64 years are involved in 1.7 times as many accidents per million population than men aged 18-64 years.

4.6.4 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children aged 0-4 years (122 severe injuries pa)

Table 4.6-5

Accident mechanisms	% of cases	Main time when occurs
Pulled pan onto self	63%	16.00-19.59
Other infrequent mechanisms	33%	insufficient data
No details of mechanism	4%	insufficient data

The main location for these accidents is the kitchen.

‘4th April 1996. A baby boy, 22 months old, at 5.30 in the afternoon in the kitchen, reached up and pulled a pan of boiling mincemeat off the cooker onto his head. He was an in-patient for 14 days and was then referred to the outpatients clinic.’

‘12th August 1995. A 4 year old girl had boiling milk from a pan spilt onto her chest & shoulder at 8 o’clock in the evening. She was an in-patient for 10 days before being referred to the outpatients clinic.’

‘1997. Mum was cooking mincemeat in the kitchen, and it was her common practice to bring it into the living room and put it on the floor to cool. The toddler burned both his feet when he stood in the saucepan, with full thickness 10% burns. When the hospital checked, exactly the same type of accident had happened to his sister. Mum had reverted to her old habits, even though she had had support in the home to get better housekeeping practice. The child was in hospital for 11 days, the burns took 6 weeks to heal and required grafting.’

Target group 2 - Children aged 5-10 years (41 severe injuries pa)

Table 4.6-6

Accident mechanisms	% of cases	Main time when occurs
Ran into parent (usually mother) who was holding pan	50%	insufficient data
Pulled pan onto self	25%	insufficient data
Other infrequent mechanisms	12.5%	insufficient data
No details of mechanism	12.5%	insufficient data

The main location for these accidents is the kitchen.

‘23rd April 1992. An 8 year old girl ran into her mother in the kitchen at 4 o’clock in the afternoon as she was lifting pan of hot water off stove. The girl was transferred to a specialist hospital.’

‘18th May 1992. An 8 year old boy ran into the kitchen at 4 o’clock in the afternoon as his mother was turning with a pan of hot water in hand. He was transferred to a specialist hospital.’

Target group 3 - Adults aged 18-64 years (114 severe injuries and 1.7 deaths pa)

Table 4.6-7

Accident mechanisms	% of cases	Main time when occurs
Got in way of steam from pan/pressure cooker	22%	insufficient data
Spilt pan on self	17%	insufficient data
Grabbed hot handle	13%	insufficient data
Knocked pan over	13%	insufficient data
Other infrequent mechanisms	13%	insufficient data
No details of mechanism	22%	insufficient data

The main location for these accidents is the kitchen.

‘23rd February 1994. A 47 year old woman in the kitchen. The pressure cooker blew back onto her face, as she had taken the lid off before the steam had evaporated - steam in face. The woman was transferred to a specialist hospital.’

‘15th April 1996. A 47 year old woman spilt a saucepan of boiling water over herself. She was an in-patient for 19 days and was then referred to the outpatients clinic.’

4.6.5 Nature of typical burns and implications of required medical treatment

Injuries caused by saucepans are similar to kettles, because of the amount of hot liquid usually contained. The implications of the required medical treatment are similar to that for kettle scalds.

The table below shows the typical average percentage burns on the total body surface area caused by a saucepan scald for a child under 5 years.

Table 4.6-8

Age of child	% tbsa	Body part
under 5 years	10-20%	face, neck, shoulder, chest, back and arms
under 5 years	8-10%	feet and ankles or hands if placed on floor

Source: medical respondents.

4.6.6 Product design ideas emerging from the research

1. *Cooker guards* may prevent saucepans from being accidentally pulled or knocked down from the cooker.

4.6.7 Key safety messages

Target audience 1 - children aged 0-4 years

Primary messages:-

- Ensure that young children are playing safely away from the cooker.

If possible, they should be kept out of the kitchen during meal preparation, or in a high chair/playpen, but not in a baby walker.

- Use a fixed cooker guard to prevent children pulling pans off the cooker.
- Turn saucepan handles towards the inside of the cooker.

Secondary messages:-

- When possible place saucepans on the rings at the back of the cooker, rather than the front rings.
- Do not place hot pans where children have access to them, eg on the floor.

(This is thought to be common practice among some Asian families who sit on the floor for family meal times.)

Target audience 2 - children 5-10 years

Primary messages:-

- Ensure that children aged 5-10 are playing safely, preferably out of the kitchen, during meal preparation.
- Use a fixed cooker guard to prevent children pulling pans off the cooker.
- Turn saucepan handles towards the inside of the cooker.

Secondary messages:-

- When possible place saucepans on the rings at the back of the cooker, rather than the front rings.

4.7 COOKERS ALL TYPES

Key target group - is children aged 0-4 years. Secondary target groups are the elderly aged 65 years and over and adults aged 18-64 years.

4.7.1 Total accidents

Table 4.7-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	5932	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	288	112	4	8	115	48
Fatal injuries	13	0.3	4	0	2.3	10.7

An estimated 56% (161) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 44% (127) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.7.2 Secondary ignition sources

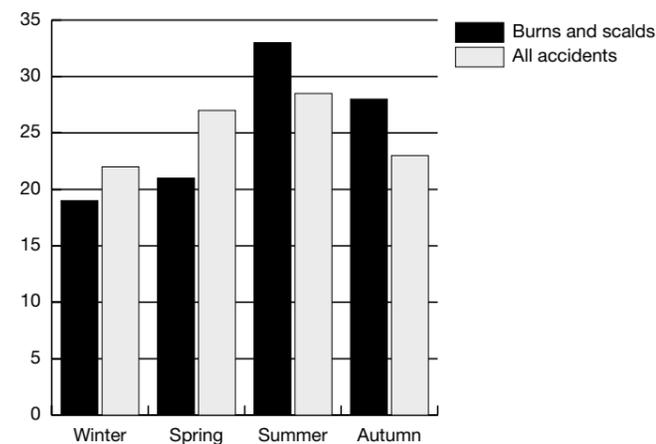
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing.

Table 4.7-2

	Severe injuries	Fatal injuries
Clothing	60 pa	10 pa

4.7.3 Seasonal variations (severe injuries only)

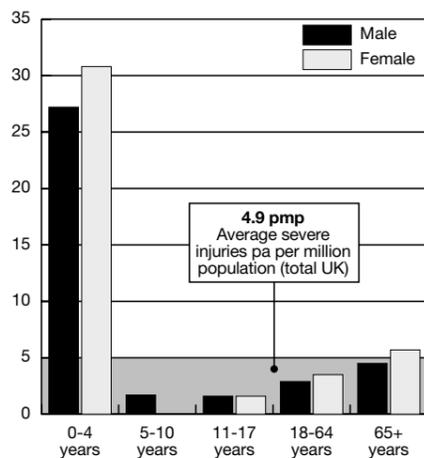
Table 4.7-3



The peak time of year for severe burns and scalds from cookers is during the summer, although the data provided no apparent reason for this trend.

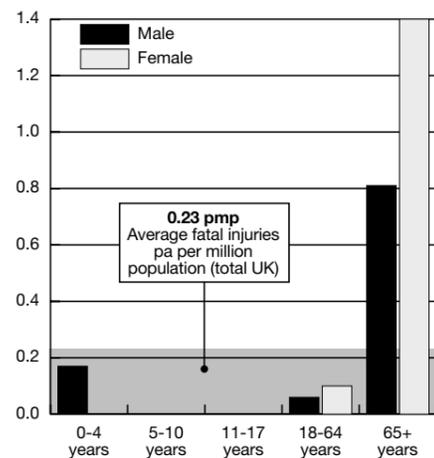
4.7.4 Age and sex of victim (severe and fatal injuries only)

Table 4.7-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	27.2	1.7	1.6	2.9	4.5
Female	30.8	0	1.6	3.5	5.7

Table 4.7-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.17	0	0	0.06	0.81
Female	0	0	0	0.1	1.4

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 112 severe injuries and 0.3 deaths pa). 37% of the severe injuries to children aged 0-4 years (ie 41 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. The second group at greatest risk are the elderly aged 65 years and over (involving 48 severe injuries and 10.7 deaths pa). 90% of the severe injuries to the elderly aged 65 years and over (ie 43 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 3. The third group most at risk is adults aged 18-64 years (involving 115 severe injuries and 2.3 deaths pa). 59% of the severe injuries to adults aged 18-64 years (ie 68 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.7.5 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children aged 0-4 years (112 severe injuries pa + 0.3 deaths pa)

Table 4.7-6

Accident mechanisms	% of cases	Main time when occurs
Touched door, hot plate/ring, grill of cooker	54%	early evening
Parent sat child on cooker	11%	insufficient data
Too close and clothing caught fire	7%	insufficient data
Other infrequent mechanisms	10%	insufficient data
No details of mechanism	18%	insufficient data

The main location for these accidents is the kitchen.

'6th September 1995. A 15 month old baby boy was crawling about on the kitchen floor at 5.45pm. He put both hands on the hot glass oven door. Dad distressed. The patient was transferred to a specialist hospital.'

'27th April 1996. A 3 year old girl. Her father put the child in her car seat and then put the car seat on the electric cooker. Accidentally knocked cooker on. She suffered full thickness burns to buttocks and was transferred to a specialist hospital.'

'A four year old girl sat on the door of the cooker, and the cooker was not secured. The cooker moved, and all the pans fell on her. She was in hospital for a long time.'

Target group 2 - Elderly aged 65 years and over (48 severe injuries pa + 10.7 deaths pa)

Table 4.7-7

Accident mechanisms	% of cases	Main time when occurs
Clothing caught alight (usually lighting or leaning over the cooker)	63%	often early morning
Lighting cooker (not involving clothing)	7%	insufficient data
Other infrequent mechanisms	14%	insufficient data
No details of mechanism	16%	insufficient data

The main location for these accidents is the kitchen.

'13th November 1992. An 87 year old woman was leaning over the electric cooker at 8 o'clock in the morning in the kitchen. The low level grill was switched on and the bottom of her jumper caught fire, burning her buttocks. She was transferred to a specialist hospital.'

'20th August 1995. A 77 year old woman was in the kitchen at 2 o'clock in the afternoon. She felt faint and leaned forward over the hot plate/ring of the cooker which was still hot. She burned her arm and chest. She thought she was leaning over the worktop. She was an in-patient for 11 days.'

'3rd February 1992. A 65 year old man was making a cup of tea at 7am in the kitchen - the sleeve of his dressing gown caught alight on the gas cooker. He was an in-patient for 30 days.'

'12th January 1995. An elderly man, aged 85, died when he was lighting the gas stove to put the kettle on and ignited his clothing accidentally.'

'30th September 1994. An elderly man, aged 90, at 7.40am in the kitchen, sustained burns to his arms, legs and head - flash burn when lighting cooker. He was an in-patient for 30 days.'

'Late 1997. An elderly lady was cooking and her clothing caught fire. She has serious injuries to the upper body, face and neck and will be in hospital in the burns unit for at least 2 months. Her return home will be dependent on the home set-up, whether there is anyone to look after her and to bring her back for treatment.'

Target group 3 - Adults aged 18-64 years (115 severe injuries pa + 2.3 deaths pa)

Table 4.7-8

Accident mechanisms	% of cases	Main time when occurs
Clothing caught alight (usually lighting or leaning over the cooker)	42%	insufficient data
Lighting cooker (not involving clothing)	7%	insufficient data
Other infrequent mechanisms	32%	insufficient data
No details of mechanism	19%	insufficient data

The main location for these accidents is the kitchen. Camping outdoors is also mentioned infrequently.

'10th July 1995. A 21 year old woman was lighting the stove in the afternoon. Her nightdress caught alight and burnt her lower arm. She was transferred to a specialist hospital.'

'26th August 1992. A 25 year old man was lighting the gas oven early in the morning. It lit suddenly, and the flashburn burnt his face. He was transferred to a specialist hospital.'

'February 1997. A 36 year old lady's shirt caught alight on the gas stove. She suffered 27% burns to her back, chest and arms, and had three split skin grafts. She was in hospital for 73 days.'

4.7.6 Nature of typical burns and implications of required medical treatment

Cooker burns among young children are usually contact burns, where the child has touched the cooker and does not realise it is hot.

The table below shows the typical average percentage burns on the total body surface area caused by a cooker burn and body part.

Table 4.7-9

Age	% tbsa	Body part
under 5	1-5%	fingers, hands where touched cooker
under 5	20%+	where clothing has caught fire
elderly	10-20%	face, neck, and upper body

Source: medical respondents, literature.

Minor - these can be treated by a practice nurse at a GP surgery or in the outpatients clinic.

Severe - large deep burns to the fingers, fingertips and hands may require skin grafts. These can take 5-10 days to heal, and the patient will require further treatment to release the grafts as they become tight. A hand pressure garment is worn for up to 12 months. Large body burns, often caused by the patient's clothing catching fire, require long stays in hospital, with an average of 21-42 in-patient days, plastic surgery and further operations over several years. The surgeon may wait for the deep dermal burns to develop and carry out a skin graft or may go for an early excision of the area, which reduces the number of in-patient days.

4.7.7 Product design ideas emerging from the research

1. *Cooker guards* can help prevent young children from pulling pans off the cooker. However they may also make it more difficult for adults to move pans safely.
2. *Lower maximum temperature of cooker doors*. A glass door at 50°C is perceived as cooler to the touch than a metal door at 50°C, even though the temperature is the same, as touching a glass door has a different sensation to a metal door and the reaction time to the heat is therefore slower. Manufacturers use several methods to keep doors cool. Many use a fan to draw cool air into a double skin surrounding the oven. Others use safety glass to reflect heat back into the oven.
3. *British Gas appliance grading system* is used as a safety feature to grade the external heat of an appliance from Grade 1 to 6 where Grade 1 is superior, Grade 2 good, Grade 3 average etc.
4. *Automatic ignition* is a standard feature on 95% of gas cookers currently sold. This is considered the most effective method of reducing the number of burn accidents caused by trying to light a cooker.
5. *Knob guards* could be fitted to prevent the accidental ignition of the part of the cooker.

4.7.8 Key safety messages

Target audience 1 - children under 5 years of age

Primary messages:-

- Ensure that young children are playing safely away from the cooker.
- If possible, they should be kept out of the kitchen during meal preparation, or in a high chair/playpen, but not in a baby walker.*
- Use fixed cooker guards to prevent young children from pulling pans off the cooker.

Secondary messages:-

- Ensure that the cooker is well secured and cannot be pulled over.
- Never place a child, as they are or in a container such as a car seat/Moses basket, on a cooker, even when turned off.

A ring may be accidentally turned on. It also suggests to the child that it is OK to be on the cooker, which may encourage them to climb on it as they grow older.

Target audience 2 and 3 - adults including the elderly

Primary messages:-

- Ensure that clothing does not come into contact with the stove when cooking, particularly sleeves.

Loose-fitting or baggy sleeves can catch fire when one reaches across the cooker.

- Ensure that the automatic ignition is operating correctly. Call a gas maintenance/repair company if you have any difficulties lighting the cooker.

4.8 CARS/MOTORCYCLES

Key target group - is children aged 11-17 years.

A secondary target group is adults aged 18-64 years.

4.8.1 Total accidents

Table 4.8-1

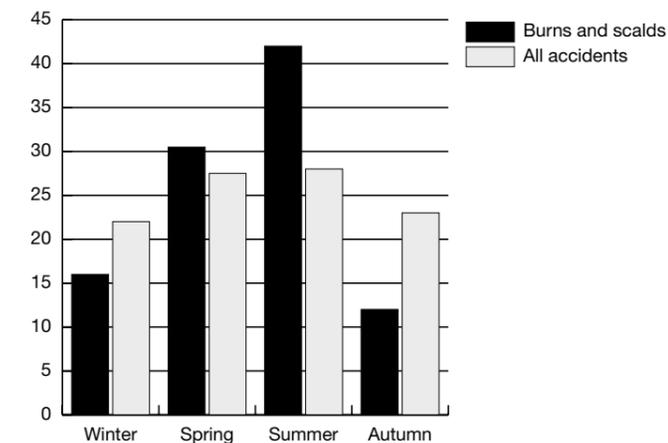
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	3739	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	248	4	0	64	180	0
Fatal injuries	1	0	0	0	1	0

An estimated 58% (144) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 42% (104) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.8.2 Seasonal variations (severe injuries only)

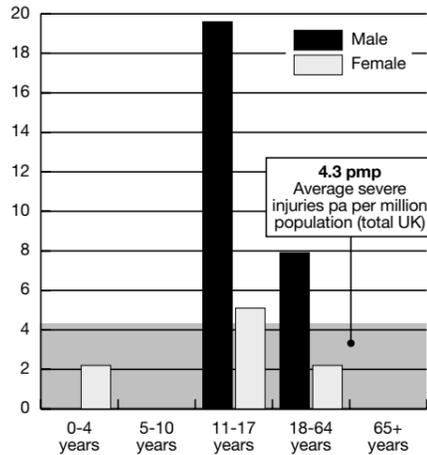
Table 4.8-2



The peak time for severe burns and scalds from cars and motorcycles is during the summer months.

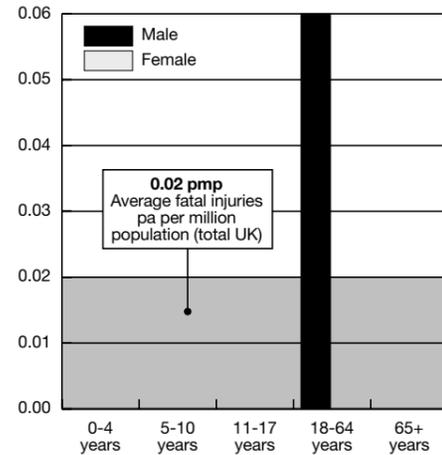
4.8.3 Age and sex of victim (severe and fatal injuries only)

Table 4.8-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	19.6	7.9	0
Female	2.2	0	5.1	2.2	0

Table 4.8-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	0.06	0
Female	0	0	0	0	0

Target risk group 1. The age group at greatest risk 11-17 year olds (involving 64 severe injuries pa). 36% of the severe injuries to children aged 11-17 years (ie 23 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Boys aged 11-17 years are involved in nearly 4 times as many accidents per million population than girls aged 11-17 years.

Target risk group 2. The secondary group at risk is adults aged 18-64 years (involving 180 severe injuries and 1 death pa). 65% of the severe injuries to adults aged 18-64 years (ie 117 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Men aged 18-64 years are involved in 3.6 times as many accidents per million population than women aged 18-64 years.

4.8.4 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children aged 11-17 years (64 severe injuries pa)

Table 4.8-5

Accident mechanisms	% of cases	Main time when occurs
Removed radiator cap, scalded by hot water	27%	insufficient data
Moped/motorcycle caught fire	27%	insufficient data
Burnt leg on hot exhaust	27%	insufficient data
Other infrequent mechanisms	19%	insufficient data

Over 60% of these accidents involve motorcycles/mopeds, often taking part in scrambling on parkland. Just under 40% involve cars, either outside the home or in the road.

‘8th March 1992. A 14 year old boy was injured at 12.00 noon on parkland during sporting activity when a motorcycle exploded. He was badly burnt on both legs and was transferred to a specialist hospital.’

‘28th April 1992. A 13 year old boy burnt his face after taking off the car radiator cap outside his home during the evening. He was transferred to a specialist hospital.’

Target group 2 - Adults aged 18-64 years (180 severe injuries and 1 death pa)

Table 4.8-6

Accident mechanisms	% of cases	Main time when occurs
Removed radiator cap, scalded by hot water	56%	16.00-19.00
Car caught fire	16%	insufficient data
Touched hot engine/radiator	9%	insufficient data
Other infrequent mechanisms	19%	insufficient data

‘12th September 1993. A 28 year old man. In the early afternoon on the driveway, the car wouldn’t start, he was looking at the engine, took the cap off the radiator and steam scalded his face. His wife was upset, couldn’t get more details. He was transferred to a specialist hospital.’

‘20th December 1994. A 23 year old man was fixing his girlfriend's car in the driveway at 18.20 in the evening. He thought it was frozen. He waited until he thought it would be just warm and then touched the fan belt. The engine was not frozen - it had been running earlier and was very hot. He was transferred to a specialist hospital.’

4.9 PETROL

Key target group - is children aged 11-17 years. The secondary group are adults aged 18-64 years. A third target group is children aged 5-10 years.

4.9.1 Total accidents

Table 4.9-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	809	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	246	0	17	41	188	0
Fatal injuries	6.3	0.3	0.3	0	3.3	1.3

An estimated 57% (140) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 43% (106) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.9.2 Secondary ignition sources

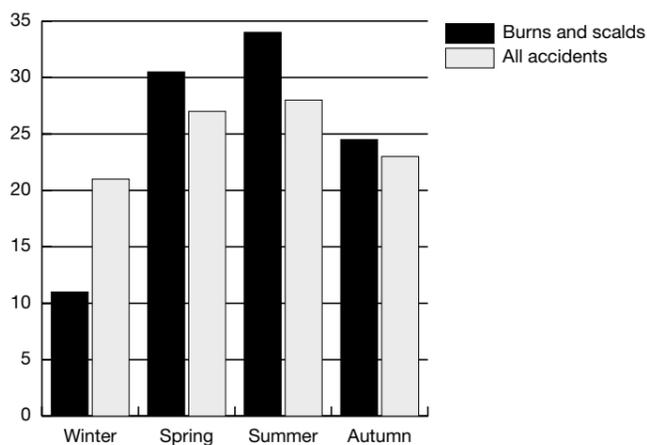
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing.

Table 4.9-2

	Severe injuries	Fatal injuries
Clothing	0 pa	0.7 pa

4.9.3 Seasonal variations (severe injuries only)

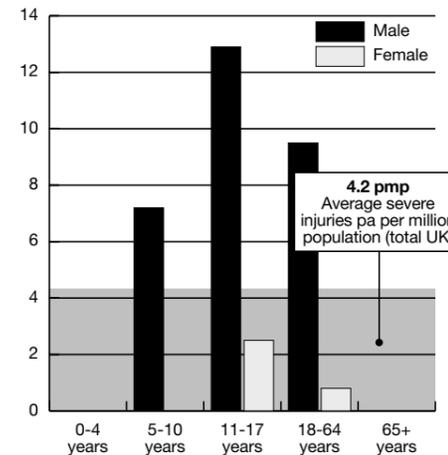
Table 4.9-3



The peak times for severe burns and scalds from petrol are in the spring and summer with garden fires.

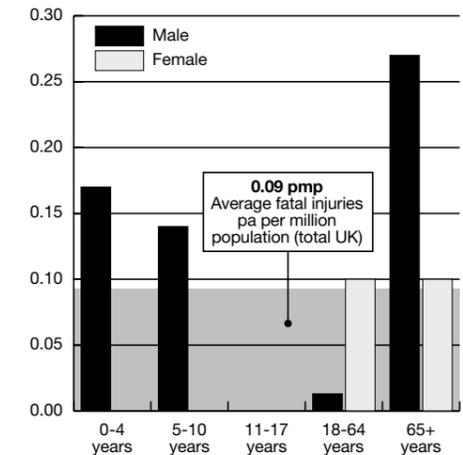
4.9.4 Age and sex of victim (severe and fatal injuries only)

Table 4.9-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	7.2	12.9	9.5	0
Female	0	0	2.5	0.8	0

Table 4.9-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.17	0.14	0	0.013	0.27
Female	0	0	0	0.1	0.1

Target risk group 1. The age group at greatest risk is children aged 11-17 years (involving 41 severe injuries pa). 38% of the severe injuries to children aged 11-17 years (ie 16 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Boys aged 11-17 years are involved in 5 times as many accidents per million population than girls aged 11-17 years.

Target risk group 2. The second age group is adults aged 18-64 years (involving 188 severe injuries and 3.3 deaths pa). 51% of the severe injuries to adults aged 18-64 years (ie 96 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Men aged 18-64 years are involved in nearly 12 times as many accidents per million population than women aged 18-64 years.

Target risk group 3. A third age group is children aged 5-10 years. There was insufficient data to differentiate between Category A and Category B injuries. Boys were involved in all the cases inspected in this age group.

4.9.5 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children aged 11-17 years (41 severe injuries pa)

Table 4.9-6

Accident mechanisms	% of cases	Main time when occurs
Removed radiator cap, scalded by hot water	56%	16.00-19.00
Car caught fire	16%	insufficient data
Touched hot engine/radiator	9%	insufficient data
Other infrequent mechanisms	19%	insufficient data

Most accidents happen in the garden. The countryside is also mentioned.

'30th July 1994. A boy aged 15 was burning undergrowth in garden in the early afternoon. He threw petrol onto it, and the burning petrol blew back onto his face. He was transferred to a specialist hospital.'

'5th November 1994. A 14 year old boy. Someone tried to accelerate a bonfire with petrol, and the patient got burns to his face. He was transferred to a specialist hospital.'

Target group 2 - Adults aged 18-64 years (188 severe injuries and 3.3 deaths pa)

Table 4.9-7

Accident mechanisms	% of cases	Main time when occurs
Lit garden fire/bonfire with petrol	63%	insufficient data
Other infrequent mechanisms	20%	insufficient data
No details of mechanism	17%	insufficient data

The main location is the garden.

'20th July 1996. A 30 year old man put petrol on a bonfire in the evening. There was a flashback, and he suffered burns to his body, face, forearms, leg, and hand. He was transferred to a specialist hospital.'

'24th October 1996. A 62 year old man was lighting a bonfire with petrol in his garden in the afternoon when he got burnt. He was transferred to a specialist hospital.'

Target group 3 - Children aged 5-10 years (17 severe injuries + 0.3 deaths pa)

This section is derived from 4 incidents, and no strong trends emerged. Two, with details given below, involved bonfires, one involved a petrol fire in an unknown home location with no other details, and in the fourth incident a child had poured petrol on himself and accidentally set fire to himself.

'31st October 1996. A 7 year old boy suffered burns to his legs trying to light bonfire with petrol in the early evening. He was an in-patient for 36 days.'

'28th October 1993. A ten year old boy sustained petrol burns to his leg at 19.25, when petrol was thrown on a bonfire. He was transferred to a specialist hospital.'

4.10 TEAPOTS/COFFEEPOTS

Key target group - children aged 0-4 years old. A secondary target group at risk is adults aged 18-64 years. A third possible group is children aged 5-10 years old.

4.10.1 Total accidents

Table 4.10-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	2085	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	217	151	13	7	39	7
Fatal injuries	0	0	0	0	0	0

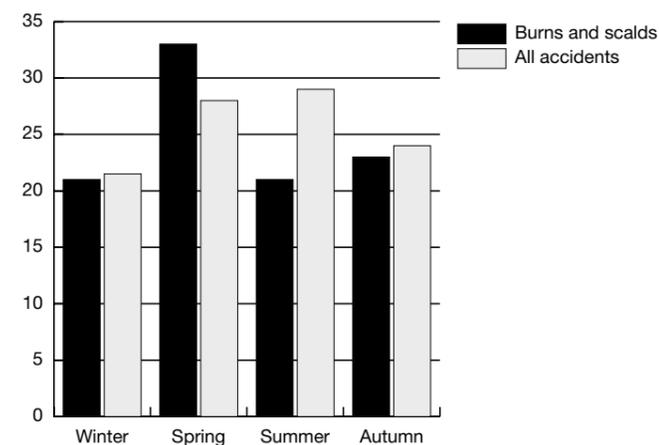
This section includes accidents mostly involving teapots (80%) as well as coffeepots (20%).

An estimated 48% (104) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 52% (113) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.10.2 Seasonal variations (severe injuries only)

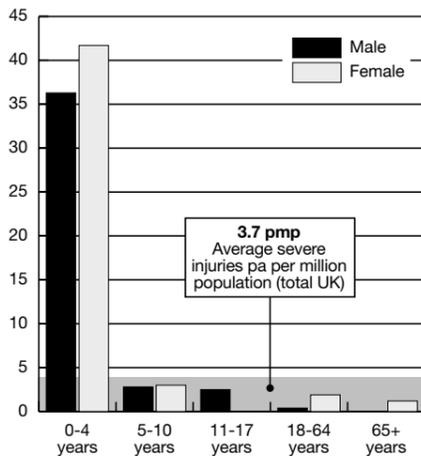
Table 4.10-2



Spring is the season that accounts for the highest level of severe injuries caused by teapots and coffeepots, accounting for 33% of all injuries. The remaining injuries are fairly evenly spread over the other three seasons.

4.10.3 Age and sex of victim (several injuries only)

Table 4.10-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	36.3	2.8	2.5	0.4	0
Female	41.7	3	0	1.9	1.2

Target risk group 1. The key age group at risk is children aged 0-4 years old, which account for 151 severe injuries a year, 48% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. A secondary age group at risk is adults aged 18-64 years, which account for 39 severe injuries a year, 33% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 3. A third age group possibly at risk is children aged 5-10 years old, which account for 13 severe injuries a year. There is insufficient data to show the trend in severity of injuries.

4.10.4 Accident mechanisms (severe injuries only)

Target group 1 - children aged 0-4 years old (151 severe injuries pa)

Table 4.10-4

Accident mechanisms	% of cases	Main time when occurs
Pulled teapot or coffeepot onto themselves	70%	12.00-15.00 & 08.00-09.00
Poured or spilt tea onto themselves	15%	insufficient data
Other infrequent mechanisms	15%	insufficient data

Most accidents happen in the kitchen. Examples of typical accidents are given below.

‘1st August 1993, between 12.00 and 15.59, a thirteen month old baby girl was in the kitchen when she pulled a teapot off of the table, and the contents spilt over her shoulder and chest causing burns to her body. She was transferred direct to the burns unit.’

‘15th September 1993, at 08.20 am, a 1 year old girl who likes to put the teapot cosy on her head was in the kitchen. Her mum had just made tea and the cosy was on the teapot, when the child grabbed the tea cosy and the teapot full of hot tea came down onto her. She suffered minor burns to her upper leg, and was an in-patient for 2 days before being referred to her GP for further treatment.’

Target group 2 - adults aged 18-64 years (39 severe injuries pa)

Table 4.10-4

Accident mechanisms	% of cases	Main time when occurs
Knocked teapot over self or poured tea over self	83%	insufficient data
Coffee pot shattered, and coffee went over victim	13%	insufficient data

Most accidents happen in the kitchen. An example of a typical accident is given below.

‘24th April 1993, at 11.30 in the morning, a 48 year old male was in the kitchen and had just made a fresh pot of tea. He scalded his arm and thigh when the full tea pot was knocked over.’

4.10.5 Nature of typical burns and implications of required medical treatment

Teapot and coffeepot scalds tend to be more significant in area than those from cups and mugs due to the larger volume of hot liquid, although less significant than a saucepan or kettle where the volume is greater and can be at a higher temperature.

Minor - These include patients seen by the practice nurse of a GP practice or by the A & E unit. The burn is assessed, covered with a clean Flamazin dressing, and the patient returns several times to the nurse or outpatients clinic to ensure that the wound is not infected and to change the dressings.

Severe - These are similar to cup and mug, saucepan and kettle injuries, with some deep dermal full thickness burns and the need for pressure garments. Often more than 50% of the scalded area requires skin grafting. The average number of in-patient days is 2-4 weeks.

The table below shows the typical average percentage burns total body surface area caused by a teapot scald for a child under 5 years. The area of the burn depends on the location of the teapot prior to the accident, ie upper body if falling from well above victim, lower body and legs if on a table.

Table 4.10-6

Age of child	% tbsa	Body part
under 5 years	8-15%	face, neck, shoulder, chest, back and arms, legs

Source: medical respondents.

4.10.6 Product design ideas emerging from the research

1. *Lockable lid* tea or coffeepots similar to vacuum flasks, such as are often used during business meetings, are available which require the turning of the lid or press of a button to allow the hot drink to be poured. This would be effective in keeping the hot liquid in the container if accidentally pulled by a child
2. *Ceramic teapot/coffeepot lids* with a safer, locking-locating device. The device design would need to take into account the fact that ceramic can expand in a slightly different way for different firings.
3. A *heavy base fitment* could be developed into which the teapot or coffeepot could sit. A variety of sizes would have to be made to fit different capacity teapots/coffeepots.
4. *Warning sticker* on the teapot or coffeepot when purchased could advise the consumer of the danger of scalds.
5. A *warning* about the dangers of hot drinks could also be given on the packaging, if any, for the teapot/coffeepot.

4.10.7 Key safety messages

Target audience - children 0-4 years

Primary message:-

- Place tea or coffeepots in the centre of a table or at the back of the work surface.
- Never pour or carry a teapot or coffeepot containing hot liquid, while carrying a child at the same time.

Secondary messages:-

- Avoid using tablecloths while you have young children.

Young children can easily pull tablecloths, causing items such as cups, mugs and teapots to fall on them.

4.11 CIGARETTES/SMOKING

Key target group - is children aged 0-4 years. Secondary target groups are children aged 5-10 years and adults aged 18-64 years.

4.11.1 Total accidents

Table 4.11-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	971	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	165	65	12	8	67	13
Fatal injuries	23	0.3	0.3	0	7.3	15

An estimated 53% (87) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 47% (78) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.11.2 Secondary ignition sources

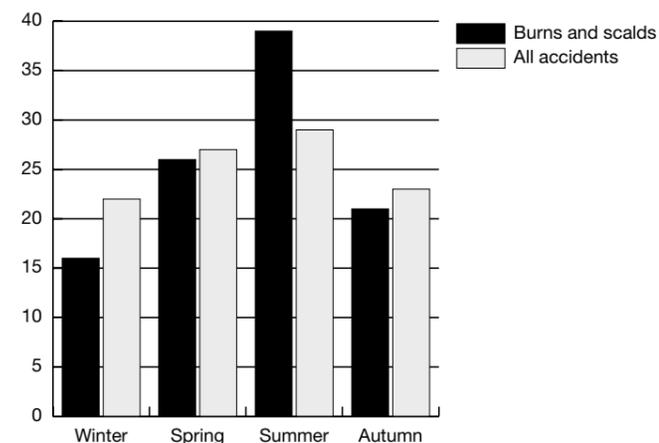
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing, furniture and bedding materials.

Table 4.11-2

	Severe injuries	Fatal injuries
Clothing	0 pa	0.2 pa
Furniture	0 pa	2 pa
Bedding/mattresses	9 pa	1.7 pa

4.11.3 Seasonal variations (severe injuries only)

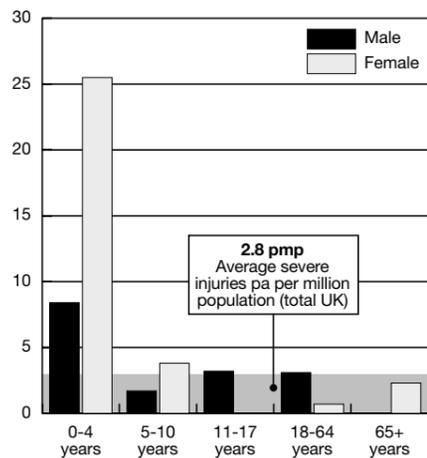
Table 4.11-3



The peak time for severe burns and scalds from cigarettes/smoking is in the summer, although the data provided no apparent reason for this trend.

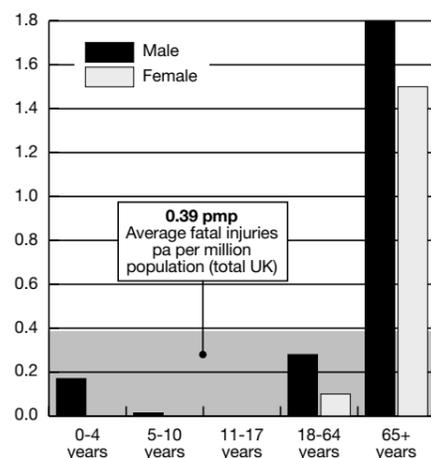
4.11.4 Age and sex of victim (severe and fatal injuries only)

Table 4.11-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	8.4	1.7	3.2	3.1	0
Female	25.5	3.8	0	0.7	2.3

Table 4.11-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.17	0.014	0	0.28	1.8
Female	0	0	0	0.1	1.5

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 65 severe injuries and 0.3 deaths pa). 53% of the severe injuries to children aged 0-4 years (ie 34 pa) involved 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Girls aged 0-4 years are involved in 3 times as many accidents per million population than boys aged 0-4 years.

Target risk group 2. The second group is children aged 5-10 years. There is insufficient data to differentiate between Category A and B injuries.

Target risk group 3. The third group is adults aged 18-64 years. 58% of the severe injuries to adults aged 18-64 (ie 39 pa) involved 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit treatment. Men aged 18-64 years are involved in more than 4 times as many accidents per million population than women aged 18-64 years.

4.11.5 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children aged 0-4 years (65 severe injuries pa + 0.3 fatal injuries pa)

Table 4.11-6

Accident mechanisms	% of cases	Main time when occurs
Eye bumped into cigarette	88%	midday, 11.30-15.00
Other infrequent mechanisms	12%	insufficient data

'15th July 1993. A 2 year old girl, at 11.30am, walked into her grandmother who was in the living room holding a cigarette in her hand. She sustained a burn to the eye and was transferred to a specialist hospital.'

'26th June 1995. A 3 year old girl was in a café at 12.00 noon. Her grandmother was holding a cigarette - the child jumped about - changed seats with one another. The child went into her grandmother's cigarette and burned her eye. She was transferred to another hospital.'

Target group 2 - Children aged 5-10 years (12 severe injuries pa + 0.3 fatal injuries pa)

This section is based on 4 incidents. Three of the incidents involved severe injuries from cigarettes in the eye, and one incident involved a death, caused by a discarded cigarette.

'6th May 1996. A 5 year old girl suffered a burn to her eye. Her mother was holding a cigarette in her hand and turned around. She did not realise the child was beside her and her cigarette burnt the child's eye. She was referred to another hospital.'

'25th March 1995. A 7 year old girl was running around in the garden and ran into the end of her granddad's cigarette. She was burnt in the eye and referred to another hospital.'

'5th December 1996. An 8 year old boy walked into a lighted cigarette with his eye open. His mother's friend was holding the cigarette in her hand at the time. He was referred to another hospital'

'20th May 1994. A 7 year old boy died in a fire at his home. The fire was caused by a discarded cigarette.'

Target group 3 - Adults aged 18-64 years (67 severe injuries pa + 7.3 fatal injuries pa)

Table 4.11-7

Accident mechanisms	% of cases	Main time when occurs
Careless disposal of smoking materials + ignition of clothing/bedding/furniture	50%	insufficient data
Careless disposal of smoking materials	17%	insufficient data
Accidentally got cigarette in eye	10%	insufficient data
Other infrequent mechanisms	13%	insufficient data
No details of mechanism	10%	insufficient data

The main location is the bedroom, where adults fall asleep or are invalids/disabled, and smoking materials fall onto the bed/bedding.

'18th May 1996. A 32 year old man fell asleep on a bed with a cigarette in the bedroom at night. The mattress caught fire. He has burns to the leg, also partial thickness burns to his hands, superficial burns to the chest and upper back, 20-25% burns of which 2% full thickness.'

'2nd November 1994. A man aged 43 was found collapsed in his flat; the armchair where he was sitting in his living room was the seat of the fire. It is believed that the cause was a lit cigarette carelessly discarded. His burns were severe and despite treatment he died.'

4.12 RADIATORS/HOT PIPES

Key target group - children aged 0-4 years old. A secondary target group is adults aged 18-64 years.

4.12.1 Total accidents

Table 4.12-1

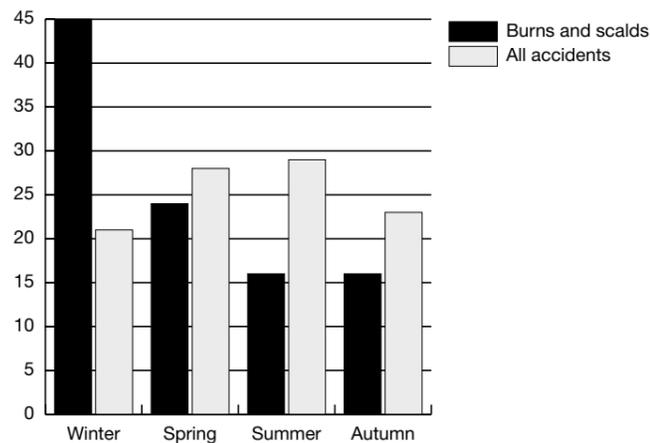
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	2696	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	163	90	4	0	40	29
Fatal injuries	2.3	0.0	0.0	0.0	0.3	2.0

An estimated 50% (82) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 50% (82) are 'category A', involving 1-4 in-patient days in hospital.

Inspection of relevant HASS/LASS cases suggests that the number of severe injuries has fallen over the last 5 years. However, this trend should be treated with caution, since the numbers of accident cases are very small, and the level of injuries is strongly dependent on how severe the winter is each year, and hence the extent to which central heating is used (with radiator temperatures being raised to the maximum in severely cold conditions).

4.12.2 Seasonal variations (severe injuries only)

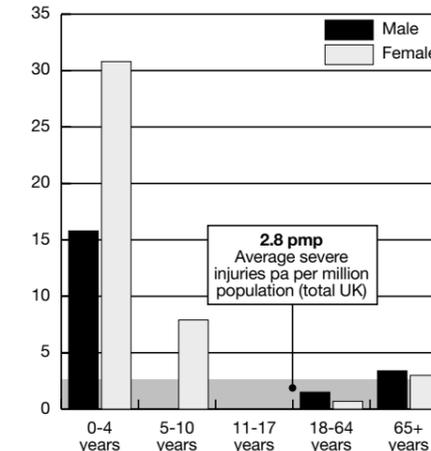
Table 4.12-2



The peak season when severe injuries are caused by hot radiators and pipes is during the winter (45% of all severe injuries), when central heating systems are used most.

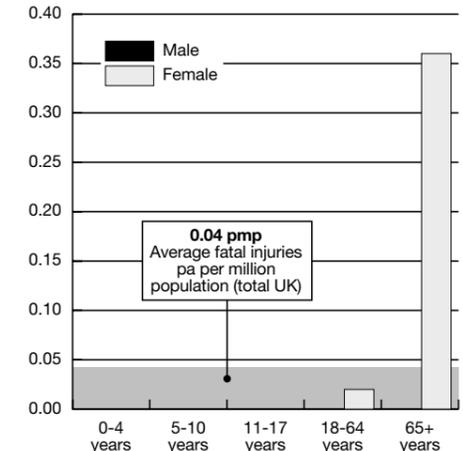
4.12.3 Age and sex of victim (severe and fatal injuries only)

Table 4.12-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	15.8	0	0	1.5	3.4
Female	30.8	1.9	0	0.7	3

Table 4.12-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	0	0
Female	0	0	0	0.02	0.36

Target risk group 1. The key age group at risk is children aged 0-4 years old, which account for 90 severe injuries a year, 67% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. A secondary age group at risk is adults aged 18-64 years old, which account for 40 severe injuries a year, 46% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.12.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (90 severe injuries pa)

Table 4.12-5

Accident mechanisms	% of cases	Main time when occurs
Rolled onto or fell against hot radiator	33%	00.00-06.59
Touched hot radiator, burnt body part (hand/foot)	33%	09.00-12.00 & 20.00-23.59
Other infrequent mechanisms	25%	insufficient data
No details of mechanism	9%	insufficient data

Most of the accidents where the child rolled or fell against a radiator happen in the bedroom. There was insufficient information on locations of other accident mechanisms. Examples of typical accidents are given below.

'28th January 1995, a 1 month old baby girl had been put in a Moses basket balanced on an upturned washing up bowl (because of draught) next to radiator. During the early

morning (00.00-06.59 - exact time not specified) the parents woke up to find baby had rolled out of basket and was against radiator screaming. The baby suffered burns to her face and hand. She was transferred to a specialist hospital for treatment.'

'14th August 1993, a 1 year old baby girl was playing in the hall/lobby and put her hands on a hot radiator, and suffered burns to her hands. She was transferred to a specialist hospital for treatment.'

Target group 2 - adults aged 18-64 (40 severe injuries pa)

Table 4.12-6

Accident mechanisms	% of cases	Main time when occurs
Doing DIY repairs and burnt by hot water from radiator	33%	insufficient data
Fell asleep against hot radiator	22%	insufficient data
Had a fit and fell against hot radiator	22%	insufficient data
No details of mechanism	22%	insufficient data

Accidents happen in different rooms throughout the house. Examples of typical accidents are given below.

'17th August 1994, at 19.30 in the evening, a 60 year old man was at home doing some DIY on his central heating system in the kitchen. A pipe burst and the hot water burnt both his hands. He was an in-patient for 13 days before being discharged.'

'4th January 1995, at around 7.00 am, a 21 year old female burnt her back, suffering full thickness burns. She said that she fell asleep leaning against a radiator. The patient not very co-operative. She was transferred to a specialist hospital for treatment.'

4.13 JUGS OF HOT WATER

Key target group - is children under 5 years old who tend to pull or knock a jug of hot water on themselves.

4.13.1 Total accidents

Table 4.13-1

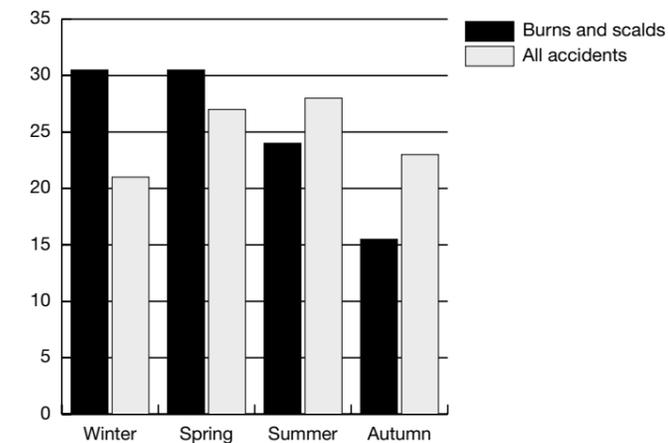
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	719	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	154	133	0	0	14	7
Fatal injuries	0	0	0	0	0	0

An estimated 48% (74) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 52% (80) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.13.2 Seasonal variations (severe injuries only)

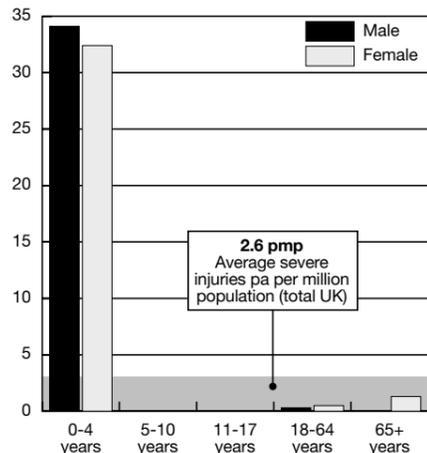
Table 4.13-2



The peak time of year for severe burns and scalds from jugs of hot water is during the winter and spring, although the data provided no apparent reason for the trend.

4.13.3 Age and sex of victim (severe injuries only)

Table 4.13-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	34.1	0	0	0.3	0
Female	32.4	0	0	0.5	1.3

Target risk group 1. The age group at greatest risk is children aged 0-4 years (involving 133 severe injuries pa). 44% of the severe injuries to children aged 0-4 years (ie 61 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. 46% of these accidents involved children aged less than 12 months.

4.13.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (133 severe injuries pa)

Table 4.13-4

Accident mechanisms	% of cases	Main time when occurs
Pulled jug on self	44%	late afternoon & early evening
Knocked jug on self	19%	early evening
Parent or sibling knocked jug over	15%	insufficient data
Other infrequent mechanisms	11%	insufficient data
No details of mechanism	11%	insufficient data

Most accidents occur in the living room. The kitchen is also mentioned. 25% of all accidents to children aged 0-4 years occurred while a baby bottle was being warmed.

‘21st September 1993. A 14 month old boy. Mother was in the kitchen in the afternoon, heating child's milk bottle in a jug of boiling water, stood jug on work top, and the child pulled jug over spilling hot water over him, superficial redness on chest and left arm. 25-50% body surface burns. He was transferred to a specialist hospital.’

‘15th July 1994. A 6 month old baby girl had just starting to crawl and grab at things. At 19.55 she was in the living room. A jug of boiling water on floor with a bottle of milk in it. The baby crawled to it and reached out, knocking it over onto itself scalding body. She was an in-patient and transferred to a specialist hospital.’

‘1st December 1994. A baby girl aged one month was scalded. In the morning Mum was going to feed the baby in the living room. The bottle was standing in jug of hot water on shelf. Mum knocked the jug over onto baby - scald to arms and legs. She was transferred to a specialist hospital.’

‘A baby boy, under 1 year of age, was having his nappy changed on a plastic changing mat. The jug of hot water with the baby's bottle in it was next to him. The baby, naked, rolled over, knocked the jug so that the hot water fell onto the changing mat. The water had nowhere to go. If there had been a towel on the mat, that would have absorbed some of the water and therefore the heat. He had extensive superficial burns and partial thickness burns on the heaviest areas.’

4.13.5 Nature of typical burns and implications of required medical treatment

Jug scalds are similar to those of kettles and saucepans, and the injury varies by the temperature and volume of the water and the clothing of the child.

The table shows the typical average percentage burns of the total body surface area caused by a jug of hot water scald for a child under 5 years.

Table 4.13-5

Age of child	% tbsa	Body part
under 5 years	20-40%	back, buttocks, chest, legs, arms (pull jug on self)
under 5 years	5-15%	feet, legs where accidentally kicked jug over

Source: medical respondents, literature.

Minor - these include patients seen by the practice nurse of a GP practice or by the A & E unit. The burn is assessed, covered with a clean Flamazin dressing, and the patient returns several times to the nurse or outpatients clinic to ensure that the wound is not infected and to change the dressings.

Severe - where the child is very young, ie 0-12 months, they are usually admitted to hospital for the 48 hours necessary for the swelling to subside and to assess the severity of the scald. Mothers are often severely traumatised due to the young age of the child.

4.13.6 Product design ideas emerging from the research

1. *Electric bottle warmers* are available at a cost of £14-17 which heat the baby's milk or food to the required temperature. These would be very effective in preventing scald accidents among very young children from jugs of hot water.

2. *Microwaves* can be used to warm a baby's bottle, although the temperature of the liquid should be tested after heating, as it is easy to overheat the liquid, which may result in scalding the baby's mouth.

4.13.7 Key safety messages

Target audience - children aged 0-5 years

Primary message:-

- Use an electric bottle warmer rather than jugs of hot water to heat feeding bottles.
- Place jugs of hot water out of the reach of babies and young children.

Babies will move before you expect and could roll and knock over a jug of hot water warming their feed. Older children can climb up or reach up.

Secondary messages:-

- Never place a jug of hot water on the floor.
- Do not hold a young child in your arms or on your lap when you are carrying a jug of hot water.

4.14 GARDEN FIRE/BONFIRE

Key target group – is children aged 11-17 years. Secondary target groups are children aged 5-10 years and adults aged 18-64 years.

4.14.1 Total accidents

Table 4.14-1

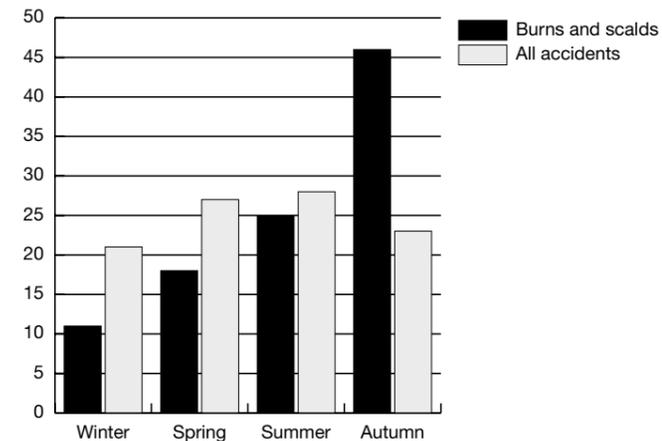
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	1348	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	143	4	17	71	47	4
Fatal injuries	0.7	0	0	0	0.33	0.33

An estimated 65% (93) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 35% (50) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.14.2 Seasonal variations (severe injuries only)

Table 4.14-2



The peak time of year for severe burns and scalds from garden fires and bonfires is during the autumn, and 36% of all incidents occur on November 5th and ten days either side of this date.

4.14.3 Age and sex of victim (severe injuries only)

Table 4.14-3

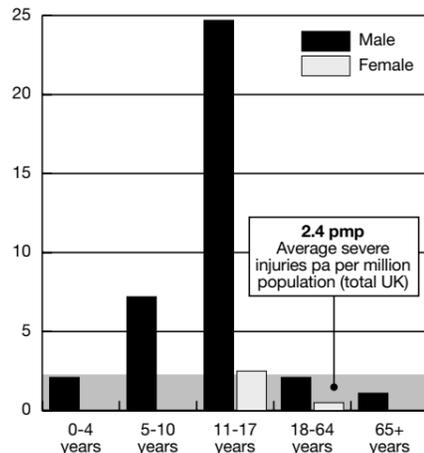
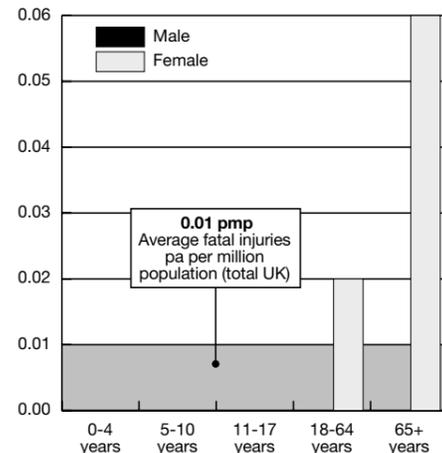


Table 4.14-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	2.1	7.2	24.7	2.1	1.1
Female	0	0	2.5	0.5	0

	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	0	0
Female	0	0	0	0.02	0.06

Target risk group 1. The age group at greatest risk is children aged 11-17 years (involving 71 severe injuries pa). 67% of the severe injuries to children aged 11-17 years (ie 48 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Boys aged 11-17 years are involved in ten times as many accidents as girls aged 11-17 years. 77% of injuries to 11-17 year olds occur on November 5th and ten days either side of that date.

Target risk group 2. The second target risk group is children aged 5-10 years (involving 17 severe injuries pa). There was insufficient data to differentiate between Category A and B injuries.

Target risk group 3. The third group is adults aged 18-64 years (involving 47 severe injuries and 0.33 deaths pa). 60% of the severe injuries to adults aged 18-64 years (ie 28 pa) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Men aged 18-64 years are involved in 4 times as many accidents as women aged 18-64 years.

4.14.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 11-17 years (71 severe injuries pa)

Table 4.14-5

Accident mechanisms	% of cases	Main time when occurs
Fell into bonfire/garden fire	50%	insufficient data
Aerosol exploded in bonfire/garden fire	33%	insufficient data
Other infrequent mechanisms	17%	insufficient data

Most accidents occur in parkland. The garden is also mentioned.

'1st November 1994. A boy aged 11 was running past a bonfire built from rubber tyres in the countryside at 6.15pm. Burns - full thickness/major - to the hand. He was transferred to a specialist hospital.'

'3rd November 1996. A 12 year old boy tripped and fell into the remains of bonfire in the late evening. He sustained full thickness burns to his hands. He was transferred to a specialist hospital.'

'6th November 1992. A girl aged 11 suffered burns to her face when an aerosol can exploded on a bonfire in the countryside at 5am. Her father thinks it was the remains of a fire from the night before. She was recorded as still in hospital at the time of preparing the computer record.'

Target group 2 - Children aged 5-10 years (17 severe injuries pa)

This section is derived from 3 incidents. Two involved aerosols exploding in a bonfire, one in a car park, one in an unknown location. The third incident involved burning rubbish from a garden fire blowing onto a child in the garden.

'26th August 1992. A 6 year old boy was injured when gypsies were living on car park, and an aerosol can in a bonfire exploded & hit the boy's face and chest. He was transferred to a specialist hospital.'

'5th September 1992. A 10 year old boy was taken immediately to be seen by the doctor. He threw an aerosol into an outside fire and it exploded in his face. No details. He was transferred to a specialist hospital.'

'29th December 1995. A 6 year old boy was burning rubbish with Dad in the garden at 4 o'clock in the afternoon. A carpet blew off the bonfire onto the child's neck and hand. He was an in-patient for 33 days and then referred to the outpatients clinic.'

Target group 3 - Adults aged 18-64 years (46 severe injuries and 0.33 deaths pa)

Table 4.14-6

Accident mechanisms	% of cases	Main time when occurs
Aerosol/something exploded in bonfire	37%	insufficient data
Fell in garden fire/bonfire	18%	insufficient data
Other infrequent mechanisms	27%	insufficient data
No details of mechanism	18%	insufficient data

Most accidents, about 80%, occur in the garden, burning garden and household rubbish. Parkland was also mentioned.

‘8th December 1995. A 28 year old man was clearing the garden, putting things on a bonfire at 4 o’clock in the afternoon. Something exploded, and he has burns to his face. He was transferred to a specialist hospital.’

‘9th February 1994. A man aged 30 fell onto a bonfire in the garden, suffering burns to his arm and lower spine. He was an in-patient for 7 days and was then referred to the outpatients clinic.’

4.15 IRONS

The key target group - is children under 5 years old who tend to touch the iron or pull the flex of the iron.

4.15.1 Total accidents

Table 4.15-1

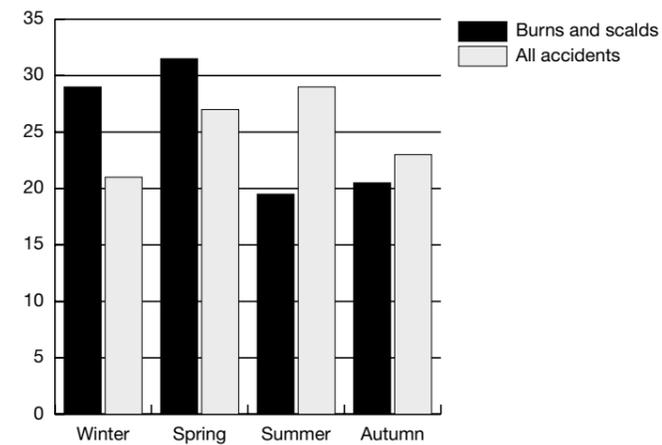
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	5393	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	137	121	4	0	8	4
Fatal injuries	0	0	0	0	0	0

An estimated 58% (79) of the severe injuries are ‘category B’ involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 42% (58) are ‘category A’, involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.15.2 Seasonal variations (severe injuries only)

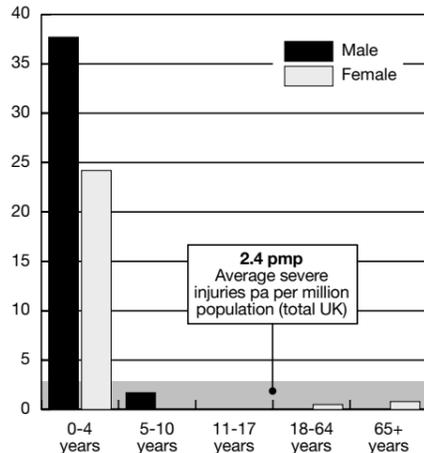
Table 4.15-2



The peak time for severe burns and scalds from irons is during the spring, although the data provided no apparent reason for this trend.

4.15.3 Age and sex of victim (severe and fatal injuries only)

Table 4.15-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	37.7	1.7	0	0	0
Female	24.2	0	0	0.5	0.8

Target group 1. The age group at greatest risk is children aged 0-4 years (involving 121 severe injuries pa). 55% of the severe injuries to children aged 0-4 years (ie 67 per year) involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. Boys are involved in 1.6 times as many accidents per million population as girls aged 0-4 years.

4.15.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (121 severe injuries pa)

Table 4.15-4

Accident mechanisms	% of cases	Main time when occurs
Child pulled the flex or iron off the ironing board or work surface	28%	insufficient data
Child touched iron	28%	throughout the day peak at 4pm
Other infrequent mechanisms	23%	insufficient data
No details of mechanisms	21%	insufficient data

Where specified the kitchen was the main location of the accident, with half as many again happening in the living room. The bedroom was an infrequent location mentioned.

‘23rd April 1993. A 2 year old boy was playing in the lounge with his older brothers at 4 o’clock in the afternoon whilst Mum was ironing. The phone rang, Mum answered the phone, and the patient put the hot iron on his hand. He was an in-patient for 31 days and transferred to a specialist hospital.’

‘4th March 1992. A 1½ year old boy in a baby walker at 12.00 noon in the kitchen pulled on the flex of a hot iron and it fell on his face. He was transferred to a specialist hospital.’

‘4th April 1994. A 1 year old boy pulled the iron onto his foot while his mother was in the garden in the morning. His mother came in when she heard patient crying and found him with the iron still on his foot - burn to foot. He was transferred immediately to a specialist hospital.’

4.15.5 Nature of typical burns and implications of required medical treatment

Hot irons can cause deep burns which require skin grafting, as the child tends to be quite young and does not understand to take their hand away immediately after contact with the iron, causing the hand to stick to the iron. A hand with diminished function can be a handicap as the child grows older, particularly in terms of employment.

The table below shows the typical average percentage burns of the total body surface area caused by an iron burn by body part.

Table 4.15-5

Age of child	% tbsa	Body part
under 5 years	< 1%	finger
under 5 years	11/2-21/2%	hand and fingers

Source: medical respondents.

Minor - These tend to be burns to the fingers or part of hand, and after examination are treated with a Flamazin dressing. Minor iron burns also present themselves at the GP surgery several days after the burn has occurred, when it has begun to blister. It is given a Flamazin dressing and monitored two or three times.

Severe - Severe iron burns can require being an in-patient for an average of 5 days and skin grafting. Pressure garments are worn on the hand, and the victim is an outpatient for up to two years. These injuries are often treated in the plastic surgery or children’s wards.

4.15.6 Product design ideas emerging from the research

1. Cordless irons are available, and currently account for about 4.3% of the present market. The research also suggests that further product development is required to address consumer concerns that current designs are cumbersome, more awkward to use and that they cool down too quickly.
2. Ironing board with flex guard is available where there is a metal rod with a hole in it at the end of the board. This enables the flex to be higher than usual, ie not dangle down.
3. Shorter flexes are less likely to dangle between the socket and the ironing board, although manufacturer/supplier respondents felt that consumers want a long length of flex, usually longer than from the work surface to the floor.

4. Special brackets are available to hold the iron when it is cooling, which usually require fixing to a wall.
5. Iron holder on ironing board is available on some ironing boards so that the iron can be left hot side down while ironing or to cool, making the iron more stable than when it is left on its heel. Solid heat resistant holders are preferable to metal grid holders which allow the hot part of the iron to be accessible to a young child's fingers if they are crawling around on the floor and reach up to the metal grid. However the ironing board itself is considered by many respondents to be inherently unstable and easily upturned.
6. Temperature indicators have been considered by several manufacturers. A coloured paint strip would indicate the temperature of the iron, even when not plugged in.

4.15.7 Key safety messages

Target audience - children aged 0-4 years

Primary message:-

- When possible, iron when the children are being looked after by another adult/carer or when they are asleep.

Secondary messages:-

- Unplug the iron and put it well back on a work surface to cool, out of the reach of children.

It can still be hot for a long time and can be easily pulled down by a young child.

- Where possible, shorten the cord of the iron as practical, to avoid it dangling down over the work surface.
- Do not iron on the floor.

4.16 HOT FOODS/HOT SAUCES

Key target group - 0-4 year old children.

A secondary target group is children aged 5-10 years old.

4.16.1 Total accidents

Table 4.16-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	4205	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	131	75	17	8	27	4
Fatal injuries	0	0	0	0	0	0

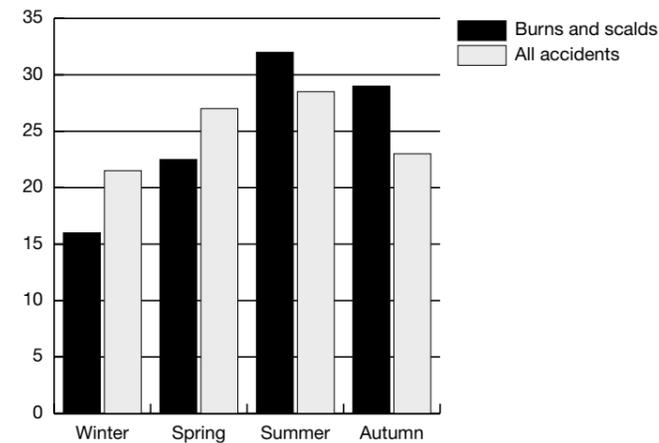
This section includes all hot foods and sauces where the container is not specified, and excludes hot drinks.

An estimated 58% (76) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 42% (55) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports.

4.16.2 Seasonal variations (severe injuries only)

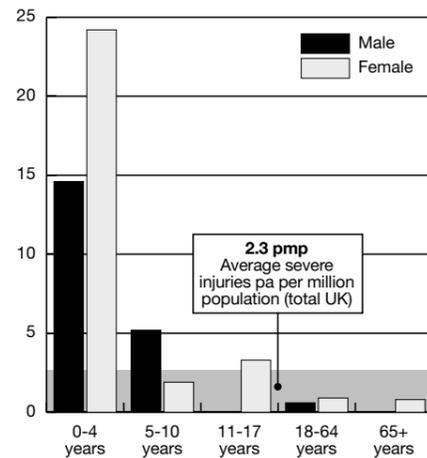
Table 4.16-2



Most accidents happen in the summer (32%) and autumn (29%). Since the key mechanisms indicate hot food was falling onto small children, it is probably the lack of clothing in these warmer months that is one of the reason why there are more severe injuries during these two seasons.

4.16.3 Age and sex of victim (severe injuries only)

Table 4.16-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	14.6	5.2	0	0.6	0
Female	24.2	1.9	3.3	0.9	0.8

Target risk group 1. The key age group at risk is 0-4 year olds, which account for 75 severe injuries a year, 56% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. A secondary key age group at risk is 5-10 year olds, which account for 17 severe injuries a year, 75% of the recorded cases involved 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.16.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (75 severe injuries pa)

Table 4.16-4

Accident mechanisms	% of cases	Main time when occurs
Hot food or sauce fell onto child or was spilt on child by another person (adult or older brother/sister)	39%	11.30-12.30 & 16.00-18.00
Child pulled hot food onto itself/or spilt/dropped hot food down itself	39%	16.00-18.00
Child ate hot food/put head into hot dish of food (to eat it)	11%	insufficient data
Other infrequent mechanisms (mentioned once)	11%	insufficient data

Most accidents happen in the kitchen. It is worth noting that a sixth of the severe injuries to children under five involved very hot 'instant' pot noodles that are made by adding boiling water. Examples of typical accidents are given below.

'19th April 1992, at around 16.00, a 1 year old boy had hot gravy spilt over his head. He was an in-patient for 9 days before being discharged.'

'1st August 1996, at 15.50, a 2 year old boy pulled a pot of curry onto himself. He suffered partial thickness burns to the upper arm, and was sent to a specialist hospital for treatment.'

'28th March 1995 at 17.30, a 3 year old girl was in the kitchen, when her sister handed her a "pot noodle" (just made with boiling water). The patient dropped the pot noodle onto her thighs and chest, and suffered partial thickness burns to her belly and abdomen. She was sent immediately to a specialist hospital for treatment.'

'3rd March 1995, at 11.50 in the morning, a 1 year old boy was in the kitchen at home with his mother who had just made jelly blancmange pudding. She had put it on a table to cool, and the child climbed up on a chair, and put his head into the dish as if to eat the pudding, which was very hot. He burnt his forehead, and his mother was very distressed. The patient was sent straight to the burns unit.'

Target group 2 - Children aged 5-10 years (17 severe injuries pa)

Most accidents happen in the kitchen. An example of a typical accident is given below.

There is too little information available to identify accident mechanisms. Four cases included two where the child was scalded by hot gravy, one case where a 5 year old boy drank boiling cheese sauce that was being prepared for a sauce, and one where a 10 year old boy was making toffee, which he spilt onto his hand. Two of the four accidents happened between 16.30 and 17.45.

4.17 GAS CYLINDERS/GAS LEAKS

Key target group - males aged 11-17 years old.

A secondary target group is adults (mostly male) aged 18-64 years old.

4.17.1 Total accidents

Table 4.17-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	395	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	125	0	0	40	59	26
Fatal injuries	0	0	0	0	0	0

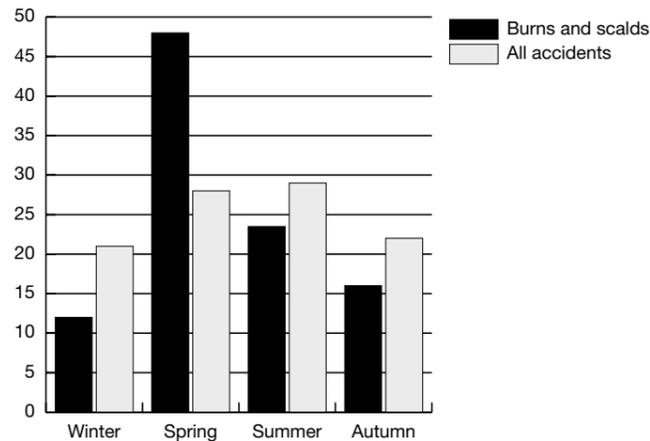
This section includes accidents caused by gas leaks (various appliances) and gas cylinders.

An estimated 68% (85) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 36% (40) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.17.2 Seasonal variations (severe injuries only)

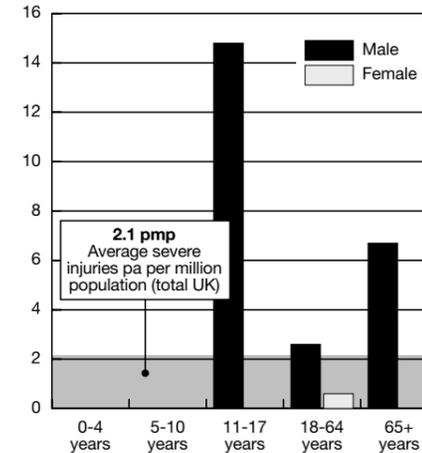
Table 4.17-2



The peak season for accidents caused by gas cylinders and gas leaks is during the spring, which account for 48% of all severe injuries.

4.17.3 Age and sex of victim (severe injuries only)

Table 4.17-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	14.8	2.6	6.7
Female	0	0	0	0.6	0

92% of the accidents involving gas cylinders and gas leaks involve males.

Target risk group 1. The key age group at risk is males aged 11-17 year olds, which account for 40 severe injuries a year, 67% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. However, it should be noted that this group includes one incident in which 5 boys were injured when a gas cylinder exploded, which has resulted in a possible over-estimate of the number of injuries in this age group.

Target risk group 2. A secondary age group at risk is adults (mostly male) aged 18-64 year olds, which account for 59 severe injuries a year, 58% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.17.4 Accident mechanisms (severe injuries only)

Target group 1 - males aged 11-17 years old (40 severe injuries pa)

This section is derived from 2 incidents only (over the five year period), one of which involved injuries to five boys aged 12-15, who were playing in the garage when a gas cylinder exploded. The other incident involved a gas cylinder that exploded in a tent, and the tent caught fire. The latter case is used below as an example for this group.

'24th August 1996 at 10.30 am/pm a 15 year old male was out in the country camping with his friends, when the gas cylinder exploded (no details were given of how it ignited) and the tent caught fire. The boy's arm was burnt and he spent 3 days in hospital before being discharged.'

Target group 2 - adults aged 18-64 years old (59 severe injuries pa)

Table 4.17-4

Accident mechanisms	% of cases	Main time when occurs
Gas cylinder/bottle exploded	42%	insufficient data
Camping (in tent) changing cylinder/gas leak & exploded	25%	22.00-23.00
Other infrequent mechanisms	29%	insufficient data
No details of mechanism	4%	insufficient data

A quarter of the accidents happened in tents, while the victims were camping. The remainder happened in various places around the home. It should also be noted that in 20% of the incidents 2 people were injured when the gas exploded. Examples of typical accidents are given below.

‘3rd March 1995, at around 08.30 am, a 41 year old was cooking in the kitchen on a camping stove about 6 feet away from his father-in-law who was changing a canister on another camping stove. The father-in-law punctured the can and escaping gas shot across the room. The gas ignited and caused an explosion in the son-in-law’s face. The son-in-law suffered full depth burns to his face and was immediately transferred to a specialist burns unit for treatment.’

‘24th August 1996. A 22 year old male and his 21 year female companion were camping out on a campsite. At 10.30 pm they were inside their tent, changing a gas cylinder on a lamp, when the cylinder exploded, and the tent caught fire. Both received burns to the face. The woman was discharged immediately, but the male was treated as an in-patient for 3 days before being discharged.’

4.18 LIGHTERS

Key target group - children aged 0-4 years. Other secondary groups are children aged 5-10 years, children aged 11-17 years and adults aged 18-64 years.

4.18.1 Total accidents

Table 4.18-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	755	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	110	17	27	17	44	4
Fatal injuries	3	1.7	0.0	0.0	0.7	0.7

An estimated 82% (90) of the severe injuries are ‘category B’ involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 18% (20) are ‘category A’, involving 1-4 in-patient days in hospital.

Inspection of relevant categories in HASS/LASS reports indicates a steady rise in the number of injuries caused by cigarette lighters. This is confirmed by research commissioned by the DTI CSU (carried out by Sambrook Research International), which showed that the number of fires caused by lighters, especially children playing with lighters has grown, the main reason has been the rapid growth in sales of disposable lighters imported into the UK following removal of tax on lighters in 1992.

4.18.2 Secondary ignition sources

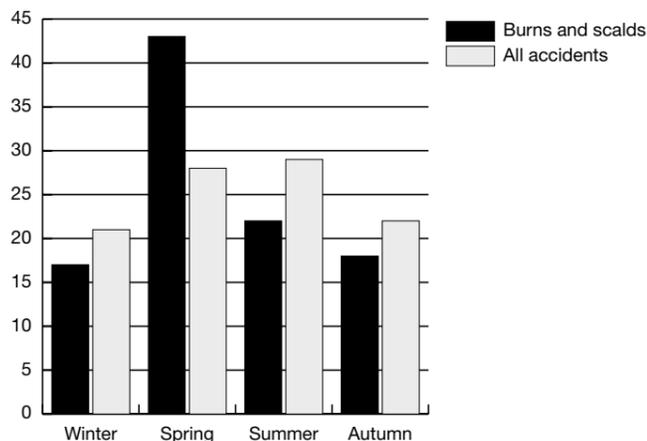
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing.

Table 4.18-2

	Severe injuries	Fatal injuries
Clothing	12 pa	0.7 pa

4.18.3 Seasonal variations (severe injuries only)

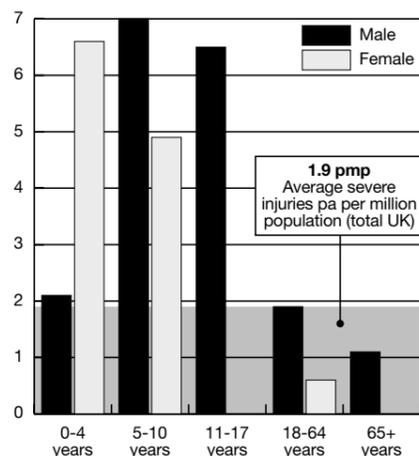
Table 4.18-3



Most severe injuries caused by lighters occur during the spring months (43%), with less than half this level of accidents happening during the other three seasons.

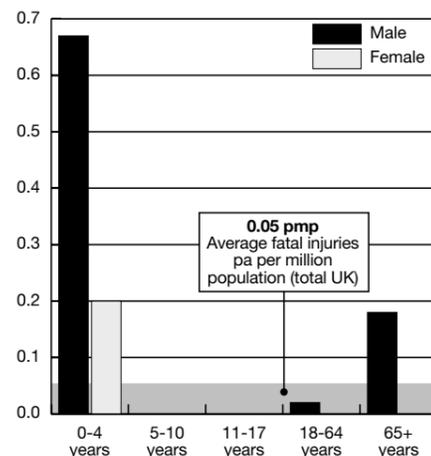
4.18.4 Age and sex of victim (severe and fatal injuries only)

Table 4.18-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	2.1	7	6.5	1.9	1.1
Female	6.6	4.9	0	0.6	0

Table 4.18-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.67	0	0	0.02	0.18
Female	0.2	0	0	0	0

Target risk group 1. The key age group at risk is 0-4 year olds, which account for 17 severe injuries a year, 50% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. It also accounts for 1.7 fatal injuries a year.

Target risk group 2. A secondary age group at risk is 5-10 year olds, which account for 27 severe injuries a year, 83% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 3. A third age group at risk is 11-17 year olds, which account for 17 severe injuries a year, 100% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 4. A fourth age group at risk is adults aged 18-64 years, which account for 44 severe injuries a year, 100% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit. It also accounts for 0.7 deaths a year.

4.18.5 Accident mechanisms (severe and fatal injuries only)

Target group 1 - 0-4 year olds (17 severe injuries pa + 1.7 fatal injuries pa)

Table 4.18-6

Accident mechanisms	% of cases	Main time when occurs
Severe - Unsupervised child, found lighter and burnt self (1 case set hair alight, 1 case ignited T-shirt, 1 case no detail)	75%	insufficient data
Severe - Sibling set child's hair alight playing with lighter	25%	insufficient data
Fatal - Other (older) children playing with lighter which caused a house fire	60%	insufficient data
Fatal - The victim was playing with lighter which caused a fire or burnt the victim	40%	insufficient data

Half of the severe injuries occurred in the living room, but no specific room was mentioned for the other half. Similarly, half the fatal accidents happened in the child's bedroom, but no room was mentioned for the other half. Examples of typical accidents are given below.

'17th January 1993, at around 12.30 pm, a 2 year old girl was playing unsupervised in the living room. She was playing with her mother's lighter, and caught her hair/forehead alight. The girl was treated as an in-patient for an unspecified length of time.'

'7th June 1995, the deceased who was a 3 month old baby was placed to sleep on a bed at a relative's home. A fire was caused by other children playing with a disposable cigarette lighter and the baby died due to smoke inhalation and multiple burns.'

Target group 2 - 5-10 year olds (27 severe injuries pa)

Table 4.18-7

Accident mechanisms	% of cases	Main time when occurs
Playing with a lighter (set fire to carpet (2), high flame burnt their faces (2), set fire to pyjamas (1))	83%	insufficient data
Other infrequent mechanisms	13%	insufficient data

Most accidents happen in the bedroom (where specified). A third of the incidents involved 2 people being injured. An example of a typical accident is given below.

'7th June 1996, at around 2.00 am, two boys were playing in their bedroom. A house fire started, caused by the children starting a bonfire in their bedroom with a lighter - the flames

were mainly on carpet. Both children burnt their feet. One boy was in hospital for 6 days and the other for 8 days.’

Target group 3 - 11-17 year olds (17 severe injuries pa)

Table 4.18-8

Accident mechanisms	% of cases	Main time when occurs
Playing with lighter and burnt themselves (includes 2 cases playing lighting an aerosol can)	100%	no data

The database contained too little information to identify the main location where accidents happen, although 2 were out of doors. An example of a typical accident is given below.

‘9th March 1996, a 12 year old male was playing in an urban road area with an aerosol can which he set alight with cigarette lighter. He suffered burns to his face, arms and chest. He was an in-patient for 14 days before being discharged for further treatment as an out-patient.’

Target group 4 - adults aged 18-64 years (44 severe injuries pa + 0.7 fatal injuries pa).

Table 4.18-9

Accident mechanisms	% of cases	Main time when occurs
lighter exploded in victim's face	22%	insufficient data
Spilt fuel on self/clothes and then set fuel alight	22%	insufficient data
Other infrequent mechanisms	56%	insufficient data

No dominant location for accidents. Examples of typical accidents are given below.

‘30th April 1996, between 16.00 and 19.59, an 18 year old female was in her car when her petrol lighter exploded. She was an in-patient for 10 days before being discharged.’

‘25th February 1996, at 9.00 am. A 40 year old man was in his living room, and had filled his lighter with petrol. Some of the petrol splashed up over his face, and he then lit a cigarette. The flames ignited the petrol on his face causing burns. He was sent to a specialist hospital for treatment.’

4.19 BOWLS/BUCKETS OF HOT WATER

Key target group - children aged 0-4 years old.

A secondary target group is children aged 5-10 years old.

4.19.1 Total accidents

Table 4.19-1

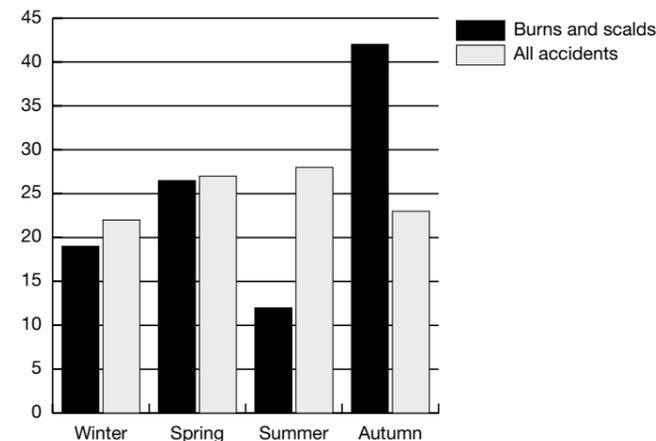
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	647	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	108	65	22	4	13	4
Fatal injuries	0.0	0.0	0.0	0.0	0.0	0.0

An estimated 50% (54) of the severe injuries are ‘category B’ involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 50% (54) are ‘category A’, involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.19.2 Seasonal variations (severe injuries only)

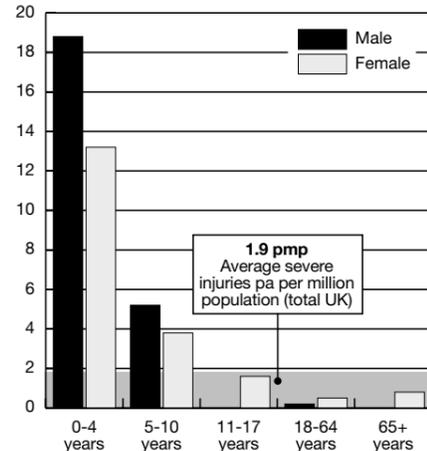
Table 4.19-2



The most frequent time for scalds caused by bowls/buckets of hot water is during the autumn (42% of all cases) and the least frequent time is during the summer. However, inspection of case histories offer no obvious explanation why this should be so.

4.19.3 Age and sex of victim (severe injuries only)

Table 4.19-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	18.8	5.2	0	0.2	0
Female	13.2	3.8	1.6	0.5	0.8

Target risk group 1. The key age group at risk is 0-4 year olds, which account for 65 severe injuries a year, 60% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. A secondary age group at risk is 5-10 year olds, which account for 22 severe injuries a year, 60% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.19.4 Accident mechanisms (severe and fatal injuries only)

Target group 1 - Children aged 0-4 years (65 severe injuries pa)

Table 4.19-4

Accident mechanisms	% of cases	Main time when occurs
Child put foot into, fell into or sat in a bowl/bucket of hot water on the floor (mostly for washing the floor/carpet, but also a bowl being used for inhaling)	48%	insufficient data
Child pulled a bowl of hot water over itself (half of them being used to heat up baby's bottle)	26%	insufficient data
Other infrequent mechanisms (single mentions)	26%	insufficient data

All accidents happen in the kitchen, where specified. Examples of typical accidents are given below.

'2nd November 1992, a 9 month old baby boy put his foot into a bowl of hot water that his mother had been using to give another child a steam inhaler for a cold, and had left the hot

bowl of water on the floor. The baby badly scalded his foot and was still an in-patient at the time of compiling this record.'

'16th April 1995, at 08.30 in the morning, a 9 month old baby girl pulled a bowl of boiling water over herself (the water being used to heat up a bottle). She scalded her belly, abdomen and legs, suffering partial thickness burns. She was transferred immediately to a specialist hospital.'

Target group 2 - Children aged 5-10 years (22 severe injuries pa)

Table 4.19-5

Accident mechanisms	% of cases	Main time when occurs
Child pulled or knocked a bowl of hot water (being used for inhaling) over itself.	80%	insufficient data
Other infrequent mechanisms (single mention)	20%	insufficient data

All accidents happen in the kitchen, where specified. An example of a typical accident is given below.

'6th of May 1996, in the early evening between 16.00 and 19.59, a five year old male was inhaling steam for croup, when he tipped hot water down himself, badly scalding his thighs, chest and testicles. He was taken to A&E, and then immediately transferred to another hospital for treatment.'

4.20 FRYING PANS

Key target group - 5-10 year old children.

A secondary target group is adults aged 18-64 years.

4.20.1 Total accidents

Table 4.20-1

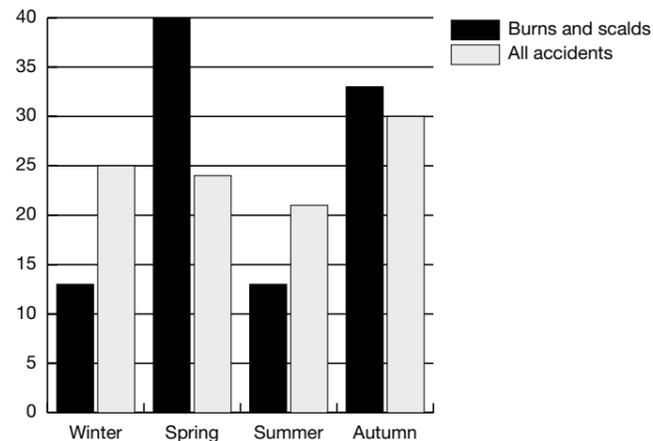
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	3793	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	96	0	13	6	76	0
Fatal injuries	0.3	0	0	0	0	0.3

This section includes frying pans (about 90% of the cases) and woks (10%).

An estimated 67% (64) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 33% (32) are 'category A', involving 1-4 in-patient days in hospital. Overall trend appears to be static, with no discernible change indicated by an inspection of the accident records over the 5-year period.

4.20.2 Seasonal variations (severe injuries only)

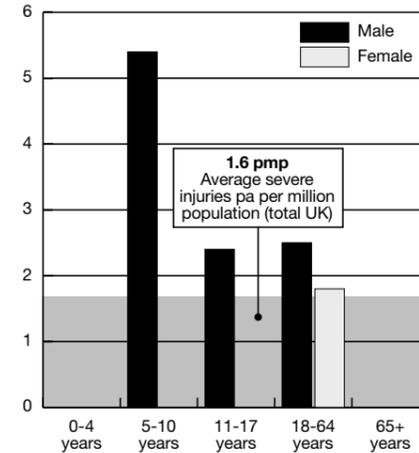
Table 4.20-2



40% of severe injuries caused by frying pans happen in the spring, and a further 33% happen in the autumn. However, the database does not indicate any specific reason for these peaks.

4.20.3 Age and sex of victim (severe injuries only)

Table 4.20-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	5.4	2.4	2.5	0
Female	0	0	0	1.8	0

Target risk group 1. The key age group at risk is 5-10 year olds, which account for 13 severe injuries a year, 100% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

Target risk group 2. A secondary age group at risk is 18-64 year olds, which account for 76 severe injuries a year, 67% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.20.4 Accident mechanisms (severe injuries only)

Target group 1 - 5-10 year olds (13 severe injuries pa)

Table 4.20-4

Accident mechanisms	% of cases	Main time when occurs
Knocked/pulled frying pan off cooker	100%	insufficient data

All accidents happen in the kitchen. An example of a typical accident is given below.

'On Boxing Day 1994, at about 10.00 am, a 10 year old male was in the kitchen cooking bacon in frying pan. He bent down, and when he stood up he knocked the frying pan off cooker and it spilled down his neck and shoulder. He was transferred to a specialist hospital for treatment.'

Target group 2 - adults aged 18-64 years (76 severe injuries pa)

Table 4.20-5

Accident mechanisms	% of cases	Main time when occurs
Knocked/spilt content of frying pan (food and/or oil) on self	42%	insufficient data
Fat from frying pan splashed (spat) onto them	17%	insufficient data
Frying pan caught fire	8%	insufficient data
No details of mechanism	33%	insufficient data

All accidents happen in the kitchen. Examples of typical accidents are given below.

‘24th November 1995, at around 11.00 am, a 22 year old male was frying sausages on the oven. The handle of the frying pan was protruding out, and as the patient turned to speak to his friend he caught the pan and it fell onto his foot. He was not wearing shoes at the time and his foot was badly burnt. He was transferred to a specialist hospital for treatment.’

‘18th March 1996 at 18.30, a 58 year old male was in the kitchen cooking sausages when the fat splashed up into his eye (once assessed the patient was sent to the burns unit).’

4.21 FIREWORKS

Key target group - youths aged 11-17, especially boys.

4.21.1 Total accidents

Table 4.21-1

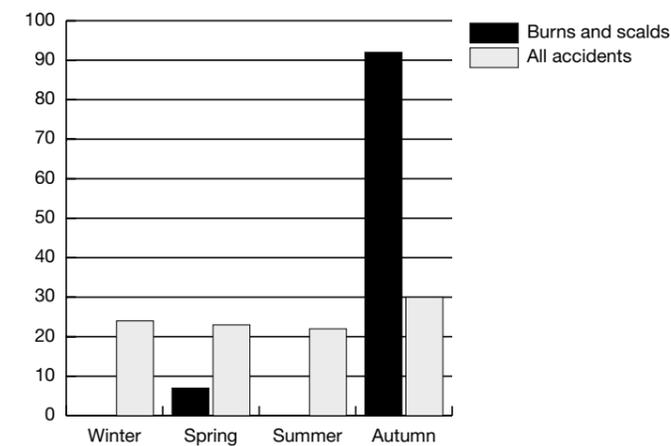
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	1348	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	88	0	6	54	28	0
Fatal injuries	0	0	0	0	0	0

An estimated 67% (59) of the severe injuries are ‘category B’ involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 33% (29) are ‘category A’, involving 1-4 in-patient days in hospital.

The firework accident census shows that injuries caused by fireworks have risen steadily between 1991 and 1994, but since then the number of injuries have fallen, partly as a result of safety promotion programmes carried out by the DTI CSU and partly due to a fall in the number of fireworks sold.

4.21.2 Seasonal variations (severe injuries only)

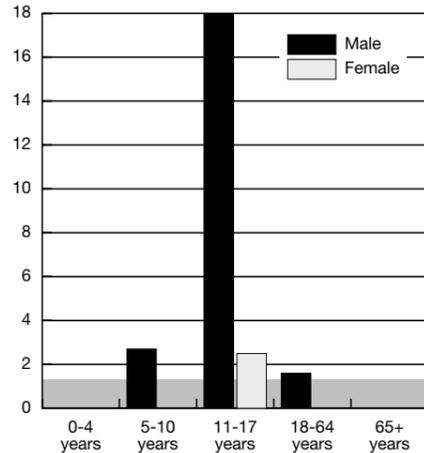
Table 4.21-2



Firework injuries are mostly during the autumn period, focused around the bonfire night, on November 5th.

4.21.3 Age and sex of victim (severe injuries only)

Table 4.21-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	2.7	18	1.6	0
Female	0	0	2.5	0	0

Target risk group 1. The key age group at risk is 11-17 year olds (90% of which are males), which account for 54 severe injuries a year, 87% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.21.4 Accident mechanisms (severe injuries only)

Target group 1 - youths aged 11-17 years (54 severe injuries pa)

Table 4.21-4

Accident mechanisms	% of cases	Main time when occurs
Firework exploded in hand	37%	insufficient data
Hit by a thrown firework	37%	insufficient data
Other infrequent mechanisms/mechanism unknown	26%	insufficient data

An example of a typical accident is given below.

'30th October 1996, time/location unknown - 15 year old male. A banger exploded in his hand. He was transferred from Russell Hall Hospital. He spent 7 days being treated as an in-patient, before receiving further treatment at the out-patient's clinic.'

4.22 SUN

Key target group - children aged 0-4 years.

4.22.1 Total accidents

Table 4.22-1

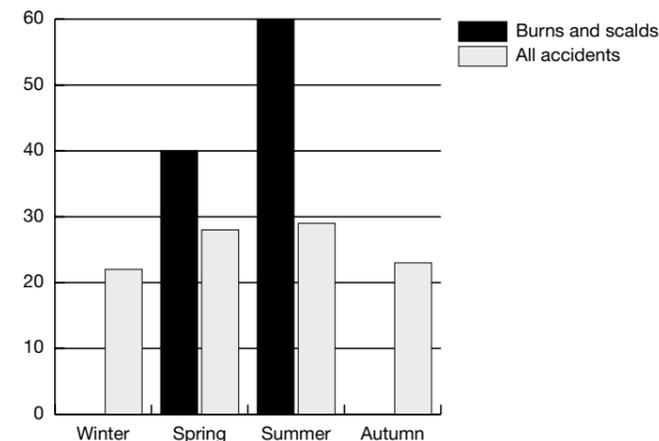
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	4656	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	55	15	0	6	28	6
Fatal injuries	0.3	0.3	0	0	0	0

An estimated 50% (28) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 50% (28) are 'category A', involving 1-4 in-patient days in hospital.

Since all these incidents involve sun burn and/or sun-stroke, the number of accidents will be high during long hot summers and low during cold wet summers. It should be noted that some of these sun burn cases, especially those involving minor injuries, happen when people are on holiday abroad.

4.22.2 Seasonal variations (severe injuries only)

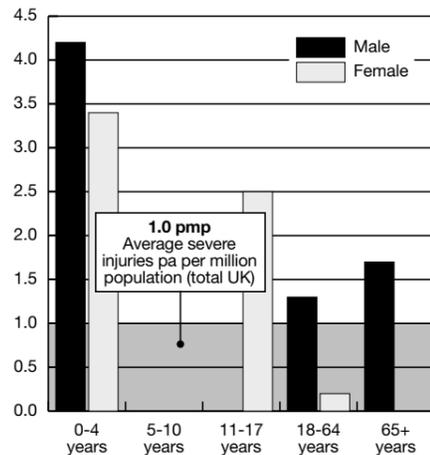
Table 4.22-2



60% of the accidents occur during the summer months and 40% during the late spring months, ie when the sun is both hottest and out for the longest period of time. It should also be noted that at least 10% of the severe injuries were incurred during holidays abroad.

4.22.3 Age and sex of victim (severe injuries only)

Table 4.22-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	4.2	0	0	1.3	1.7
Female	3.4	0	2.5	0.2	0

Target risk group 1. The key age group at risk is children aged 0-4 years, which account for 15 severe injuries a year, 33% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.22.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (15 severe injuries pa + 0.3 fatal injuries pa)

Table 4.22-4

Accident mechanisms	% of cases	Main time when occurs
Playing in the sun and sun burnt head/shoulders	100%	insufficient data

Examples of typical accidents are given below.

‘26th June 1992, around midday - a 2 year old male was playing outside in the garden on a very sunny day and he badly sunburned his shoulders. He was transferred to another hospital for treatment.’

4.23 BABY BOTTLES

Key target group - children aged 0-4 years old.

4.23.1 Total accidents

Table 4.23-1

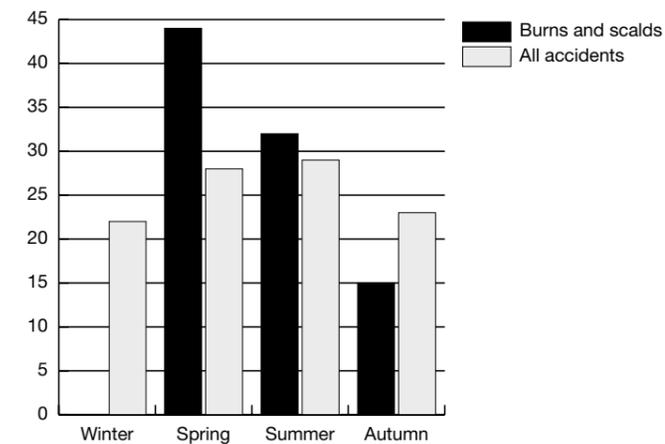
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	467	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	54	54	0	0	0	0
Fatal injuries	0	0	0	0	0	0

An estimated 54% (29) of the severe injuries are ‘category B’ involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 46% (25) are ‘category A’, involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.23.2 Seasonal variations (severe injuries only)

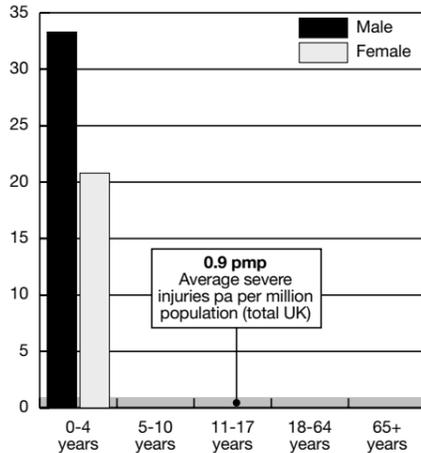
Table 4.23-2



Over 50% of the severe injuries (all involving children aged 0-4) occur during the spring, with none recorded in the winter. There is no apparent reason for this trend from the data files. Furthermore, it should be noted that the chart is based on the analysis of 13 severe injuries cases only.

4.23.3 Age and sex of victim (severe injuries only)

Table 4.23-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	33.3	0	0	0	0
Female	20.8	0	0	0	0

Target risk group 1. The key age group at risk is children aged 0-4 years, which accounts for 54 severe injuries a year, 54% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.23.4 Accident mechanisms (severe injuries only)

Target group 1 - Children aged 0-4 years (54 severe injuries pa)

Table 4.23-4

Accident mechanisms	% of cases	Main time when occurs
Baby pulled a feeder bottle either being cleaned and full of boiling water, or full of very hot milk	46%	insufficient data
Other infrequent mechanisms	38%	insufficient data
No details of mechanism	16%	insufficient data

All accidents happen in the kitchen (where the location is specified). Examples of typical accidents are given below.

‘28th March 1992, at around 7.00 am - a 1 year old girl pulled bottle of hot baby feed onto herself and scalded her throat and chest. She was transferred to a specialist hospital.’

‘21st of May 1994, at about 19.45. Mother had boiled a bottle for her 1 year old baby girl. She put it down on a shelf, but the baby reached up and poured boiling water onto self.’

4.24 MATCHES

Key target group - children under 5 years old.

A second possible target group is children aged 5-10 years.

4.24.1 Total accidents

Table 4.24-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	413	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	48	17	11	0	12	8
Fatal injuries	3.3	1.0	0.0	0.0	0.0	2.3

An estimated 80% (38) of the severe injuries are ‘category B’ involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 20% (10) are ‘category A’, involving 1-4 in-patient days in hospital.

Overall trend is for a steady fall in the number of accidents caused by matches, reflecting the reduction in sales of matches over the last 5 years.

4.24.2 Secondary ignition sources

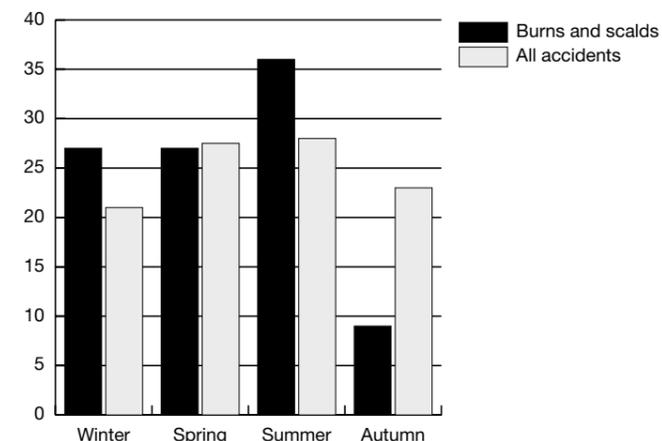
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing, furniture and bedding materials.

Table 4.24-2

	Severe injuries	Fatal injuries
Clothing	29 pa	1 pa
Furniture	0 pa	0.3 pa
Bedding/mattresses	4 pa	0.7 pa

4.24.3 Seasonal variations (severe injuries only)

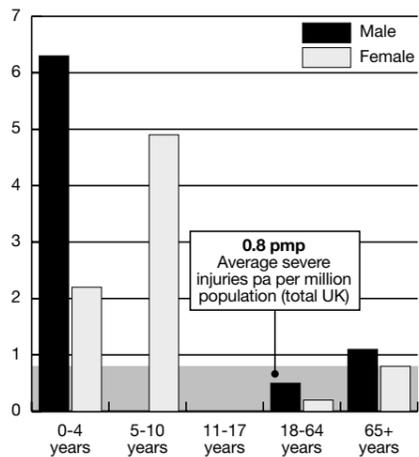
Table 4.24-3



Severe injuries involving matches happen most frequently during the summer months (36% of recorded cases), followed by winter and spring.

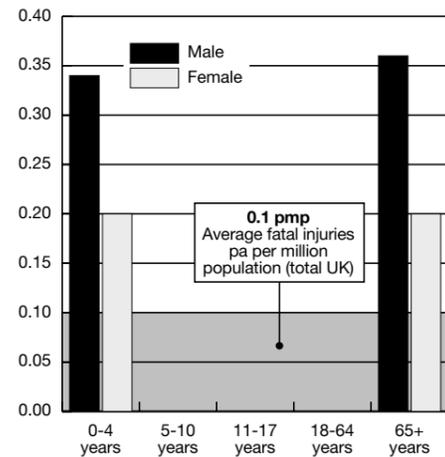
4.24.4 Age and sex of victim (severe and fatal injuries only)

Table 4.24-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	6.3	0	0	0.5	1.1
Female	2.2	4.9	0	0.2	0.8

Table 4.24-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.34	0	0	0	0.36
Female	0.2	0	0	0	0.2

Target risk group 1. The key age group at risk is children aged 0-4 years, which account for 17 severe injuries a year, 75% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit, and 1 fatal injury a year.

Target risk group 2. A secondary possible age group at risk is children aged 5-10 years, which account for 11 severe injuries a year. However the estimate is based on a small number of cases (2 in the five year period) and insufficient data is available to analyse accident mechanisms.

4.24.5 Accident mechanisms (severe and fatal injuries only)

Target group 1 - children aged 0-4 years (17 severe injuries pa + 1 fatal injury pa)

Table 4.24-6

Accident mechanisms	% of cases	Main time when occurs
Victim playing with matches (ignited clothes/bedding/room)	70%	insufficient data
Young sibling playing with matches	15%	insufficient data
No details of mechanism	15%	insufficient data

Most accidents happen in the bedroom. Examples of typical accidents are given below.

‘30th January 1995 at 17.30 - a four year old male rifled through his mum's chest of

drawers, found a box of matches, took them into his bedroom and started playing with them. As he struck them his jumper caught fire burning through his other clothes. He walked downstairs screaming, and his mum found him in the hall. He received burns to his ribs and chest, and was transferred to another hospital for treatment.’

‘10th January 1995 during the afternoon (12.00-15.59) a four year old male was playing with matches and set fire to his trousers. He suffered full thickness burns to leg and was transferred immediately to a specialist hospital for treatment.’

‘24th June 1994 - time unknown. The deceased who was a 3 year old girl was playing with matches in her bedroom with other children. They set the bedclothes alight. The smoke alarm had a battery incorrectly fitted and the alarm itself was also incorrectly placed. She died from burns in the ensuing fire.’

4.25 WELDING

Key target group - males aged 18-40 years. However, only 30% of the injuries require 5 or more days as an in-patient, or transfer to a specialist hospital - mostly eye hospitals.

4.25.1 Total accidents

Table 4.25-1

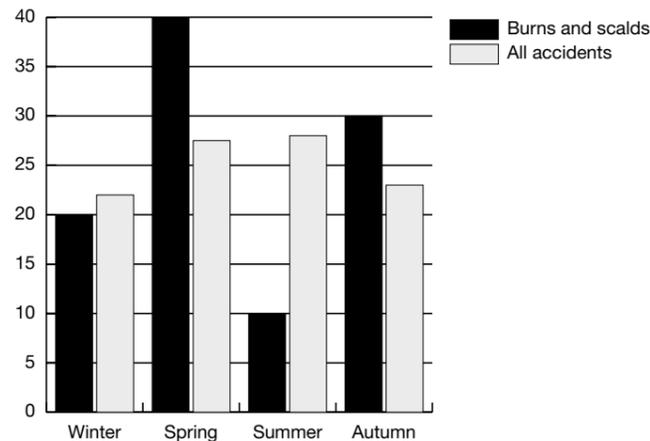
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	2660	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	46	0	0	0	46	0
Fatal injuries	0	0	0	0	0	0

An estimated 30% (14) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 70% (28) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.25.2 Seasonal variations (severe injuries only)

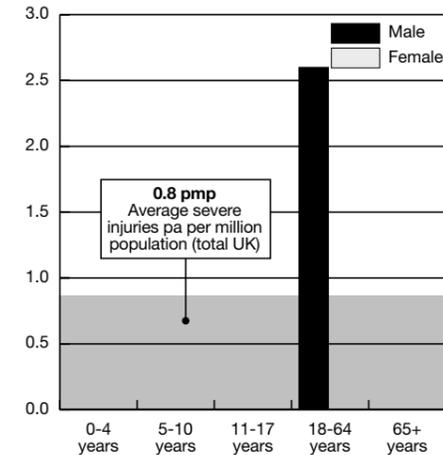
Table 4.25-2



The peak period for accidents caused by welding is during the spring months, which account for 40% of the severe injuries.

4.25.3 Age and sex of victim (severe injuries only)

Table 4.25-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	0	2.6	0
Female	0	0	0	0	0

All the victims suffering severe injuries are males, aged 23-40 years.

Target risk group 1. The key age group at risk is males aged 18-40 years, which account for all of the 46 severe injuries a year, 30% of which involve 5 or more days as in-patients and/or transfer to a specialist hospital/burns unit.

4.25.4 Accident mechanisms (severe injuries only)

Target group 1 - males aged 18-40 (46 severe injuries pa)

Table 4.25-4

Accident mechanisms	% of cases	Main time when occurs
Welding without goggles or with sunglasses/ wrong goggles, and received burns to eye/painful eyes	70%	insufficient data
Welding car and petrol vapours ignited	30%	insufficient data

Most accidents happen in the garden shed, garage, or on paths/driveways adjacent to the house. An example of a typical accident is given below.

'7th May 1993, in the early evening - male aged 32 was welding without goggles and suffered burns to his eye. He was transferred to a specialist (eye) hospital.'

'19th September 1993, at around midday - male aged 26 years was in the shed welding a petrol tank, when the vapours blew out and caught fire. He received burns to his upper leg and after arriving at A&E he was transferred to a specialist hospital.'

4.26 Barbecue

Key target group - none identified. However, main mechanism (60% of cases) involved pouring methylated spirit or similar accelerant over a barbecue.

4.26.1 Total accidents

Table 4.26-1

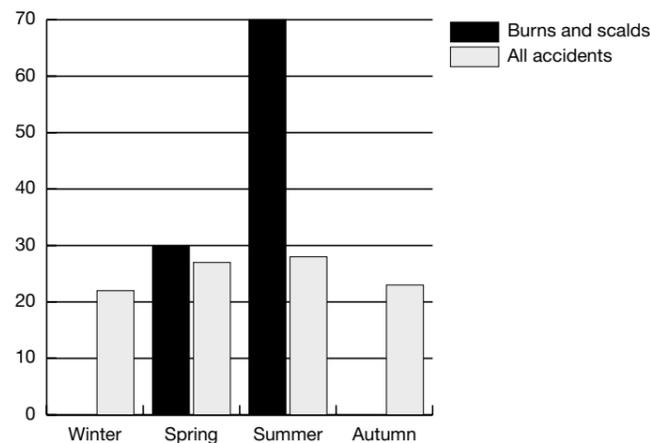
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	583	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	44	12	0	8	23	0
Fatal injuries	0.3	0	0	0	0.3	0

An estimated 80% (35) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 20% (9) are 'category A', involving 1-4 in-patient days in hospital. 60% of the barbecue accidents involved the use of accelerants (such as methylated spirits, or an unspecified fuel) and all these accidents resulted in 'category B' type injuries.

Inspection of relevant categories in HASS/LASS reports indicates that the number of accidents caused by barbecues is rising. There are too few severe injury cases (10) to give a reliable trend over the 5-year period, although it is worth noting that there were 4 cases in the 3-year period 1992-94, compared to 6 cases in the 2-year period 1995-95, suggesting a rise in barbecue accidents. The rise is probably due to the growth in sales of barbecues over the last 3-4 years. However, the use of barbecues is dependent on the weather, and years with an exceptionally high number of hot sunny days, especially at weekends, are likely to have higher levels of barbecue accidents.

4.26.2 Seasonal variations (severe injuries only)

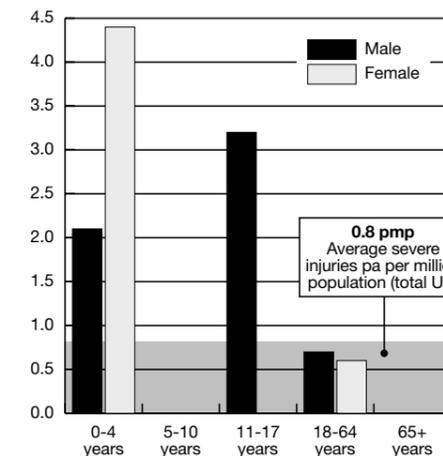
Table 4.26-2



All of the accidents occur either in the summer (70%) or in the spring (30%), ie during the warmer months when barbecues are most likely to be used.

4.26.3 Age and sex of victim (severe only)

Table 4.26-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	2.1	0	3.2	0.7	0
Female	4.7	0	0	0.6	0

No specific target group is identified as being at particular risk. Although 12 children aged 0-4 years are involved each year, this is based on three cases only over the 5 year period, and therefore the estimate is not statistically valid.

4.26.4 Accident mechanisms (severe injuries only)

All victims

Table 4.26-4

Accident mechanisms	% of cases	Main time when occurs
Trying to light the Barbeque with methylated spirit or other liquid fuel, and the fuel exploded over the victim	60%	insufficient data
Other infrequent mechanisms	20%	insufficient data
No details of mechanism	20%	insufficient data

Most accidents happen in the garden. Where children under 12 were injured, the accelerant was being poured onto the barbecue by an adult. Both cases involving 12-17 year olds involved the victims themselves pouring an accelerant onto the barbecue.

4.27 CANDLES

Key target group - no significant target group is identified.

However, accident levels of minor and severe injuries are rising rapidly, reflecting a growing demand for candles. If this trend continues, candles may become a more critical group within 3-5 years.

4.27.1 Total accidents

Table 4.27-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	683	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	42	4	0	8	29	0
Fatal injuries	1.7	0.0	0.3	0.0	0.3	1.0

An estimated 30% (12) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 70% (30) are 'category A', involving 1-4 in-patient days in hospital.

The number of total accidents caused by candles that are given in HASS reports indicates a sharp increase of about 90% from an average figure of 410 accidents a year (1988-1990) compared to 780 accidents a year for the years 1993-1995. This is also reflected in the severe accidents, which despite the small data base (10 cases for the 5-year period) shows that the number of cases in 1995-1996 (7 cases) was 300% greater than the number of severe injury cases during the period 1992-1993 (3 cases).

It is thought that the sharp rise in accidents is a direct result of a recent, strong growth in demand for candles by consumers, ie it mainly reflects increased sales of candles.

4.27.2 Secondary ignition sources

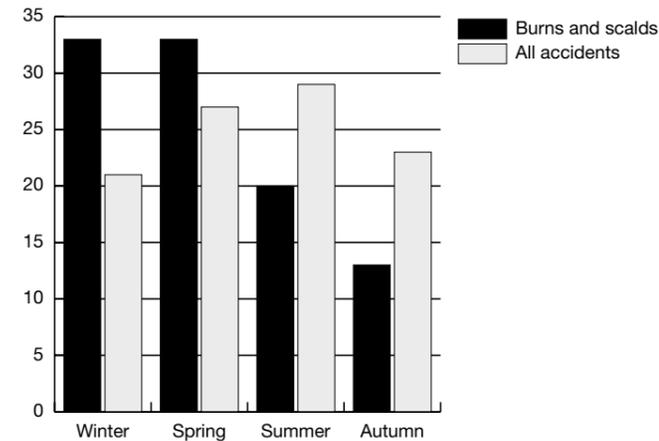
This accident group includes injuries caused by secondary ignition sources. Estimates for fatal and severe injuries only are given below for clothing and bedding materials.

Table 4.27-2

	Severe injuries	Fatal injuries
Clothing	17 pa	1.0 pa
Bedding/mattresses	4 pa	0.3 pa

4.27.3 Seasonal variations (severe injuries only)

Table 4.27-3

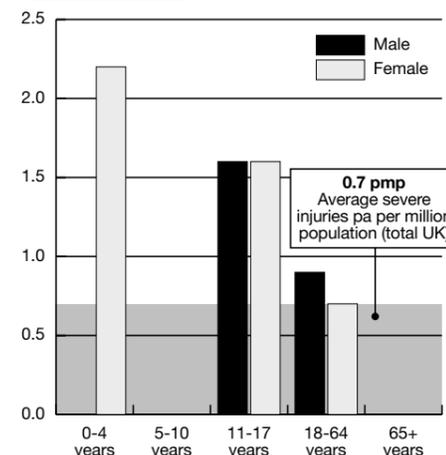


Severe and fatal accidents caused by candles are more frequent during winter (reflecting the greater use of candles during the dark winter months), as well as in spring.

However, it should be noted that the chart is based on a very small sample of 10 severe and 5 fatal cases only.

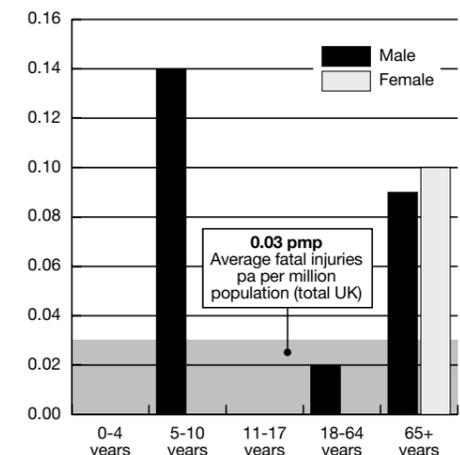
4.27.4 Age and sex of victim (severe and fatal injuries only)

Table 4.27-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0	1.6	0.9	0
Female	2.2	0	1.6	0.7	0

Table 4.27-5



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0	0.14	0	0.02	0.09
Female	0	0	0	0	0.1

The total number of severe and fatal injuries per year is relatively low (43.7 pa) compared to other product groups. No age group emerges as being at great risk from burns caused by candles, bearing in mind that the estimate of 4 children a year aged 0-4 years receiving

severe burns is statistically invalid, since it is based on 1 case over the 5 year period, and therefore this age group is not recommended for future targeting.

However, although the accident levels are low at present, this group should be studied in the future - *if the future demand for candles continues to grow strongly, the number of severe accidents caused by candles will almost certainly increase strongly as well.*

4.27.5 Accident mechanisms (severe and fatal injuries only)

About 40% of the accident cases involved victims setting their clothing alight with candles, and a further 10% setting their bedding alight with candles.

4.28 HOT WATER BOTTLES

Key target group - none identified.

4.28.1 Total accidents

Table 4.28-1

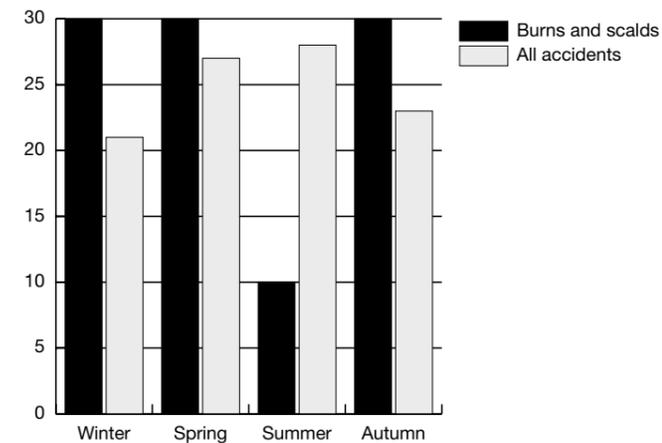
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	1168	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	42	4	0	4	29	4
Fatal injuries	0.0	0.0	0.0	0.0	0.0	0.0

An estimated 70% (29) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 30% (13) are 'category A', involving 1-4 in-patient days in hospital.

Overall trend appears to be static, with no discernible change indicated by inspection of relevant categories in HASS/LASS reports, and discussions with executives interviewed.

4.28.2 Seasonal variations (severe injuries only)

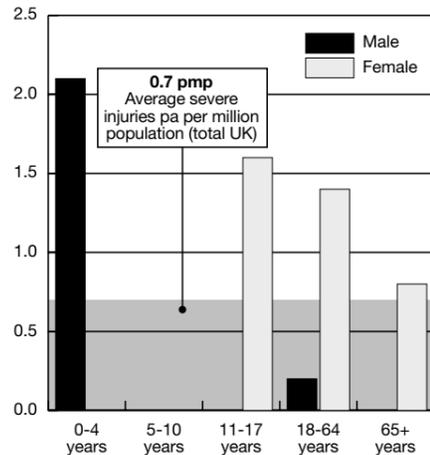
Table 4.28-2



Accidents involving hot water bottles are lowest during the warmer months during the summer, and higher during the colder months in autumn, winter and spring.

4.28.3 Age and sex of victim (severe and fatal injuries only)

Table 4.28-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	2.1	0	0	0.2	0
Female	0	0	1.6	1.4	0.8

Target risk group 1. None identified. Total numbers in each age group are below critical levels. It should also be noted that the age groups with 4 severe injuries are based on 1 single accident (for each age group) during the 5-year period, and are therefore not statistically valid.

4.28.4 Accident mechanisms (severe injuries only)

All accidents

Table 4.28-4

Accident mechanisms	% of cases	Main time when occurs
Hot water burnt skin through prolonged contact with body	30%	insufficient data
Hot water bottle burst while getting into bed	30%	insufficient data
Spilt hot water while filling hot water bottle	10%	insufficient data
No details of mechanism	30%	insufficient data

Most accidents with hot water bottles happen in bed, with the exception of accidents when hot water was spilt while filling (which happened in the kitchen).

4.29 OTHER MINOR GROUPS

Key target group - children aged 0-4 are at greatest risk for severe injuries, followed by children aged 5-10. Elderly people aged 65+ years are at greatest risk for fatal injuries.

4.29.1 Total accidents

Table 4.29-1

	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	7458	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	406	94	53	12	223	23
Fatal injuries	20.7	0.3	0	0.3	6.3	13.7

An estimated 47% (190) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 53% (216) are 'category A', involving 1-4 in-patient days in hospital.

The key causes are shown in the following table, although it should be noted that the estimates are based on very small numbers of cases (<10 cases per group over 5 years) and have limited statistical validity.

Table 4.29-2

	Severe injuries	Fatal injuries
Sunbed/sun lamps	37	0
Curling tongs	25	0
Taps	25	0
Baking tins	21	0
Flask/thermos	21	0
Shower	16	0
Wall paper stripper	16	0
Electric blanket	16	2.7
Lighter fuel	14	0.3
Aerosol	12	
Microwave	8	0
Toaster	8	
Electric lamps	4	0
Plastic	4	0
Other miscellaneous	179	17.7
Total	406	20.7

4.29.2 Age and sex of victim (severe and fatal injuries only)

Table 4.29-3

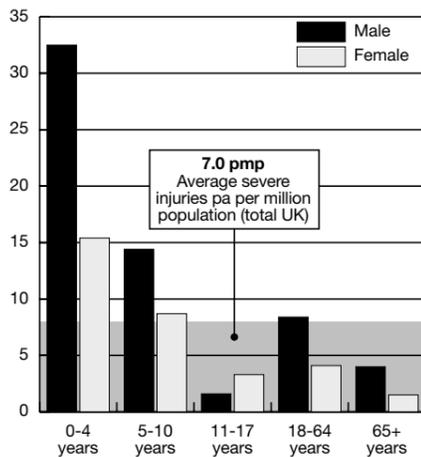
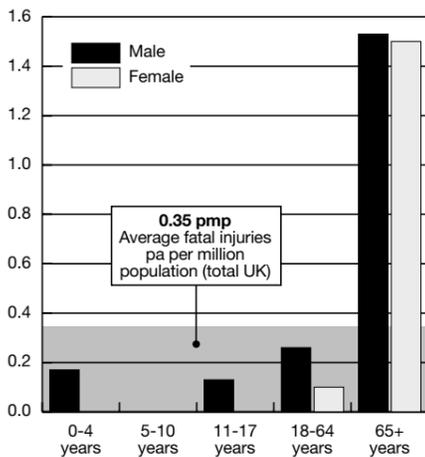


Table 4.29-4



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	32.5	14.4	1.6	8.4	4
Female	15.4	8.7	3.3	4.1	1.5

	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	0.17	0	0.13	0.26	1.53
Female	0	0	0	0.1	1.5

The above chart shows the age groups at risk from all other infrequent causes (combined). Children aged 0-4 (especially males) are at greatest risk for severe injuries, followed by children aged 5-10. People aged 65 years or more are at greatest risk for fatal injuries.

4.30 UNKNOWN CAUSES

Key target group - is children aged 0-4 years for severe injuries.

However, the cause of these accidents is unknown, mainly because parents were too distressed to give details.

4.30.1 Total accidents

Table 4.30-1

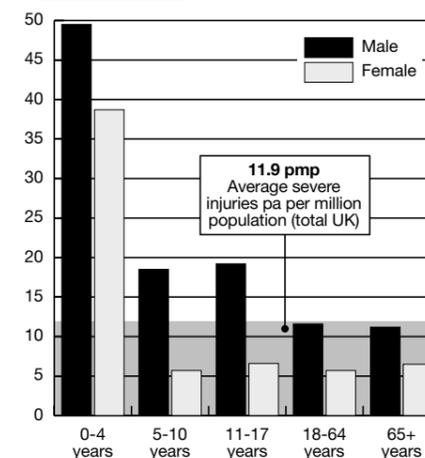
	Total estimated accidents per year	0-4 years	5-10 years	11-17 years	18-64 years	65+ years
Minor injuries (A & E visits)	4948	n/a	n/a	n/a	n/a	n/a
Severe injuries (A & E/in-patient)	1044	264	87	103	472	119
Fatal injuries	81.5	4.2	2.8	0	31.8	42.7

An estimated 60% (626) of the severe injuries are 'category B' involving 5 or more days as an in-patient and/or transfer to a specialist hospital/burns unit treatment, and 40% (418) are 'category A', involving 1-4 in-patient days in hospital.

The causes of severe accidents is often where the parents (of young children) are too distressed to respond to an accident questionnaire. The unknown causes for fatal accidents are usually where the victim (mostly elderly people) were alone and it was not possible to clearly determine the cause of the accident (usually a major house fire).

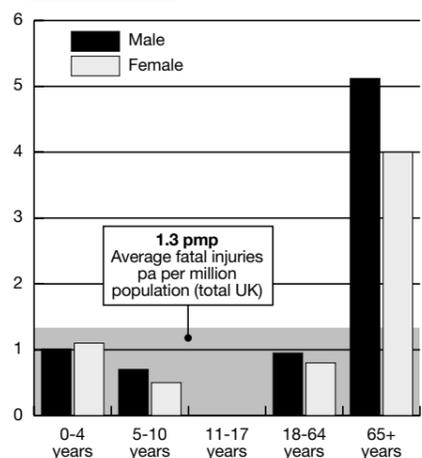
4.30.2 Age and sex of victim (severe and fatal injuries only)

Table 4.30-2



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	49.5	18.2	19.2	11.6	11.2
Female	38.7	5.7	6.6	5.7	6.5

Table 4.30-3



	0-4 yrs	5-10 yrs	11-17 yrs	18-64 yrs	65+ yrs
Male	1.01	0.7	0	0.95	5.12
Female	1.1	0.5	0	0.8	4

Although the causes of these accidents are unknown, the age profile is similar to the overall profile for all accidents, ie children aged 0-4 years are at highest risk per million population for severe injuries, followed by children aged 5-10 years. Elderly people aged 65 or more years are at greatest risk for fatal injuries.

5. APPENDICES

5.1 HOW FATAL AND NON-FATAL INJURIES WERE CALCULATED

HASS/LASS figures 1992-1996 and HADD figures 1993-1995 were used as a basis for the calculation of fatal and non fatal injuries caused by burns and scalds each year.

5.1.1 Fatal injuries

Fatal accident data is based on the analysis of deaths caused by burns and scalds held on the HADD database for the years 1993-1995. These were analysed by the product category involved. The data was searched manually to identify the cause of house fire accidents where possible and to exclude deaths by other causes such as heart attack or stroke. The description of the accident was reviewed for each case, and where necessary entries for the product involved in the accident was re-coded to ensure that consistent data was analysed.

5.1.2 Non-fatal injuries

The HASS and LASS survey represents a sample of all home and leisure accidents in the United Kingdom where the victim visited an A&E department for treatment. Data were drawn from the HASS/LASS samples from 1992 to 1996 to include burns and scalds incidents. Inspection of the data showed that in some cases more than one injury occurred to a single victim, and two or more entries were recorded on the sample. The additional entries were deleted to give a single entry per victim.

In addition, the description of the accident was reviewed for each case, and where necessary the entry for the product involved in the accident was re-coded to ensure that consistent data was analysed. It was possible to identify in many of the cases the actual product involved (especially cups/mugs of hot beverages, teapots, baths, etc) rather than broad classifications such as hot water or hot liquid.

Data was also classified by the severity of the injury - 1) minor where the victim visited the A & E department but was not admitted; 2) severe where the victim was admitted to hospital or transferred to a specialist Hospital or burns unit for treatment (where it is assumed that most will be admitted as patients, due to the severity of their injuries having necessitated transfer to another medical unit).

Minor injuries were analysed in-depth for 1995 only. The number of accidents within each product group (eg cup/mug, bath, saucepan, etc) was determined and then multiplied by the national multiplying factor (nmf.) for 1995 (ie 18.28 for HASS accidents and 35.56 for LASS accidents) to provide the national estimate for minor burns and scalds injuries.

Severe injuries were analysed in-depth for the five year period 1992-1996, in order to obtain sufficient cases within key product groups for meaningful analysis. The national estimate for the average number of severe accidents per year within each product group was calculated by applying the average nmf. for the five year period (ie 20.82 for HASS and 32.35 for LASS) to the average number of accidents per year identified within each product group (eg cup/mug, bath, saucepan, etc) over the 5-year period.

5.2 SOCIO ECONOMIC TRENDS IN BURNS/SCALDS

Discussions with regional burns units suggests that people from lower socio-economic backgrounds experience a higher number of burns and scalds injuries compared to people from higher socio-economic backgrounds.

5.2.1 Segmentation by socio-economic groupings

Respondents at burns units were asked to estimate what proportion of the burns cases that they handle are from people in socio-economic groups ABC1 and what proportion from groups C2DE. (Most respondents were familiar with these groupings, and a brief explanation was given by the interviewer if respondents were unclear.)

Six burns units provided estimates for the proportion of C2DE victims, and these are given in the following table.

Table 5.2-1

Estimated % of C2DE victims

50%	55%	60%	60%	75%	80%	Average = 63%
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It is worth noting that the two highest percentages were given in Manchester and Birmingham, and the two lowest percentages were given for Nottingham and Stoke Mandeville.

These estimates are applied to the total number of severe burns/scalds (7765 pa), and normalised per million population in the following table.

Table 5.2-2

Socio economic group	% of all burns /scalds	Number of severe burns/scalds	Est number of population (m)	Severe burns/scalds per (m) population
ABC1	37%	2873	28.6	100
C2DE	63%	4891	29.8	164

The above calculation suggests that people from C2DE backgrounds are about 50% more likely to experience burns and scalds injuries compared to people from ABC1 groups.

It must be stressed that the above estimate is indicative only, since it is based on qualitative estimates given by respondents in burns units who have a close working knowledge of their patients, rather than a statistically valid analysis of cases including details of the occupation of the main income earner in the family of the burns/scald victim).

The above findings are consistent with reports (identified during the literature search) and discussions with experts in the USA and Australia, which indicate that lower socio-economic groups overseas also suffer significantly higher numbers of burns and scalds injuries (per million population) compared with people in higher socio-economic groups.

Furthermore, Mr Ken Dunn, Senior Burns Surgeon at Withington Hospital, Manchester, is currently researching the incidence of burns and scalds injuries in different geographical

locations. His preliminary findings are given below, comparing the relatively affluent South East region with the relatively less affluent North East/North West regions.

Table 5.2-3

	South East	North East/North West
Total number of all burns/scalds (domestic and non-domestic) admissions per 1000,000 population	15-16	35
Disposable income per head (1995)	9,589	NW = £7,971 NE = £7,420
Unemployment (1997)	3.8%	NW = 6.3% NE = 8.5%

Source - National Casemix Register

The above findings suggest that the number of burns and scalds in regions such as the North West and North East are about twice as high per hundred thousand population compared to the South East.

5.2.2 Reasons for a higher incidence of burns/scalds in lower socio-economic groups

Respondents gave several reasons explaining why people from low socio-economic groups (C2DE) are involved in more accidents per million population than people from higher socio-economic groups (ABC1). The most common reasons mentioned are given below.

- Higher unemployment and lack of finances, resulting in pressure to buy the cheapest products (rather than more expensive products that may have added safety features).
- Overcrowding
- Lack of parental control/supervision of children
- Poorer facilities used, eg low quality cookers, sometimes unsecured to the wall, or use of 2-ring gas cookers at floor level.
- Fewer thermostats are thought to be used in hot water systems in council houses
- Higher frequency of deep fat frying in pans on the cooker at home.
- More smokers and associated smokers materials such as lighters/matches

NOTE - The above findings on socio-economic trends, are indicative only, being based on qualitative views of specialists working with burns and scalds patients. A more rigorous approach is required, including formal collection of key information regarding the occupation of the main income earner of the burn/scald victim's family, in order to obtain statistically reliable information.

5.3 MINOR BURNS AND SCALDS VICTIMS - GP SURGERIES

Discussions with respondents in GP surgeries indicate that there are at least 250,000 minor burn and scald accidents per year in addition to those attending A & E departments.

5.3.1 Estimate of the number of GP treated minor burns and scald injuries

Respondents at GP surgeries were asked to estimate the number of patients per year attending the GP surgery for treatment of a burn or scald injury, excluding industrial/work accidents and referrals from hospital. Most minor burns and scald injuries are seen by the nurse practitioner and are not registered on the computer records unless they require treatment by the doctor, eg for antibiotics if infection occurs. Therefore the estimates were usually based on a consensus among staff at the surgery.

Table 5.3-1

	Burns/scalds patients pa	Patient List	Cases per 1000 patients	Comments
Salford	150	13,000	11.5	70% of list C2DE
Burton-on-Trent	100	12,000	8.3	70% of list C2DE
Bridgnorth*	95	15,000	6.3	50/50 ABC1/C2DE
Tamworth	40	16,000	2.5	50/50 ABC1/C2DE
Sherwood	20	9,500	2.1	50/50 ABC1/C2DE
Newcastle, Staffs	20	10,000	2.0	50/50 ABC1/C2DE
Burton-on-Trent	7	11,500	0.6	70% of list ABC1
Bristol	10	19,000	0.5	70% of list ABC1
Total	442	106,000	33.8	Average 4.2 per 1000 patients/population

* The Bridgnorth Surgery is also a cottage hospital, and therefore the figures may be higher than normal as patients who elsewhere would go to an A & E department are likely to go immediately to the cottage hospital.

As can be seen in the table above, the highest proportion of burns and scalds cases are in the practices with the highest percentage of C2DE patients on their lists. These were areas in Salford and Burton.

Although the above sample is small and is not statistically reliable, the average of 4.2 minor burns and scalds patients attending the doctor's surgery per 1000 population gives a total annual figure of around 250,000 additional accidents to those 112,000 per annum visiting the A & E departments and fatalities. This compares favourably with the view of specialists in burns units that there are 2½ times as many patients with burns and scalds going to GP practices for treatment than patients going to A & E departments.

Most burns and scalds cases at GP surgeries reflect the causes of A & E visits, ie mainly cups and mugs upset, contact burns with irons, cookers and heaters. Bath injuries were rarely mentioned as these tend to be severe and go directly to hospital. The burn or scald is assessed, covered with a Flamazin dressing, and the patient returns several times to the nurse to ensure the wound is not infected and to change the dressing.

5.4 HOW BURNS AND SCALDS ARE ADDRESSED OVERSEAS

There has been notable success in reducing injuries, especially those caused by hot tap water. However, the number of scalds caused by hot beverages remains unchanged.

5.4.1 How a campaign can best succeed in reducing burns/scalds injuries

Discussions with specialists in the USA, Australia and New Zealand, and analysis of 100+ reports on burns and scalds injuries, highlighted which activities have had greatest impact on educating consumers of the risks of burns and scalds and more importantly on reducing the number and severity of burn injuries, as well as what doesn't work well. The findings corresponded well with the injury analysis and discussions with specialists in the UK.

Key aspects of how a campaign is more likely to succeed in reducing burns and scalds injuries are summarised below, in approximate order of importance.

1. *A passive solution* is often an effective and permanent means of reducing injuries. The most effective solutions addressing burns/scalds injuries (relevant to the UK) are as follows:
 - Reduce the temperature of stored water to 50°C.
 - Alternatively, maintain stored water above 60°C but reduce the temperature of delivered water (to the bath primarily) to 50°C through the use of thermostatic controlled mixer taps, although this may have limited application in the UK where it is thought that single hot/cold water taps are used, where as mixer taps are very common overseas.

Other passive solutions mentioned and considered to be effective are:

 - Cooker guards
 - Shorter flexes/curly flexes or cordless appliances (kettles)
 - Child safe taps
 - Deep fat electric fryers (as opposed to heating deep fat in a pan)
 - Smoke alarms
 - Child safe lighters
 - Flame resistant nightwear
 - Sprinkler systems
2. *Safety promotional activities in the media* can increase consumers awareness and knowledge about the risks of burns and scalds. It may also influence some consumers to consider initiating passive measures, if such measures or products exist (such as lowering water heater temperatures), and a facilitating agent such as a temperature test card was found to be highly effective in combination with a co-ordinated media

programme. The insertion of literature into the utility bill explaining the value of testing the level of risk in the home such as the temperature of hot water and the availability of a free thermometer test card was also found to be extremely effective.

In addition, mass media is found to be very useful in getting the risk issues onto the public agenda, and informing key decision makers of the issues at stake.

TV consumer programmes are found to be quite effective, especially where 5-10 minutes can be spent on a single safety issue. Public safety announcements on the TV are also quite effective. Press and local radio can be fairly effective if focused on ethnic groups, especially where the information is given in the local language. Leaflets have greatest use in giving the key safety messages to key stakeholders such as standards departments, trading standards officers, community workers, etc, and ensuring that all concerned are 'singing from the same hymn sheet' and trying to achieve an agreed common goal.

3. *A facilitating agent*, such as a temperature test card, can greatly enhance the success rate in getting consumers to act, either by reducing the temperature of their hot water system, or by seeking alternative ways of making the hot water system safer. A knock on benefit of such a facilitating agent was that once consumers had received literature and acted on the primary area of risk (ie the hot water temperature) some consumers also took note of the other burn/scald risk situations in their homes (highlighted in the accompanying literature) and acted by buying safer appliances or fitting guard rails, etc.
4. *A key safety message to promote* is the correct actions to take after a burn or scald. It is important that consumers are aware of the correct actions to take when dealing with a burn/scald victim - the most important action being to immediately immerse the complete burn area under cold running water for a minimum of 30 minutes if possible, before seeking further medical attention, unless the severity of the injury is life threatening. Burns specialists throughout the world agree that this action alone can often reduce the severity of the burn (ie from a 3rd degree to 2nd degree or from 2nd degree to 1st degree) for all or part of the area of the body burnt/scalded. This in turn can reduce or even eliminate the need for subsequent skin grafts.
5. *Other safety messages need to be kept simple for maximum impact*. An effective safety campaign should focus on one or two simple concepts, rather than risk confusing consumers with a wide range of safety messages. Key messages identified from discussions with overseas respondents and literature have been incorporated in the main body of the report (where relevant).

Consumer perceptions may vary from country to country, and receptiveness to key safety message may also vary. Several organisations overseas have found it very beneficial to conduct surveys to a) determine the actual level of risk awareness that exists amongst consumers and b) test different possible safety messages to ascertain which messages are most easily understood by consumers within the key target groups.

6. *Community based education programmes* are highly effective. The prime target should be parents of young children, especially new mothers. One-to-one discussions or one-to-group discussions are found to be highly effective in educating consumers, especially if there is a relevant passive measure that can be initiated to eliminate (or greatly reduce) the risk. In the UK, there are good opportunities to initiate education of young parents a) at pre-natal classes; b) in post natal gift packs and c) through the dissemination of information via health visitors during post natal home visits.
7. *School based education programmes* can also be very effective. It is found that young children especially (aged 5-10) are highly susceptible to safety messages, and respond well to checking out how safe their own home is. They also enjoy being able to teach their parents something. Many young children also have younger siblings. Successful presentations need to be about 30 minutes long, contain simple repetitive messages, which are enhanced by teacher led modules during the normal school curriculum. One long term benefit of this type of approach is that many of the young people being educated become new parents themselves.
8. *Identifying the key stakeholders involved* can be essential. The process should involve all parties that are directly involved in the campaign, as well as any third parties that are likely to be affected by the goals of the campaign (and/or may raise serious objections or promote policies that are alien to the goals of the campaign). Good communication with the parties concerned is essential. Well organised meetings where key participants can be involved and air their concerns and views have been found to be particularly effective. Key participants may include representatives from health departments, trade and industry departments, trading standards and safety executives, standards and code makers, relevant branches of industry, trade and retail, and relevant trade associations.
9. *Involvement of industry* in promoting safer products can be a highly effective (and low cost) way of getting consumers to buy safer products. Design competition can be effective in stimulating industry to come up with new, effective ideas, especially if a prestigious award is involved. More importantly, industry is more likely to get strongly involved if it clearly understands that a demand exists for a safer product, and that

public safety campaigns are going to strongly increase the public's awareness of the safety issues and create a growing demand for safer solutions. Once companies can see a profitable market opportunity developing, they often initiate highly focused and effective marketing campaigns to get the desired products to the consumers at risk.

Some major corporations that sell products related to products involved in burns or scalds injuries (or high risk groups such as young children) are often prepared to fund well organised safety campaigns. Being associated with saving the lives and welfare of babies and young children in particular is perceived as greatly enhancing the funders' corporate image. Effective ways of getting industry involved include a) personal visits (enhanced if it includes a senior burns surgeon and a suitable burn/scald victim), b) special events, c) brochures/literature setting out the general message and safety policies/goals.

10. *Changes in standards/codes, and legislation* (where relevant), can sometimes support the process of replacing older, less safe products with new safer products, provided such legislation can be enforced in practice. This can apply to replacement products (ie when old water heaters need replacing) as well as new installations.

5.4.2 Experience of tackling burns & scalds injuries in Norway, USA and Australia

5.4.2.1 Harstad, Norway

A 10 year programme which targeted the prevention of burns in small children. The burn rates in Harstad (23,000 inhabitants) and its six surrounding municipalities (14,000 inhabitants) fell by 51% and 40% respectively following a community based intervention programme, while burn rates in Trondheim (population 134,000) where no interventions were promoted, remained stable over the same period.

The programme consisted of a mix of passive interventions (the two most successful being the lowering of tap water thermostat settings to 55°C and the promotion and installation of cooker safeguards) and active interventions through the promotion of increased parental vigilance in putative burn situations. Parental counselling via public health nurses (at the time of birth and at 4 monthly intervals throughout the statutory 4-year vaccination programme) was thought to be particularly effective in raising the awareness of the risks of burns and scalds to young children and the subsequent installation of passive interventions. The use of local statistics and case studies of recent accidents in the Harstad region was also considered to have been an effective tool in convincing people that these types of accident can happen to them, rather than to someone else far away in a national database.

A project is now under consideration to apply the community based intervention programme to a large community, i.e. Oslo. The city will be divided into about 9 separate 'communities' and accident data will be provided for each separate community.

5.4.2.2 National Safekids, USA

National Safekids employs 43 people directly and has 235 coalitions throughout the USA. It has been successful in attracting sponsorship from the private sector. Johnson and Johnson has provided \$1m pa for many years, and recent significant sponsorship contracts include General Motors, 1st Alert Smoke Detectors and Belsports (sponsoring bicycle helmets). National Safekids has been instrumental in getting 28 states in the USA to amend plumbing codes to reduce hot water temperatures.

It found that focus groups were very important in a) establishing the actual level of awareness (or lack of awareness) amongst parents and carers of the risks of burns/scalds from different sources of hot water in the home (especially the bath) and b) the key safety messages that were meaningful to parents/carers of young children.

The media it has found most effective in getting safety messages across have been the television, especially major shows such as the Oprah Winfrey Show, and public service announcements (PSAs) on the TV. Radio is also quite useful for targeting low income families, and certain ethnic minorities (especially where transmissions are in the ethnic language). Pamphlets and leaflets are thought to be extremely valuable in promoting a consensus message amongst different funders and stake holders. They also ensure that codemakers, community workers, educators (as well as funders) are all 'singing the same hymn'.

Another of Kidsafe's goals is to provide suitable literature, videos, PSAs and other safety promotion materials to support its local coalitions to 'empower the local community' and establish effective community led education of the target audience. In many cases, this involves staff at local health departments or hospitals.

5.4.2.3 Burns Institute - San Diego

San Diego regional burns centre has seen burns injuries fall about 25% over the last 6 years from 436 to 333 acute injury admissions a year. About 75% of these injuries are home and leisure accidents. During the same period, the population is estimated to have grown about 15%, hence the real decrease in injury rate per million population is about 35%.

The Burns Institute believes that much of the success in reducing burns and scalds injuries are a result of the vigorous safety prevention campaign that it has initiated. The campaign has focused on educating consumers of the risks.

10% of the Institute's safety promotion effort is media based, mainly PSAs which are considered to be more valuable in promoting general awareness amongst potential fund raisers of the role of the burn institute, rather than raising public awareness significantly. 90% of its safety promotion effort is community based. Most of the past efforts have focused on targeting children of different ages, through school education programmes, and motivating the children to educate their parents and siblings. The puppet show (aimed at

6-9 year olds) is considered to be extremely successful, as well as popular. Key safety messages (given by Burns Institute personnel) are enhanced by teacher led modules and work assignments aimed at the children checking the safety of their own homes and teaching their parents the key safety messages. Young children are particularly motivated at the prospect of teaching their own parents something new and important. Follow up education programmes are repeated to 9-13 year olds and 14-17 year olds, with the format and safety messages adapted to address the burns risks relevant to each age group.

Child care burn prevention messages are also presented to groups of expectant mothers and new parents. These involve the presentation of a 45 minute video followed by discussion of the key safety issues. The focus is safety in the kitchen and bathroom. Similar video presentations and discussions are given to senior citizens (55 years and over!). Both these programmes are currently limited in number, but are becoming more important in the Institute's future promotion campaigns.

Several key aspects of successful safety promotion material emerged over the years.

1. Pictures and images are much more powerful than words.
2. One-to-one or one-to-small group interactive teaching is very effective in getting the safety messages both understood and remembered.
3. A small number of simple messages, repeated several times, is more effective than trying to present many complex messages.

5.4.2.4 Victoria, Australia

Victoria State identified three priorities regarding burns and scalds injuries - a) house fires, b) hot water scalds and c) scalds from tea and coffee (mainly cups/mugs).

There has been some success in addressing house fires, by getting smoke alarms fitted in homes. All new homes in Victoria as well as homes having substantial alterations are required to have smoke alarms fitted. It is estimated that 75% of homes now have alarms. The second generation campaign has focused on ensuring that alarms are still functional. Consumers are reminded to change batteries at the same time that they change their clocks. Local fire brigades also promote safety awareness to children during school visits.

There has been a significant reduction in the number of burn/scald injuries in Victoria State over the last 5 years from scalds caused by hot water. Most water in Australia is heated by electricity, and heated to 65-70°C to utilise the benefits of off-peak electricity. One of the key goals was to set the standards to deliver water in the bathroom to a maximum of 50°C. The next goal is to get the standard incorporated into state legislation.

Another key factor in the campaign that is thought to have contributed to the fall in hot water scalds was the successful 'Working with Industry' campaign, funded by the Victoria

Health Department. The Department approached the plumbing industry to raise its awareness of the number of injuries involved each year and the seriousness of the injuries, including articles in plumbing newsletters and sending safety material packs to plumbers. More importantly it promoted the value added business available to the plumbing industry by promoting safer products.

One of the key tools available was the low cost temperature test card, with Kidsafe (Australia) and the Department of Health on it endorsing the campaign. This allowed plumbers to test the temperature of hot water of people's homes when called out for a visit, and explain on a one-to-one basis if the temperature of the water was unsafe. They could also produce safety literature and advise of solutions that were available. Two suppliers of hot water systems changed their marketing strategies and focused on promoting new safety products. Several solutions were made available, and both companies profited significantly from the campaign. The major energy producer also stopped its 'Hottest of Hot Water' campaign, which was contradictory to the goal of the safety campaign.

Child health centres throughout the state promoted safety awareness to parents of young children. The Safety Centre at the Royal Children's Hospital in Melbourne has a kitchen/bathroom display, highlighting the dangers of burns and scalds in the home and also sells a wide range of safety products including child safe taps, dual water systems, tempering valves, oven door guards, stove guards, etc.

The third goal of hot tea/coffee is as yet unresolved. Monash University has developed some prototype designs for a more stable heavy bodied/wide based mug (with a low centre of gravity) but currently lacks the funds to test the mugs for stability as well as test the acceptability of different designs amongst consumers. The mugs would be targeted at nursing mothers, possibly promoting them through maternity hospitals as part of new baby gift packs. However, one problem these mugs face is overcoming consumer resistance in terms of lack of aesthetic appeal of such a mug.

5.4.2.5 New South Wales, Australia

In New South Wales State an estimated 450 children under 15 are hospitalised each year as a result of scalds, a further 900 seek care at an Emergency Department (ED) for such injuries and up to 1,800 seek medical care by a GP. Of those hospitalised, a third are severe cases requiring 5 or more days in hospital, and these children almost always need many operations for skin grafts and on-going treatment. It is estimated that each severe scald injury costs at least \$60,000 (£25,000) to treat (including multiple surgery, burns management treatment, physiotherapy, ongoing medical check-ups and medication). The leading cause of scalds to children in the home is hot beverages (50% of ED admissions). However, hot tap water accounts for about 25% of all admissions, and tend to be more serious because of the large surface body area involved and longer exposure time.

The aim of the campaign was to reduce the number of scalds in young people by 28% over 10 years (1992 to 2001). In the 7 year period (1988/89 to 1995/96) the number of scalds in NSW children aged 0-4 (the dominant age group among children under 15) fell by 13.5%. Furthermore, the mean length of stay for child scalds fell by 18% from 6.7 days to 5.5 days and the total bed days fell by 22% in the last 2 financial years. These results show a reduction in the severity of scalds incurred as well as the number of scald victims. The programme to date involved 2 distinct phases.

Phase 1 (1988-1992) was to put scald injuries on the public agenda. The 'Hot Water Burns Like Fire' campaign, was aimed at raising parents and carers awareness of the frequency and nature of scalds to young children. It also raised the issue of scalds with key decision makers, in respect of safer standards and the promotion of safer products to minimise the risks through passive intervention. Key marketing included TV commercials, an 8-page supplement in major Sunday newspapers, 'Doctors Television Network' in GP waiting rooms, a national current affairs programme and coverage in local TV and radio.

Phase 2 (1993-1996) was a more focused campaign, targeting accidents involving hot water scalds, partly because these injuries usually involve more serious injuries. Two key areas of focus were - 1) to ensure that new hot water systems (new homes and renovated hot water systems) should deliver water at safe temperatures (50°C) and 2) to raise awareness amongst consumers of options available to reduce temperatures of delivered water in existing hot water systems. Major milestones in this campaign were as follows:

- May 1993 Meeting called by NSW Health of State and national experts in infection control to discuss safe home water storage temperatures results in unanimous support for 50°C as a safe storage temperature for residential settings.
- Sept 1993 Meeting between NSW Health and hot water manufacturers to discuss barriers and (business) opportunities linked to changes in the Plumbing Code.
- Dec 1993 NSW convened a meeting with over 20 stakeholders in the hot water industry (including Standards Australia, Pacific Power, Sydney Electricity, Prospect County Council, The Water Heater Industry Group, Rheem Australia, AGL, Australian Gas Association, The National Gas Company, Master Plumbers Association of NSW, NSW Department of Public Works, and various traders, retailers and manufacturers) and reached agreement on the wording of the NSW Policy Statement - "To reduce the incidence of hot tap water scalding, all new residential hot water supply systems should be installed to deliver hot water at a maximum of 50°C measured at the outlet of all sanitary fixtures (eg in bathrooms, including ensuite)".

Sept 1994 The Plumbing Code of Australia, Australian Standard AS3500 part 4 was amended in line with the NSW Residential Hot Water Policy Statement to recommend that all new residential hot water supply systems be established to ensure that the maximum temperature of hot water delivered to new bathrooms will not exceed 50°C.

The media campaign commenced in July 1994, once the key groundwork outlined above had been carried out. The central tool or 'enabling factor' in the campaign was a hot water temperature test card containing a liquid crystal thermometer and an accompanying brochure, which encouraged the testing of hot water and gave different options available to the consumer to reduce the risk of a tap water scald. Many stakeholders, especially gas company plumbers, reproduced the card with their own logo alongside NSW Health.

Key supporting media marketing included a paid television commercial featuring the Head of the Burns Unit of the Children's Hospital (and his daughter) promoting the hot water temperature card, paid radio advertising, newspaper adverts and the dissemination of 120,000 cards and brochures. In addition, NSW Health in conjunction with Standards Australia sponsored an award for the design of a scald safety product as part of the annual Design Mark Awards. 17 companies entered designs, covering all aspects of scalds in the home and the winner was an Australian manufacturer of tempering valves (which mix cold water with hot to ensure that a pre-set temperature is delivered from the hot water tap).

In 1995, a random survey showed that 24% of homes contacted (with children aged 0-4 years) said they had a temperature card, 84% of these families had used the card to measure the temperature of the hot water in their home and 81% had turned down the temperature of their hot water system. Hence about 20% of NSW homes with children aged 0-4 were safer from the risk of scalds from hot tap water.

The use of the test card is therefore believed to be one of the major contributors to the reduction of scalds injuries in the NSW region.

Another key factor that contributed to the success of the campaign was the identification and involvement of the key stakeholders, which included discussing potential barriers to the implementation of the campaign and finding acceptable solutions.

The media considered most effective (in approximate order of effectiveness) is as follows:

Temperature test card - accepted by all parties, easily understood by consumers, and could be re-used. (There is evidence that some parents passed it on to friends/relatives).

TV programmes - can get 4-5 minutes addressing the issues in depth, supported by well chosen case stories. TV adverts also very good, but short and expensive.

Meetings with stakeholders/partners - Communication was essential for the campaign to work. This included correcting mis-information, and addressing genuine fears so that better solutions could be developed, even though agreement wasn't possible on every issue.

Press and radio were considered useful for reaching specific ethnic groups and lower socio-economic groups.

Leaflets were considered to have been quite useful, especially in explaining the more complex messages. They also contain important contact numbers.

5.4.3 Reports on burns and scalds extracted from the literature search

Prevention of tap water scald burns: Evaluation of a multi-media injury control programme. Murray Katcher, *AJPH* Sept 1987, Vol.77, No9. A prospective study was designed to evaluate a mass media prevention programme reaching 2m people to determine the impact on risk awareness of hot tap water burns and injury prevention behaviour. Liquid crystal thermometers for testing hot water temperature were offered at no cost. 140,000 thermometers were requested, 45% learning about it from the television and 44% from the utility bill insert, 7.7% from newspaper adverts. 61.5% of people who requested a liquid crystal thermometer tested their hot water temperature. Of these, 43% rated their water as high in temperature (ie >54.4°C) and 52% of this sub group turned down their hot water system. This meant that about 15% of the 140,000 people who requested a thermometer acted and reduced the potential for scalds. However, a separate survey amongst people that did not receive a thermometer showed that although the education programme raised awareness of the danger of hot tap water from 72% to 89%, there was no increase in either testing or lowering of water heater temperatures. Clearly, the addition of a 'facilitating agent' had a major impact on consumer behaviour.

Tap water burn prevention: The effect of legislation. Erdman, Feldman, Rivara, Heimbach and Wall, *PEDIATRICS* Vol. 88 No. 3 September 1991. Five years after a 1983 Washington State Law required new water heaters to be preset at 49°C (120°C), 77% of homes (84% of homes with post-law and 70% of homes with pre-law water heaters) had tap water temperatures of less than 54°C, compared with 20% in 1977. Few people increased their water heater temperature after installation. The average admission rate for burns victims fell by 56% from 5.5 in the 1970's to 2.4 from July 1979 to May 1988. Compared with the 1970's the total body surface area burned, mortality, grafting, scarring, and length of stay in hospital were all reduced. A combination of legislation and education campaigns has resulted in significantly safer water temperatures, and appears to have resulted in a reduction of frequency, morbidity and mortality of tap water burn injuries in children. Furthermore, lower water heater settings proved acceptable to the consumer.

Reduction in paediatric burn admissions over 25 years, 1970-94. C Streeton, T Nolan, *Injury Prevention* 1997;3. Hospital records of the Royal Children's Hospital burns unit, Melbourne were audited for 1974-90 (4992 cases), as well as statewide hospital admissions identified from the Victorian Inpatient Minimum Database for 1987-94 (3353 cases) and burn deaths in Victoria (163 cases) from the Australian Bureau of Statistics 1970-94.

Between 1970 and 1994 there was a 66% reduction in the annual number of burn admissions to the Royal Children's Hospital, a similar reduction across the state, and a 40% fall in the mortality rate. Reductions occurred for all types of burns, ie scalds by 60%, flame burns by 55% and contact burns by 70%, but at differing times corresponding to the introduction of product legislation, education programmes and changes in heating practices. However there was no decline in the number of beverage related scalds. The burn education prevention campaigns in the media, especially those directed towards hot water burn injuries among younger children is thought to have played a role in reducing the number of burns and scalds injuries.

NSW Public Health Policy Statement on the safety of 50°C temperature hot water delivery in domestic settings. Dr George Rubin, Chief Health Officer, New South Wales Department of Health, 1993. The policy statement was - "To reduce the incidence of hot tap water scalding, all new residential hot water supply systems should be installed to deliver hot water at a maximum of 50°C measured at the outlet of all sanitary fixtures (eg in bathrooms, including ensuites)". The following responses were made to questions raised.

A committee of infectious disease specialists and injury prevention specialists met in May 1993. The infectious disease specialists, including a representative on the NH&MRC Legionella task force were satisfied that 50°C storage temperature would not increase the population risk of Legionnaire's disease. Facts provided by Professor Lyn Gilbert at the meeting included - "Legionellae multiply rapidly at 37°C, more slowly at 45°C, while growth is inhibited at temperatures in excess of 45°C, and destroyed at 50°C. The kill rate depends on further increases. 50°C means a kill rate of 50% every 30 minutes, 54°C means a kill rate of 99% in 10 minutes and 60°C means a kill rate of 99% in 1 minute."

Furthermore, at present in the USA, over half of the states (28/50) have legislated for 49°C as a setting for new home hot water systems (aimed to reach 130 million people). Some states have had this legislation for over 10 years. A review of the Centers for Disease Control - data from "Summary tables - notifiable diseases - reported cases by geographic areas" (in "Summary of notifiable diseases in the United States"), MMWR - 1980 through 1989, shows that there has been no significant increase in Legionnaire's disease in these states compared with those which do not have the legislation in place.

In addition, a review of literature by Dr Alfeld Larson of the University of Tasmania, showed that despite many case control studies looking for the cause of sporadic cases of Legionnaire's disease and the many millions of people who are exposed to Legionellae in their own homes, there are published reports of **only four cases of Legionnaire's disease suspected to have been acquired from home hot water heaters**. Only two of these cases reported the tank temperatures, and the temperatures were 37°C and 35°C - well below the recommended temperature of 50°C and right within the prime breeding temperature range (ref; Stout JE, Yu VL, Muraca P: Legionnaire's disease acquired within the homes of two patients: link to the home hot water supply. *JAMA*; 257 (9), 1215-1217 1987).

Iron burns to the hand in the young paediatric patient: A problem in prevention.

Brown, Greenhalgh and Warden, J Burn Care Rehabil 1997. Iron burns are a common cause of contact burns in children. Although the total surface area is usually small, the hand is frequently involved, often resulting in both functional and cosmetic deformities. A review of 82 paediatric patients suffering iron burns to the hand during the period 1987-92 in Cincinnati, Ohio showed that iron burns to the hand occurred most commonly in male children less than 2 years of age. Most were minor partial thickness burns, but 15% sustained full thickness burns requiring grafting. 10% of patients developed complications including hypertrophic scarring and scar contractures requiring surgical release.

Socio economic factors and parental inexperience appeared to play a significant role, as most of these injuries occurred in low income, single parent, single child households. Most injuries were unintentional, however, many were caused by carelessness or neglect. Abuse was suspected or proven in 7% of the cases.

5.5 RESPONDENTS INTERVIEWED, REPORTS/LITERATURE CONSULTED

84 respondents were interviewed - 39 by face-to-face interviews indicated by an asterisk (*) and 45 by telephone interviews. Over 100 reports and articles were also reviewed.

5.5.1 Details of respondents interviewed during the programme of research

Burns Units/Hospitals

Aberdeen Royal	Sr Fiona Day, Ward Sister	UK
Booth Hall Children's Burns Unit*	Kevin Ryan, Ward Manager	UK
Booth Hall Children's Burns Unit*	Nurse Marcia Watson	UK
City Hospital, Nottingham*	Miss F Bailie, Consultant Plastic/Surgery	UK
Mount Vernon Burns Unit	Sue Forbes, Unit Manager	UK
North Staffordshire Burns Unit*	Sr P Dunn, Unit Manager	UK
Nuffield Burns Unit, Stoke Mandeville	Staff Nurse Adele Jones	UK
Pinderfields Hospital, Wakefield*	Dr K Judkins	UK
Royal Hospital for Sick Children,	Peter Raine, Consultant Burns Surgeon	UK
St Andrews Centre for Plastic Surgery	Ms Jackie Watson, Ward Manager	UK
Sandwell District Hospital	Jane Purvis, Secretary to Plastic Surgeon	UK
Selly Oak Hospital Burns Unit*	Sr Lesley Street, Development Mgr	UK
Selly Oak Hospital Burns Unit*	Helen King, Play Therapist	UK
Selly Oak Hospital Burns Unit	John Gower, Snr Consult Burns Surgeon	UK
Withington Hospital*	Ken Dunn, Consult Burns Surgeon	UK
Withington Hospital	Ken Dunn, Consult Burns Surgeon	UK
Yorkhill Hospital, Peach Unit	Dr David Stone, Director	UK

GP surgeries

Bridge Street Surgery, Stapenhill*	Sr Helen Wanda, Nurse Manager	UK
Bridge Street Surgery, Stapenhill*	Sr Sylvia Smith, Practice Nurse	UK
Bridgnorth Hospital*	Sr Joyce Green, Nurse Manager	UK
Gordon Street Surgery, Burton*	Sr Tracey Atherton, Practice Nurse	UK
Hollies Medical Centre, Tamworth*	Sr Jan Wheeldon, Practice Nurse	UK
Langworthy Medical Centre, Salford*	Sr Colleen Greenall, Nurse Practitioner	UK
Sherwood Health Centre, Nottingham	Rachel Nield, Practice Nurse	UK
Whiteladies Health Centre, Bristol	Sr J Edmonds, Treatment Room Nurse	UK
Wolstanton Medical Centre*	Dr R J Tucker	UK
Wolstanton Medical Centre*	Rose Goodwin, Nurse Team Leader	UK
Wolstanton Medical Centre*	Pat Cartwright, Health Visitor	UK

Manufacturers/suppliers/trade associations

Building Research Establishment	Dr David Purser, Section Head	UK
Building Research Establishment	Martin Schuler, Public Health, Water	UK
Haden	M Attwood, Sales Director	UK
Creda	Edward Alcock, Health & Safety Officer	UK
Moulinex Swan	Garry Wassall, Technical Manager	UK
National Housebuilders Council	Richard Brown, Technical Officer	UK
National Home Improvement Council	Mary Murphy, Housing Trusts Officer	UK
Philips Domestic Appliances	Barry Coldbreath, Marketing Dir	UK
Philips Domestic Appliances	Geoff Train, Total Quality Manager	UK

Royal Doulton Tableware	Richard Halliday, Marketing Manager	UK
Staffordshire Tableware	Gail Jones, Licensing Manager	UK
Stoves	Ray Bowen, Research & Development	UK

Others

Argyll & Clyde Health Board	Lorraine Crawford, Librarian	UK
Birmingham Post and Mail	Anna Burke, Information Officer	UK
Health Education Board for Scotland	Heather Kennen, Programmes Officer	UK
Health Education Board for Scotland	Sandy Whiteacre, Promotions Department	UK
Health Education Board for Scotland	Steve Garrad, Audio Visual Department	UK
Liverpool Post and Echo	Jenny McLaren, Information Officer	UK
RoSPA	Janice Cave, Safety Officer	UK
St Margaret's CE Junior School	R Whittaker, Headmaster	UK
Solihull Council Social Services	Ms Liz Hobbs, Senior Social Officer	UK
Southern Birmingham Health Trust	Jackie Montgomery, Care Dev Officer	UK
Southern Birmingham Health Trust	Lynn Inglis, Promotions Unit	UK
University Newcastle, Child Health	Dr E Towner, Snr Lecturer Child Health	UK
University Newcastle, Child Health	Dr Thein Ohn, Research Associate	UK
Parent of scald patient	Mrs Wareham	UK
Parent of scald patient	Mrs Gregory	UK

Overseas organisations

Kidsafe NSW, Sydney*	Peta Smith	Australia
Kidsafe Victoria, Melbourne*	Ian Scott	Australia
NSW Health Department, Sydney*	Pam Albany, Injury Prevention Unit	Australia
NSW Health Department, Sydney*	Jane Elkington, Injury Prevention Unit	Australia
NSW Health Department, Sydney*	Carl Erle, Injury Prevention Unit	Australia
Royal Children's Hospital, Melbourne*	Julian Keogh, Burns Surgeon	Australia
The Safety Centre, Melbourne*	Lynda Hannah, Manager	Australia
The Safety Centre, Melbourne*	Jeni Foster, Safety Programme Co-ordinator	Australia
The Safety Centre, Melbourne*	Barbara Minuzzo, Advisory Line	Australia
County Hospital of Aarhus	Secretarial Department	Denmark
Ministry Family Affairs & Childcare	Vibeke Bildoy, Product Advisor	Norway
Norwegian Board of Health	Marit Christie, Adviser	Norway
Statens Institut för Folkehelse	Dr J Wiik, Deputy Director	Norway
Statens Institut för Folkehelse	Branco Coppia, Head of Health	Norway
Statens Institut för Folkehelse	Steffi Wetterland, Information Officer	Norway
Injury Prevention Research Centre*	Borge Ytterstad (on secondment to IPRC), author of the Harstad Injury Prevention Study	NZ
Burns Institute San Diego*	James Floros, Executive Director	USA
Burns Institute San Diego*	Nancy Nowak, Director Programme Services	USA
CPSC, Washington DC*	Jim Hoebbel, Chief Engineer Fire Hazards	USA
CPSC, Washington DC*	Donald Switzer, Directorate Engineering	USA
CPSC, Washington DC*	Linda E Smith, Senior Statistician	USA
CPSC, Washington DC*	Suad Nakamura, Physiologist	USA
National Safekids Campaign, Washington*	Heather Paul, Executive Director	USA
National Safekids Campaign, Washington*	Angela Mickalide, Program Director	USA
National Safekids Campaign, Washington*	Ana Validzic, Research Assistant	USA
Ohio State University, Columbus	Dee Jepson, Engineering Health and Safety Dept	USA
Trauma Foundation, San Francisco*	Andrew McGuire, Executive Director	USA
Trauma Foundation, San Francisco*	Eric Gorovitz, Resident Lawyer	USA
Trauma Foundation, San Francisco*	Elizabeth McLoughlin, Director of Programmes	USA

5.5.2 Details of reports, articles and other material used as reference material

Internet pages

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1997	Burns, Scalds and You, Safekids, USA
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1997	Childproof tap cover offer, NSW Health Department, Australia
1997	DFRS - Fire Safety Tips, Maryland Fire & Rescue, USA
1997	Don't get burned, Baton Rouge Gen Med Centre, USA
1997	Fire and Burn Injury Interventions, Harborview Inj. Prevention Centre, USA
1997	Fire and Burn Safety education materials, Burn Institute, San Diego, USA
1997	Fire Safety Quiz, Harleysville Group, USA
1997	Injury Prevention Program, Loyola University Med Centre, USA
1997	Iowa Health Book: Preventing Scalds, Mass.Public Health Dept, USA
1997	Kids Safety Page, The Childproofer Inc, USA
1997	Microwave Burn Prevention, Shriners Burns Institute, USA
1997	Parents Appliance Use & Safety Exchange, Ohio State University, USA
1997	Press release Dr Ytterstad winning prize, State Ministry for Health, Norway
1997	Preventing burn injuries among special needs, Univ of Kansas Med Centre, USA
1997	Preventing Hot Water Scalds, Canadian Parents Online, Canada
1997	Report - Victorian Scalds Prevention Campaign, Kidsafe, Australia
1997	Scald Burn Injury, Kidsafe Washington, USA
1997	Scald Burn Prevention, Safe Kids Home page, USA
1997	Scalds & Falls of Infants & Small Children, CPSC, USA
1997	Scalds in the Kitchen, Kennett Fire Company, USA
1997	Tips for burn prevention, Arkansas Children's Hospital, USA
1997	Your Home Fire Safety Checklist, CPSC, USA
1996	Accidents & Safety Health Education Scotland, HEBS, UK
1996	Accidents in the Home - RIB, Strategy & Intelligence Group, Ireland
1996	Children and Burns, University of Georgia, USA
1996	Fire Burn Prevention Week, Safe Kids Coalition, USA
1996	Home Injury Prevention Project, University of Georgia, USA
1996	Home Safety for Seniors, Victoria Care Division, Australia
1996	Hot water temperature and scald burns, Public Health Assoc., Australia
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1995	First Aid Book - Burns & Scalds, MedAccess Corporation, USA
1995	Overview initiatives to reduce incidence/severity scalds, Kidsafe Australia
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Other reports, articles, teaching aids

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