Government Consumer Safety Research

Burns and scalds accidents in the home
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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>
<thead>
<tr>
<th></th>
<th>Fatal</th>
<th>Severe (Hospital in-patient)</th>
<th>Minor (A&amp;E visits)</th>
<th>Minor (GP visits)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>211</td>
<td>7,765</td>
<td>104,000</td>
<td>250,000</td>
<td>382,000</td>
</tr>
</tbody>
</table>

• 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 3 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>
<thead>
<tr>
<th>Age Group</th>
<th>(% of Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 years</td>
<td>(45%)</td>
</tr>
<tr>
<td>5-10 years</td>
<td>(8%)</td>
</tr>
<tr>
<td>11-17 years</td>
<td>(8%)</td>
</tr>
<tr>
<td>18-64 years</td>
<td>(32%)</td>
</tr>
<tr>
<td>65+ years</td>
<td>(8%)</td>
</tr>
</tbody>
</table>
1.1.4 Key location for accidents causing burns and scalds

Where known, nearly 50% of the severe burns/scalds injuries (ie 1550 a year or 4 a day) to children under 3 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.

1.1.3 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>
<thead>
<tr>
<th>Table 1.1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 0-4 years</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>Total severe injuries/fatalities</td>
</tr>
</tbody>
</table>

1.1.4 Key location for accidents causing burns and scalds

<table>
<thead>
<tr>
<th>Table 1.1-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location of burns and scalds - children under 5</td>
</tr>
</tbody>
</table>

Where known, nearly 50% of the severe burns/scalds injuries (ie 1550 a year or 4 a day) to children under 3 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 coffee pots** 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 15 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>
<thead>
<tr>
<th>Product</th>
<th>Age</th>
<th>Typical % Burnss (severe cases)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cup</td>
<td>0-11⁄2 years</td>
<td>15-20%</td>
<td>Extensive facial/upper body burns</td>
</tr>
<tr>
<td>Cup</td>
<td>11⁄2-4 years</td>
<td>5-10%</td>
<td>Neck/shoulder/upper body burns</td>
</tr>
<tr>
<td>Bath</td>
<td>0-23 years</td>
<td>10-50%</td>
<td>Fall in the bath/multibody burns</td>
</tr>
<tr>
<td>Bath 21st</td>
<td>21st up</td>
<td>10-12%</td>
<td>Most stand in bath, some fall in</td>
</tr>
<tr>
<td>Kettle 0-4 years</td>
<td>10-20%</td>
<td></td>
<td>From above - facial/upper body burns</td>
</tr>
<tr>
<td>Tea/coffee pot</td>
<td>0-4 years</td>
<td>8-15%</td>
<td>Upper/lower body burns</td>
</tr>
<tr>
<td>Jug hot water</td>
<td>0-4 years</td>
<td>20-40%</td>
<td>Body burns if young baby lies in it</td>
</tr>
<tr>
<td>Jug hot water</td>
<td>0-4 years</td>
<td>5-15%</td>
<td>Feet/legs when kick/knock jug</td>
</tr>
<tr>
<td>Saucepan</td>
<td>0-4 years</td>
<td>10-20%</td>
<td>From above facial/upper body burns</td>
</tr>
<tr>
<td>Saucepan</td>
<td>0-4 years</td>
<td>8-10%</td>
<td>Access elsewhere. foot/hand burns</td>
</tr>
<tr>
<td>Iron 0-4 years</td>
<td>11-20%</td>
<td></td>
<td>Localised deep dermal burns/hands</td>
</tr>
<tr>
<td>Iron 0-4 years</td>
<td>&lt; 1%</td>
<td></td>
<td>Finger where touched iron</td>
</tr>
<tr>
<td>Cooker 0-4 years</td>
<td>20% and over</td>
<td></td>
<td>Clothing caught fire or set on cooker</td>
</tr>
<tr>
<td>Cooker 0-4 years</td>
<td>1-5%</td>
<td></td>
<td>Fingers, hands where touched cooker</td>
</tr>
<tr>
<td>Fire heaters</td>
<td>0-4 years</td>
<td>5-20%</td>
<td>Fall on fire, legs, arm, part of torso</td>
</tr>
<tr>
<td>Fire heaters</td>
<td>0-4 years</td>
<td>1-21⁄2%</td>
<td>Fingers/hand if touch fire</td>
</tr>
<tr>
<td>Chip/fryer</td>
<td>0-4 years</td>
<td>20-40%</td>
<td>From above, multibody burns</td>
</tr>
<tr>
<td>Chip/fryer</td>
<td>0-4 years</td>
<td>1-5%</td>
<td>Small spills, feet, arm</td>
</tr>
</tbody>
</table>
The nature of the burn or scald is dependent on the severity of the burn, i.e. 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 coffee pot, 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.
- 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.

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>
<thead>
<tr>
<th></th>
<th>In-depth face-to-face interviews</th>
<th>Telephone interviews/ telephone contacts</th>
<th>Total contacts/Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns Units</td>
<td>8</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>GP’s</td>
<td>9</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Manufacturers</td>
<td>0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Other UK organisations</td>
<td>0</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Overseas organisations</td>
<td>22</td>
<td>7</td>
<td>29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39</strong></td>
<td><strong>45</strong></td>
<td><strong>84</strong></td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Product</th>
<th>Total injuries (fatal + non fatal)</th>
<th>Minor injuries (A &amp; E visits)</th>
<th>Severe injuries (A &amp; E visits)</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cups/mugs</td>
<td>114017</td>
<td>10142</td>
<td>1265</td>
<td>0</td>
</tr>
<tr>
<td>Kettles</td>
<td>10817</td>
<td>10284</td>
<td>573</td>
<td>0</td>
</tr>
<tr>
<td>Fires/heaters</td>
<td>8036</td>
<td>7366</td>
<td>420</td>
<td>30</td>
</tr>
<tr>
<td>Cookers</td>
<td>6233</td>
<td>5892</td>
<td>288</td>
<td>13</td>
</tr>
<tr>
<td>Saucepans</td>
<td>5695</td>
<td>5375</td>
<td>318</td>
<td>2</td>
</tr>
<tr>
<td>Irons</td>
<td>5530</td>
<td>5303</td>
<td>137</td>
<td>0</td>
</tr>
<tr>
<td>Chip pans</td>
<td>5782</td>
<td>4882</td>
<td>408</td>
<td>2</td>
</tr>
<tr>
<td>Sun</td>
<td>4721.3</td>
<td>4686</td>
<td>55</td>
<td>0.3</td>
</tr>
<tr>
<td>Hot food/meals/sauces</td>
<td>4363</td>
<td>4206</td>
<td>120</td>
<td>0</td>
</tr>
<tr>
<td>Cans/motorcycles</td>
<td>3988</td>
<td>3799</td>
<td>248</td>
<td>1</td>
</tr>
<tr>
<td>Flying pain</td>
<td>3893.9</td>
<td>3793</td>
<td>96</td>
<td>0.3</td>
</tr>
<tr>
<td>Radiator/heat pipes</td>
<td>2861</td>
<td>2899</td>
<td>163</td>
<td>2</td>
</tr>
<tr>
<td>Welding</td>
<td>2706</td>
<td>2680</td>
<td>46</td>
<td>0</td>
</tr>
<tr>
<td>Baths</td>
<td>2698</td>
<td>2103</td>
<td>574</td>
<td>21</td>
</tr>
<tr>
<td>Baking tin</td>
<td>2627</td>
<td>2608</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>Textile fires</td>
<td>2320</td>
<td>2285</td>
<td>217</td>
<td>0</td>
</tr>
<tr>
<td>Garden fires/bonfires</td>
<td>1498.7</td>
<td>1306</td>
<td>143</td>
<td>0.7</td>
</tr>
<tr>
<td>Fireworks</td>
<td>1436</td>
<td>1348</td>
<td>88</td>
<td>0</td>
</tr>
<tr>
<td>Sunbed/lamp</td>
<td>1295</td>
<td>1258</td>
<td>37</td>
<td>0</td>
</tr>
<tr>
<td>Hot water bottles</td>
<td>1210</td>
<td>1168</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Cigarettes/smoking</td>
<td>1159</td>
<td>797</td>
<td>165</td>
<td>23</td>
</tr>
<tr>
<td>Petroleum</td>
<td>1081.3</td>
<td>809</td>
<td>246</td>
<td>8.3</td>
</tr>
<tr>
<td>Microwaves</td>
<td>961</td>
<td>953</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Jugs of hot water</td>
<td>873</td>
<td>719</td>
<td>154</td>
<td>0</td>
</tr>
<tr>
<td>Lighters</td>
<td>669</td>
<td>755</td>
<td>110</td>
<td>3</td>
</tr>
<tr>
<td>Curling tongs</td>
<td>762</td>
<td>737</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>Boats of hot water</td>
<td>755.3</td>
<td>647</td>
<td>108</td>
<td>0.3</td>
</tr>
<tr>
<td>Candles</td>
<td>726.6</td>
<td>683</td>
<td>42</td>
<td>1.6</td>
</tr>
<tr>
<td>Electric lamps</td>
<td>615</td>
<td>611</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Barbeque</td>
<td>583.3</td>
<td>539</td>
<td>44</td>
<td>0.3</td>
</tr>
<tr>
<td>Gas cylinders/leaks</td>
<td>521</td>
<td>399</td>
<td>125</td>
<td>1.0</td>
</tr>
</tbody>
</table>

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.

**Definitions**

- **Burns**: 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.
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- **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.
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**Tbsa**: 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. 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. ... 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>
<thead>
<tr>
<th>Table 3.1-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total injuries (fatal + non-fatal)</td>
</tr>
<tr>
<td>Flask/thermos</td>
</tr>
<tr>
<td>Baby bottles</td>
</tr>
<tr>
<td>Matches</td>
</tr>
<tr>
<td>Shower</td>
</tr>
<tr>
<td>Tap</td>
</tr>
<tr>
<td>Glue</td>
</tr>
<tr>
<td>Wall paper stripper</td>
</tr>
<tr>
<td>Plastic</td>
</tr>
<tr>
<td>Hot dishes/plates</td>
</tr>
<tr>
<td>Blow lamps</td>
</tr>
<tr>
<td>Lighter fuel</td>
</tr>
<tr>
<td>Toaster</td>
</tr>
<tr>
<td>Kerosene accelerants</td>
</tr>
<tr>
<td>Saucepans</td>
</tr>
<tr>
<td>Electric blanket</td>
</tr>
<tr>
<td>Aerosol</td>
</tr>
<tr>
<td>Other infrequent articles</td>
</tr>
<tr>
<td>Unknown/no details</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Source - HASS/LASS/HADD

Notes on the above table
1. 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.

2. The following articles cause large numbers of minor injuries (ie > 500 per annum) but relatively few severe/fatal injuries.
   - Sun 4656 minor injuries 53 severe/fatal injuries
   - Welding 2660 minor injuries 46 severe/fatal injuries
   - Baking tins 2600 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.

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<table>
<thead>
<tr>
<th>Table 3.2-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (pa)</td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>Cups/thermos</td>
</tr>
<tr>
<td>Baby bottles</td>
</tr>
<tr>
<td>Kettles</td>
</tr>
<tr>
<td>Fires/heaters (all)</td>
</tr>
<tr>
<td>Chip pan/deep fryer</td>
</tr>
<tr>
<td>Saucepans</td>
</tr>
<tr>
<td>Cookers (all)</td>
</tr>
<tr>
<td>Cars/motorcycles</td>
</tr>
<tr>
<td>Petrol</td>
</tr>
<tr>
<td>Teapot/coffee pot</td>
</tr>
<tr>
<td>Cigarettes/smoking</td>
</tr>
</tbody>
</table>

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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

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.
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

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)

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.
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 13 1⁄2% 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 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 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 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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reached/pulled cup or mug of hot drink</td>
<td>59%</td>
<td>throughout the day with peaks at 7am, noon, 4pm and 8pm.</td>
</tr>
<tr>
<td>Poured/spilt drink on himself/herself</td>
<td>19%</td>
<td>early evening</td>
</tr>
<tr>
<td>Adult knocked and/or spilt hot drink over child</td>
<td>8%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>2%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>12%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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 13 1⁄2% 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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knocked hot drink on self</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spilt hot drink on self</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>25%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>
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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18 months</td>
<td>15-20%</td>
<td>face, neck, shoulder, chest and arms</td>
</tr>
<tr>
<td>18 months - 4 years</td>
<td>5-10%</td>
<td>face, neck, shoulder, chest and arms</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Table 4.2-1</th>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>2703</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>574</td>
<td>437</td>
<td>46</td>
<td>25</td>
<td>25</td>
<td>41</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>23</td>
<td>0</td>
<td>0</td>
<td>3.6</td>
<td>15.2</td>
<td></td>
</tr>
</tbody>
</table>

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)

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)

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.
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)

’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)

’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 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)

’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.

4.2.4 Accident mechanisms (severe and fatal injuries only)

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fell into water</td>
<td>37%</td>
<td>morning and early evening</td>
</tr>
<tr>
<td>Climbed into hot bath (usually unsupervised)</td>
<td>20%</td>
<td>throughout the day</td>
</tr>
<tr>
<td>Put into hot bath by sibling or parent</td>
<td>7%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Baby/young child turned on hot tap</td>
<td>7%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Sibling turned on hot tap</td>
<td>7%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent/no details of mechanisms</td>
<td>13%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Age of child</th>
<th>% Area</th>
<th>Body part</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 2-2½ years</td>
<td>20-30%</td>
<td>whole body as falling in and cannot get out</td>
</tr>
<tr>
<td>2½-3 years upwards</td>
<td>70-20%</td>
<td>feet and ankles if standing, body if prone</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Exposure</th>
<th>Average bath temperature for individuals</th>
<th>Average shower temperature for individuals</th>
<th>Discomfort noticed at</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 seconds at 50ºC</td>
<td>40.5ºC</td>
<td>40.0ºC</td>
<td>45.0ºC</td>
</tr>
<tr>
<td>10 seconds at 60ºC</td>
<td>very superficial burn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 seconds at 70ºC</td>
<td>full-thickness burn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 second at 70ºC</td>
<td>partial thickness burn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 minute at 55-65ºC</td>
<td>partial thickness burn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 minutes at 50ºC</td>
<td>full-thickness burn</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 50ºC.

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.

Secondary messages:-

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

- 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.
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

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)

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.

---

**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 50ºC 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.

---

**Table 4.3-1**

<table>
<thead>
<tr>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>10,084</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>573</td>
<td>367</td>
<td>87</td>
<td>5</td>
<td>92</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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.

**Table 4.3-2**

<table>
<thead>
<tr>
<th>Burns and scalds</th>
<th>All accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>30</td>
</tr>
<tr>
<td>Spring</td>
<td>25</td>
</tr>
<tr>
<td>Summer</td>
<td>20</td>
</tr>
<tr>
<td>Autumn</td>
<td>15</td>
</tr>
</tbody>
</table>

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)

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)

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

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>
<thead>
<tr>
<th>Age of child</th>
<th>% tbsa</th>
<th>Body part</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 5 years</td>
<td>10-20%</td>
<td>face, neck, shoulder, chest, back and arms</td>
</tr>
</tbody>
</table>

4.3.6 Data on resulting disability

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

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.'
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>
<thead>
<tr>
<th>Table 4.4-1</th>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>8036</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>420</td>
<td>30</td>
<td>38</td>
<td>36</td>
<td>150</td>
<td>106</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>30</td>
<td>0.3</td>
<td>0.3</td>
<td>0</td>
<td>2.3</td>
<td>27</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Table 4.4-2</th>
<th>Severe injuries</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>80 pa</td>
<td>7 pa</td>
</tr>
<tr>
<td>Furniture</td>
<td>0 pa</td>
<td>2 pa</td>
</tr>
<tr>
<td>Bedding/mattresses</td>
<td>4 pa</td>
<td>0 pa</td>
</tr>
</tbody>
</table>

4.4.3 Seasonal variations (severe injuries only)

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>
<thead>
<tr>
<th>Table 4.4-3</th>
<th>0-4 yrs</th>
<th>5-10 yrs</th>
<th>11-17 yrs</th>
<th>18-64 yrs</th>
<th>65+ yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18.8</td>
<td>7</td>
<td>10.4</td>
<td>5.7</td>
<td>11.2</td>
</tr>
<tr>
<td>Female</td>
<td>27.7</td>
<td>9.5</td>
<td>3.3</td>
<td>2.7</td>
<td>11.8</td>
</tr>
</tbody>
</table>

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)

Most accidents take place 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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothes caught alight</td>
<td>21%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Fell/collapsed near fire</td>
<td>18%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Fell into/onto fire</td>
<td>18%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Sat too near fire - burnt limb, not clothing</td>
<td>4%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>22%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanisms</td>
<td>20%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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 4.4-6

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too close to fire and clothing caught fire</td>
<td>67%</td>
<td>mid evening</td>
</tr>
<tr>
<td>Fell onto fire</td>
<td>22%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>11%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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 (56 severe injuries pa)

Table 4.4-7

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Too close to fire and clothing caught fire</td>
<td>25%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>75%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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 4.4-8

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

Most accidents take place in the living room.

23th January 1993. A 32 year old woman was lighting the gas fire in the living room with match because pilot light was not working - flames blow 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

<table>
<thead>
<tr>
<th>Age</th>
<th>% tbsa</th>
<th>Body part</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 5</td>
<td>1-2%</td>
<td>fingers, hands if touch fire</td>
</tr>
<tr>
<td>under 5</td>
<td>5-20%</td>
<td>legs, hand, arm, if fall on fire</td>
</tr>
<tr>
<td>elderly</td>
<td>10-60%</td>
<td>multi body parts, depending how long before found</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>0-4 years</th>
<th>5-9 years</th>
<th>10-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A&amp;E visits)</td>
<td>4692</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A&amp;E/in-patient)</td>
<td>408</td>
<td>59</td>
<td>33</td>
<td>20</td>
<td>244</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
</tr>
</tbody>
</table>

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)

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.

Table 4.5-2
**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)

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)

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.

### 4.5.3 Age and sex of victim (severe injuries only)

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 yrs</td>
<td>5.0</td>
<td>2.0</td>
</tr>
<tr>
<td>5-10 yrs</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>11-17 yrs</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>18-64 yrs</td>
<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>65+ yrs</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**Table 4.5-1**

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulled flex of fryer or pulled deep fat fryer</td>
<td>33%</td>
<td>16.00-17.59</td>
</tr>
<tr>
<td>Pulled chip pan off cooker</td>
<td>33%</td>
<td>around 16.00</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>11%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>23%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

**Table 4.5-2**

### 4.5.5 Accident mechanisms % of cases

- **Pulled chip pan/deep fat fryer on self** 67%
- **Other infrequent mechanisms** 23%

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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulled chip pan/deep fat fryer on self</td>
<td>67%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>23%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

**Table 4.5-3**

All accidents take place in the kitchen.
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 spilled 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. Children are particularly at risk of burns from chip pan fires. The table below shows the typical average percentage burns of the total body surface area caused by deep fat fryer/chip pan burns.

### Table 4.5-7

<table>
<thead>
<tr>
<th>Accident mechanism</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chip pan caught fire</td>
<td>60%</td>
<td>16.00 - 20.00</td>
</tr>
<tr>
<td>Spilt hot oil from chip pan on self</td>
<td>7%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>7%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>28%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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.

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.

58

Table 4.5-9

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrequent mechanisms (insufficient data)</td>
<td>100%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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.

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.

4.5.6 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/pen, 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>
<thead>
<tr>
<th></th>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>5375</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>318</td>
<td>122</td>
<td>41</td>
<td>5</td>
<td>114</td>
<td>36</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1.7</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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)

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)

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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulled pan onto self</td>
<td>63%</td>
<td>10.00-19.59</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>33%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>4%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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 1993. 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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run into parent (usually mother) who was holding pan</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Pulled pan onto self</td>
<td>25%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>12.5%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>12.5%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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.’

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>
<thead>
<tr>
<th>Age of child</th>
<th>% tbsa</th>
<th>Body part</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 5 years</td>
<td>10-20%</td>
<td>face, neck, shoulder, chest, back and arms</td>
</tr>
<tr>
<td>under 5 years</td>
<td>8-10%</td>
<td>feet and ankles if placed on floor</td>
</tr>
</tbody>
</table>

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

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 4.7-1

<table>
<thead>
<tr>
<th>Category</th>
<th>Minor injuries (A &amp; E visits)</th>
<th>Severe injuries (A &amp; E/in-patient)</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 years</td>
<td>n/a</td>
<td>250</td>
<td>12</td>
</tr>
<tr>
<td>5-10 years</td>
<td>n/a</td>
<td>112</td>
<td>4</td>
</tr>
<tr>
<td>11-17 years</td>
<td>n/a</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>18-64 years</td>
<td>n/a</td>
<td>8</td>
<td>115</td>
</tr>
<tr>
<td>65+ years</td>
<td>n/a</td>
<td>115</td>
<td>4</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Clothing</th>
<th>Severe injuries</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>60 ps</td>
<td>10 ps</td>
</tr>
</tbody>
</table>

4.7.3 Seasonal variations (severe injuries only)

<table>
<thead>
<tr>
<th>Season</th>
<th>Severe injuries</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Spring</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Summer</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Autumn</td>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 4.7-2

<table>
<thead>
<tr>
<th>Season</th>
<th>Severe injuries</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Spring</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>Summer</td>
<td>35</td>
<td>10</td>
</tr>
<tr>
<td>Autumn</td>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>
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)

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

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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing caught alight (usually lighting or leaning over the cooker</td>
<td>63%</td>
<td>often early morning</td>
</tr>
<tr>
<td>Lighting cooker (not involving clothing)</td>
<td>7%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>14%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>18%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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.’
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 50ºC is perceived as cooler to the touch than a metal door at 50ºC, 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**

- 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.

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.

### Table 4.7-8

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

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

<table>
<thead>
<tr>
<th>Age</th>
<th>% tbsa</th>
<th>Body part</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 5</td>
<td>1-5%</td>
<td>fingers, hands where touched cooker</td>
</tr>
<tr>
<td>under 5</td>
<td>20%+</td>
<td>where clothing has caught fire</td>
</tr>
<tr>
<td>elderly</td>
<td>10-20%</td>
<td>face, neck, and upper body</td>
</tr>
</tbody>
</table>

Source: medical respondents, literature.

---

‘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.’

‘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.
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.

### Table 4.8-1

<table>
<thead>
<tr>
<th></th>
<th>0-4</th>
<th>5-10</th>
<th>11-17</th>
<th>18-64</th>
<th>65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries</td>
<td>3739</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries</td>
<td>248</td>
<td>4</td>
<td>0</td>
<td>64</td>
<td>180</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### 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)

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

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.’

Table 4.8-3

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

‘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.’
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 4.9-5

<table>
<thead>
<tr>
<th>Sex</th>
<th>0-4 yrs</th>
<th>5-10 yrs</th>
<th>11-17 yrs</th>
<th>18-64 yrs</th>
<th>65+ yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0</td>
<td>0.05</td>
<td>0.10</td>
<td>0.15</td>
<td>0.20</td>
</tr>
<tr>
<td>Female</td>
<td>0</td>
<td>0</td>
<td>0.05</td>
<td>0.10</td>
<td>0.15</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removed radiator cap, scalded by hot water</td>
<td>26%</td>
<td>16.00-19.00</td>
</tr>
<tr>
<td>Caught fire</td>
<td>14%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Touched hot engine/boiler</td>
<td>13%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>19%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lit garden fire/bonfire with petrol</td>
<td>63%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>20%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>17%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Minor injuries (A &amp; E visits)</th>
<th>2085</th>
<th>n/a</th>
<th>n/a</th>
<th>n/a</th>
<th>n/a</th>
<th>n/a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>217</td>
<td>151</td>
<td>13</td>
<td>7</td>
<td>39</td>
<td>7</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>n/a</td>
</tr>
</tbody>
</table>

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 or/and 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

<table>
<thead>
<tr>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns and scalds</td>
<td>35.0</td>
<td>30.0</td>
<td>25.0</td>
</tr>
<tr>
<td>All accidents</td>
<td>30.0</td>
<td>25.0</td>
<td>20.0</td>
</tr>
</tbody>
</table>

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)

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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulled teapot or coffeepot onto themselves</td>
<td>70%</td>
<td>12.00-15.00 &amp; 08.00-09.00</td>
</tr>
<tr>
<td>Poured or spilt tea onto themselves</td>
<td>15%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>15%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

‘1st August 1993, between 12.00 and 13.59, 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 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)

Accident mechanisms % of cases Main time when occurs

| Knocked teapot over self or poured tea over self | 93% | 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 3 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.
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

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.

4.11.3 Seasonal variations (severe injuries only)

An estimated 53% (87) of the severe injuries are 'category B' involving 3 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.

4.10.6 Product design ideas emerging from the research

1. **Lockable lid** tea or coffee pots 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/coffee pot 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 coffee pot 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 coffee pots in the centre of a table or at the back of the work surface.
- Never pour or carry a teapot or coffee pot 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.

<table>
<thead>
<tr>
<th>Table 4.10-6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age of child</strong></td>
</tr>
<tr>
<td>under 5 years</td>
</tr>
</tbody>
</table>

Source: medical respondents.

### Table 4.10-6

<table>
<thead>
<tr>
<th><strong>Age of child</strong></th>
<th><strong>% TBSA</strong></th>
<th><strong>Body part</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>under 5 years</td>
<td>8-15%</td>
<td>face, neck, shoulder, chest, back and arms, legs</td>
</tr>
</tbody>
</table>

Source: medical respondents.

### Table 4.11-1

<table>
<thead>
<tr>
<th><strong>Total estimated accidents per year</strong></th>
<th><strong>0-4 years</strong></th>
<th><strong>5-10 years</strong></th>
<th><strong>11-17 years</strong></th>
<th><strong>18-64 years</strong></th>
<th><strong>65+ years</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>971</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>165</td>
<td>65</td>
<td>12</td>
<td>8</td>
<td>67</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>23</td>
<td>0.3</td>
<td>0.3</td>
<td>0</td>
<td>7.3</td>
</tr>
</tbody>
</table>

An estimated 53% (87) of the severe injuries are 'category B' involving 3 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.

### Table 4.11-2

<table>
<thead>
<tr>
<th><strong>Severe injuries</strong></th>
<th><strong>Fatal injuries</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Clothing</strong></td>
<td>0 ps</td>
</tr>
<tr>
<td><strong>Furniture</strong></td>
<td>0 ps</td>
</tr>
<tr>
<td><strong>Bedding/mattresses</strong></td>
<td>0 ps</td>
</tr>
</tbody>
</table>

### Table 4.11-3

<table>
<thead>
<tr>
<th><strong>Severe injuries</strong></th>
<th><strong>Fatal injuries</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Burns and scalds</strong></td>
<td>All accidents</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Winter</strong></th>
<th><strong>Spring</strong></th>
<th><strong>Summer</strong></th>
<th><strong>Autumn</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>15</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>20</td>
<td>25</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>30</td>
<td>35</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

82
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)

**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). 55% of the severe injuries to children aged 0-4 years (ie 54 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 4.11-4**

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye bumped into cigarette</td>
<td>88%</td>
<td>midday; 11.30-15.00</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>12%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

**Table 4.11-5**

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Careless disposal of smoking materials</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Careless disposal of smoking materials + ignition of clothing/bedding/furniture</td>
<td>17%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Accidently got cigarette in eye</td>
<td>10%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>13%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>10%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

**13th 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 1993.** 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.

**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**

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Careless disposal of smoking materials</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Careless disposal of smoking materials + ignition of clothing/bedding/furniture</td>
<td>17%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Accidently got cigarette in eye</td>
<td>10%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>13%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>10%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th></th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>2696</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>163</td>
<td>90</td>
<td>4</td>
<td>0</td>
<td>40</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>2.3</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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)

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 4.12-1**

<table>
<thead>
<tr>
<th>Age group</th>
<th>Minor injuries (A &amp; E visits)</th>
<th>Severe injuries (A &amp; E/in-patient)</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 yrs</td>
<td>2696</td>
<td>163</td>
<td>2.3</td>
</tr>
<tr>
<td>5-10 yrs</td>
<td>n/a</td>
<td>90</td>
<td>0.0</td>
</tr>
<tr>
<td>11-17 yrs</td>
<td>n/a</td>
<td>4</td>
<td>0.0</td>
</tr>
<tr>
<td>18-64 yrs</td>
<td>n/a</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>65+ yrs</td>
<td>n/a</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

4.12.4 Accident mechanisms (severe injuries only)

**Table 4.12-2**

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

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)

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

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)

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.

4.13.3 Accident mechanisms

Table 4.12-6

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doing DIY repairs and burnt by hot water from radiator</td>
<td>35%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Fell asleep against hot radiator</td>
<td>25%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Had a fit and fell against hot radiator</td>
<td>25%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>22%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

Table 4.13-1

<table>
<thead>
<tr>
<th>Table 4.13-1</th>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>719</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>154</td>
<td>133</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4.13-2

| 30 accidents |
|--------------|---|---|---|
| Burns and scalds | 20 | 25 | 30 |

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.
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 spilled 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.

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 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.
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

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)

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.

---

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.

---

Table 4.14-1

<table>
<thead>
<tr>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>1348</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>143</td>
<td>4</td>
<td>17</td>
<td>71</td>
<td>47</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0.7</td>
<td>0</td>
<td>0</td>
<td>0.33</td>
<td>0.33</td>
</tr>
</tbody>
</table>

Table 4.14-2

<table>
<thead>
<tr>
<th>All accidents</th>
<th>Burns and scalds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>15</td>
</tr>
<tr>
<td>Spring</td>
<td>20</td>
</tr>
<tr>
<td>Summer</td>
<td>40</td>
</tr>
<tr>
<td>Autumn</td>
<td>45</td>
</tr>
</tbody>
</table>

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)

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 4.14-3

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall into bonfire/garden fire</td>
<td>50%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Aerosol/something exploded in bonfire</td>
<td>insufficient data</td>
<td></td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>insufficient data</td>
<td></td>
</tr>
</tbody>
</table>

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.’

‘9th 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 1993. 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 4.14-5

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerosol/something exploded in bonfire</td>
<td>37%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Fall in garden fire/bonfire</td>
<td>insufficient data</td>
<td></td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>insufficient data</td>
<td></td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>insufficient data</td>
<td></td>
</tr>
</tbody>
</table>

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

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)

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.

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)

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)

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>
<thead>
<tr>
<th>Age group</th>
<th>% TBSA</th>
<th>Body part</th>
</tr>
</thead>
<tbody>
<tr>
<td>under 5 years</td>
<td>11.2-21.2%</td>
<td>hand and fingers</td>
</tr>
</tbody>
</table>

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 GPsurgery 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

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)

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.

<table>
<thead>
<tr>
<th>4.16-1</th>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>4205</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>131</td>
<td>75</td>
<td>17</td>
<td>8</td>
<td>27</td>
<td>4</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 4.16-2

<table>
<thead>
<tr>
<th>4.16-2</th>
<th>Burns and scalds</th>
<th>NI accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autumn</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
4.16.3 Age and sex of victim (severe injuries only)

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)

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.

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

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)

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)

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 years old, 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 years old, 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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas cylinder/bottle exploded</td>
<td>42%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Camping (in tent) changing cylinder/gas leak &amp; exploded</td>
<td>25%</td>
<td>22.00-23.00</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>29%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>4%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

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.

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas cylinder/bottle exploded</td>
<td>42%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Camping (in tent) changing cylinder/gas leak &amp; exploded</td>
<td>25%</td>
<td>22.00-23.00</td>
</tr>
<tr>
<td>Other infrequent mechanisms</td>
<td>29%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>4%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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 lightsers, 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>
<thead>
<tr>
<th>Severe injuries</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>12 ps</td>
</tr>
</tbody>
</table>
4.18.3 Seasonal variations (severe injuries only)

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)

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)

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.’
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)

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

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.

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>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Playing with lighter and burnt themselves (includes 2 cases playing lighting an aerosol can)</td>
<td>100%</td>
<td>no data</td>
</tr>
</tbody>
</table>

The total estimated number of accidents in each age group is shown in Table 4.19-1.

Table 4.19-1

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>647</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>108</td>
<td>65</td>
<td>22</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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)

The table above shows the seasonal distribution of severe injuries caused by bowls/buckets of hot water. 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)

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

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

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)

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)

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>
<thead>
<tr>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>96</td>
<td>0</td>
<td>13</td>
<td>6</td>
<td>76</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Accidents by season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries</td>
</tr>
<tr>
<td>Severe injuries</td>
</tr>
<tr>
<td>Fatal injuries</td>
</tr>
</tbody>
</table>

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)

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)

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)

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

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)

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.

4.21.3 Total estimated accidents

<table>
<thead>
<tr>
<th>Minor injuries (A &amp; E visits)</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total estimated accidents per year</td>
<td>1348</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/patient)</td>
<td>88</td>
<td>0</td>
<td>6</td>
<td>54</td>
<td>28</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>0-4 yrs</th>
<th>5-10 yrs</th>
<th>11-17 yrs</th>
<th>18-64 yrs</th>
<th>65+ yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>0</td>
<td>2.7</td>
<td>36</td>
<td>1.6</td>
<td>0</td>
</tr>
<tr>
<td>Female</td>
<td>0</td>
<td>0</td>
<td>2.5</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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)

Table 4.21-4

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firework exploded in hand</td>
<td>37%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Hit by a thrown firework</td>
<td>37%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Other infrequent mechanisms/mecanisms unknown</td>
<td>26%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>4656</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>55</td>
<td>15</td>
<td>n/a</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0.3</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Winter</th>
<th>Spring</th>
<th>Summer</th>
<th>Autumn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burns and scalds</td>
<td>20</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>All accidents</td>
<td>40</td>
<td>60</td>
<td>40</td>
</tr>
</tbody>
</table>

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.
4.23 BABY BOTTLES

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

4.23.1 Total accidents

An estimated 54% (29) of the severe injuries are ‘category B’ involving 5 or more days as 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)

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.

Table 4.23-1

<table>
<thead>
<tr>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>467</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>54</td>
<td>54</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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)

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.
4.24 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

An estimated 80% (38) of the severe injuries are 'category B' involving 5 or more days as 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.

4.24.3 Seasonal variations (severe injuries only)

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.'
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)

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)

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>
<thead>
<tr>
<th>Minor injuries (A &amp; E visits)</th>
<th>Severe injuries (A &amp; E/in-patient)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total estimated accidents per year</td>
<td>Total estimated accidents per year</td>
</tr>
<tr>
<td>0-4 years</td>
<td>5-10 years</td>
</tr>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>2620</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>46</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Burn and scalds</th>
<th>All accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>Winter</td>
</tr>
<tr>
<td>Spring</td>
<td>Spring</td>
</tr>
<tr>
<td>Summer</td>
<td>Summer</td>
</tr>
<tr>
<td>Autumn</td>
<td>Autumn</td>
</tr>
</tbody>
</table>

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)

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

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>
<thead>
<tr>
<th>Table 4.26-1</th>
<th>Total estimated accidents per year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-4 years</td>
</tr>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>583</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>44</td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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 1993-95, 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)

4.26.3 Age and sex of victim (severe only)

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

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.

All of the accidents occur either in the summer (70%) or in the spring (30%), i.e., during the warmer months when barbecues are most likely to be used.
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>
<thead>
<tr>
<th>Table 4.27-1</th>
<th>Total estimated accidents per year</th>
<th>0-4 years</th>
<th>5-10 years</th>
<th>11-17 years</th>
<th>18-64 years</th>
<th>65+ years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>685</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>42</td>
<td>4</td>
<td>8</td>
<td>29</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Fatal injuries</td>
<td>1.7</td>
<td>0.0</td>
<td>0.3</td>
<td>0.0</td>
<td>0.3</td>
<td>1.0</td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Table 4.27-2</th>
<th>Severe injuries</th>
<th>Fatal injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>17</td>
<td>1.0</td>
</tr>
<tr>
<td>Bedding/mattresses</td>
<td>4</td>
<td>0.3</td>
</tr>
</tbody>
</table>

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.

4.27.3 Seasonal variations (severe injuries only)

<table>
<thead>
<tr>
<th>Table 4.27-3</th>
<th>Burns and scalds</th>
<th>All accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Spring</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Summer</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Autumn</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Table 4.27-4</th>
<th>Table 4.27-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male 0-4 yrs</td>
<td>0.00</td>
</tr>
<tr>
<td>Female 0-4 yrs</td>
<td>0.02</td>
</tr>
<tr>
<td>Male 5-10 yrs</td>
<td>0.04</td>
</tr>
<tr>
<td>Female 5-10 yrs</td>
<td>0.07</td>
</tr>
<tr>
<td>Male 11-17 yrs</td>
<td>0.06</td>
</tr>
<tr>
<td>Female 11-17 yrs</td>
<td>0.10</td>
</tr>
<tr>
<td>Male 18-64 yrs</td>
<td>0.12</td>
</tr>
<tr>
<td>Female 18-64 yrs</td>
<td>0.14</td>
</tr>
<tr>
<td>Male 65+ yrs</td>
<td>0.16</td>
</tr>
<tr>
<td>Female 65+ yrs</td>
<td>0.18</td>
</tr>
</tbody>
</table>

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...
4.28 HOT WATER BOTTLES

Key target group - none identified.

4.28.1 Total accidents

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)

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.

4.27.5 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.

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.
4.29 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

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>
<thead>
<tr>
<th>Table 4.29-2</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Accident mechanisms</th>
<th>% of cases</th>
<th>Main time when occurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot water burnt skin through prolonged contact with body</td>
<td>30%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Hot water bottle burst while getting into bed</td>
<td>30%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>Spilt hot water while filling hot water bottle</td>
<td>10%</td>
<td>insufficient data</td>
</tr>
<tr>
<td>No details of mechanism</td>
<td>30%</td>
<td>insufficient data</td>
</tr>
</tbody>
</table>

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).
4.30 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.

4.50.1 Total accidents

<table>
<thead>
<tr>
<th>Table 4.30-1</th>
<th>Total estimated accidents per year</th>
<th>0-4 yrs</th>
<th>5-10 yrs</th>
<th>11-17 yrs</th>
<th>18-64 yrs</th>
<th>65+ yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor injuries (A &amp; E visits)</td>
<td>(no)</td>
<td>1044</td>
<td>264</td>
<td>87</td>
<td>103</td>
<td>472</td>
</tr>
<tr>
<td>Severe injuries (A &amp; E/in-patient)</td>
<td>81.5</td>
<td>4.2</td>
<td>2.8</td>
<td>0</td>
<td>31.8</td>
<td>42.7</td>
</tr>
</tbody>
</table>

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).

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

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 20.82 for HASS accidents 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.

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 suggest 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>
<thead>
<tr>
<th>SOCIO ECONOMIC GROUP</th>
<th>ESTIMATED % OF C2DE VICTIMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC1</td>
<td></td>
</tr>
<tr>
<td>C2DE</td>
<td></td>
</tr>
</tbody>
</table>

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.

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>
<thead>
<tr>
<th>TABLE 5.2-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated % of C2DE victims</td>
</tr>
<tr>
<td>50%</td>
</tr>
<tr>
<td>50%</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>TABLE 5.2-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOCIO ECONOMIC GROUP</td>
</tr>
<tr>
<td>----------------------</td>
</tr>
<tr>
<td>ABC1</td>
</tr>
<tr>
<td>C2DE</td>
</tr>
</tbody>
</table>

| TABLE 5.2-3 | | | |
|--------------|
| SOCIO ECONOMIC GROUP | | | |
| ABC1           | | | |
| C2DE           | | | |

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.
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 not work well in the UK where it is thought that single hot/cold water taps are used, whereas 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 campaign.

As can be seen in the table above, the highest proportion of burns and scald 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, in addition to those attending A & E departments.

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, e.g. for antibiotics if infection occurs. Therefore the estimates were usually based on a consensus among staff at the surgery.

<table>
<thead>
<tr>
<th>Practice</th>
<th>Burn/scalds patients pa</th>
<th>Patient List</th>
<th>Cases per 1000 patients</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salford</td>
<td>150</td>
<td>13,000</td>
<td>11.5</td>
<td>70% of list C2DE</td>
</tr>
<tr>
<td>Burton-on-Trent</td>
<td>100</td>
<td>12,000</td>
<td>8.3</td>
<td>70% of list C2DE</td>
</tr>
<tr>
<td>Bridgnorth*</td>
<td>95</td>
<td>15,000</td>
<td>6.3</td>
<td>50/50 ABC1/C2DE</td>
</tr>
<tr>
<td>Tamesworth</td>
<td>40</td>
<td>16,000</td>
<td>2.5</td>
<td>50/50 ABC1/C2DE</td>
</tr>
<tr>
<td>Sherwood</td>
<td>20</td>
<td>9,500</td>
<td>2.1</td>
<td>50/50 ABC1/C2DE</td>
</tr>
<tr>
<td>Newcastle, Staffs</td>
<td>20</td>
<td>10,000</td>
<td>2.0</td>
<td>50/50 ABC1/C2DE</td>
</tr>
<tr>
<td>Burton-on-Trent</td>
<td>7</td>
<td>11,500</td>
<td>0.6</td>
<td>70% of list ABC1</td>
</tr>
<tr>
<td>Bristol</td>
<td>10</td>
<td>19,000</td>
<td>0.5</td>
<td>70% of list ABC1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>442</strong></td>
<td><strong>106,000</strong></td>
<td><strong>33.8</strong></td>
<td><strong>Average 4.2 per 1000 patients</strong></td>
</tr>
</tbody>
</table>

* 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.
Consumer perceptions may vary from country to country, and receptiveness to key safety messages 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 parents, 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
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 Belparts (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 in the USA. 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 school education programmes, and motivating the children to educate their parents and siblings. The puppet show (aimed at young children) is estimated to have grown about 15%, hence the real decrease in injury rate per million population is about 35%.

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 an small children. The burn rates in Harstad (25,000 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 35°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.

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.

5.4.2.2 National Safekids, USA

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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.

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.

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.
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 water by promoting safer products.

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 goals 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.
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 adverts, a national current affairs programme and coverage in local TV and radio.

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 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.

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 1993/96) 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 ensuites)”.

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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 five years or more and there is no evidence of an 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 Alfild 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
Burns Unit
Sr Fiona Day, Ward Sister
UK

Booth Hall Children's Burns Unit
Kevin Ryan, Ward Manager
UK

City Hospital, Nottingham
Miss F Balle, 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

Withington Hospital
Ken Dunn, Consultant Burns Surgeon
UK

Withington Hospital
Ken Dunn, Consultant 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 Alberton, Practice Nurse
UK

Hollies Medical Centre, Tamworth
Sr Ian Wheldon, Practice Nurse
UK

Langworthy Medical Centre, Salford
Sr Colleen Greensall, Nurse Practitioner
UK

Sherwood Health Centre, Nottingham
Rachel Nield, Practice Nurse
UK

Whitleadies 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 Atwood, Sales Director
UK

Creda
Edward Alocak, Health & Safety Officer
UK

Moulinex Swan
Garry Wassell, 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
5.5.2 Details of reports, articles and other material used as reference material

**Internet pages**

1997 Babyproofing the bathroom, Parentzone, USA
1997 Burns, Scalds and You, Safekids, USA
1997 Childhood Burns: The Preventable Epidemic, Jean L Athey, USA
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, Harleyville 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 Childproofner Inc, USA
1997 Microwave Burn Prevention, Shriners Burns Institute, USA
1997 Parents Appliance Use & Safety Exchange, Ohio State University, USA
1997 Press release Dr Ytrestad 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 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
1997 Accidents & Safety Health Education Scotland, HEBS, UK
1997 Accidents in the Home - RIB, Strategy & Intelligence Group, Ireland
1997 Children and Burns, University of Georgia, USA
1997 Fire Burn Prevention Week, Safe Kids Coalition, USA
1997 Home Injury Prevention Project, University of Georgia, USA
1997 Home Safety for Seniors, Victoria Care Division, Australia
1997 Hot water temperature and scald burns, Public Health Assoc., Australia
1997 Manic Moms Safety Video, Manic Moms Journal, USA
1995 First Aid Book - Burns & Scalds, MedAccess Corporation, USA
1995 Overview initiatives to reduce incidence/severity scalds, Kidsafe Australia
1995 Water heater settings - safety first, Missouri Outreach, USA
1994 Fires, flames and scald deaths Australia 1994, NISU, Australia

**Other reports, articles, teaching aids**

1997 'Hot Water Burns like Fire', NSW Scalds Prevention Campaign evaluation report, NSW Injury Prevention Policy Unit
1997 Accident Notebook, S. Birmingham Community Health
1997 Burns Incidence and Treatment in the United States, American Burn Ass’n 1997 fact sheet
1997 Child Accident Prevention Campaign Evaluation, Health Education Board Scotland
1997 Choose the right kettie, September issue of Which?
1997 First Aid for Scalds Campaign, Angela Georgiou and Kristen Gatenby
1997 Iron burns to the Hand in the, Young Paediatric Patient a Problem in Prevention, R Brown, D Greenhalgh and G Warden Jouranl of Burn Care and Rehabilitation

**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: Vibeke Bil揭晓, Product Advisor, Denmark
- Ministry Family Affairs & Childcare: Marit Christie, Adviser, Norway
- Statens Institut for Følkeselkab: Dr J Wik, Deputy Director, Norway
- Statens Institut for Følkeselkab: Brancos Coppia, Head of Health, Norway
- Statens Institut for Følkeselkab: Steffl Wetterland, Information Officer, Norway
- Injury Prevention Research Centre: Borge Ytrestad (on secondment to IPRC), NZ
- Burns Institute San Diego: James Floros, Executive Director, USA
- Burns Institute San Diego: Nancy Nowak, Director Programme Services, USA
- CPSC, Washington DC: Jim Hoelbel, Chief Engineer Fire Hazards, USA
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