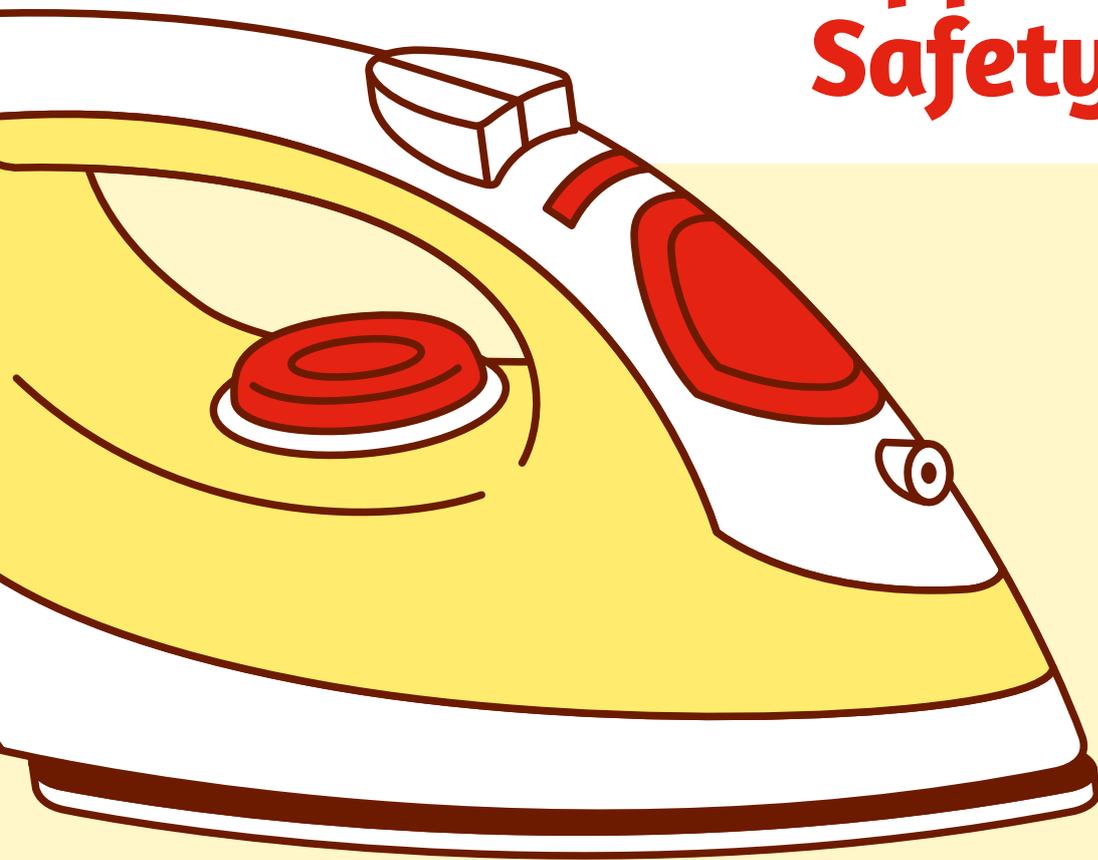


Electrical Safety First

The UK's electrical safety experts

A 360° approach

Improving Electrical Appliance Safety



Safer products, better business

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Foreword

By Malcolm Harbour, MEP



If policy makers were to set out the desired objectives for product safety, they would probably include the following principles:

Consumers have an entitlement to well designed, safe products that are fit for purpose. Products that can injure, if used incorrectly or irresponsibly, must have the appropriate labels and warnings, and must be designed to minimise the risks involved in their operation. Effective and speedy procedures must be in place to take faulty products off the market, and to recall and remedy products in use.

It is all too easy to write and talk about these ideals. As Chairman of the European Parliament's Internal Market and Consumer Protection Committee, I know that in the real world, they are all too difficult to achieve.

We will shortly be examining a major reform from the European Commission on the General Product Safety Directive. We have prepared for this project by undertaking our own research and setting out our concerns in a strategy paper published last year.

My Committee also led the Parliament's work on Standards reform, again preceded by a strategy study. The need to engage the consumer's voice more strongly in standards development was a key message.

That is why I warmly welcome this latest research from Electrical Safety First, which has a long record of campaigning on product safety issues. It sets out, very clearly, a series of fact-based, practical ideas. They run from standards, labelling, traceability and recalls through to market surveillance.

We will certainly be examining this report's recommendations when we look at the new European legislative proposal. We need to promote these messages more strongly to all levels of public administrations that have a role in delivering product safety.

My Committee thinks that product safety needs more visibility with policy makers. At a time of continued public budget cuts, expanding market surveillance is not a top priority. We need to make our existing research more effective by sharing information, improving data collection and dissemination, and using web based tools. We need to work closely with the responsible producers, importers and retailers to drive poorly designed and unsafe offerings off the market. We must step up our global initiatives – we have regular contact with the US Consumer Product Safety Commission.

My Committee and I look forward to working with Electrical Safety First, as we step up our drive to create a European Single Market that meets consumers' entitlements to access and use safer products.

A handwritten signature in black ink that reads "Malcolm Harbour".

Malcolm Harbour CBE

Member of the European Parliament for the West Midlands, UK Chairman of the Internal Market and Consumer Protection Committee

1. Introduction

4 Consumers quite rightly expect their household products and appliances to be well designed, safe and fit for purpose.

While most electrical products available to UK consumers are safe and compliant with relevant standards, a significant number of accidents linked to these appliances still occur every year. On average, these result in 45 fatalities from around 17,000 accidental domestic fires and up to 45,000 hospital admissions each year – with a direct cost to the taxpayer of an estimated £4.2 million¹.

Around half of all accidental fires in UK homes are electrical, with 85% of these attributed to electrical appliances and, over the last few years, electrical products have been listed by RAPEX (the EU system for the notification of dangerous consumer products) as the third most frequently notified product group².

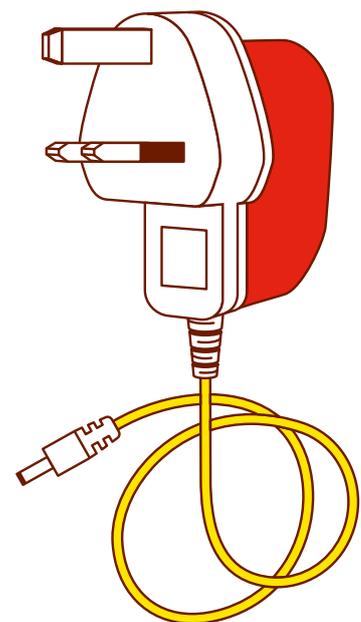
Any business, even the most quality-conscious, can be subject to a product recall, as recent high-profile events have shown, and their impact can be significant. In addition to the impact on individual consumers, recalls can not only adversely affect corporate reputation but also the business bottom-line.

Products that have the potential to injure, including through incorrect use, must have the appropriate labels and warnings. They must also be designed to minimise the risks involved in their normal use. When things go wrong, effective measures need to be undertaken to remove defective products from the market – and to trace and recall products that may pose a risk to people's safety. However, Electrical Safety First research has also shown that consumer behaviour and risk awareness can play a major role in heat and fire-related accidents. We are addressing this through our long-standing consumer campaigns, which are all designed to increase public understanding of electrical safety.

There is strong evidence from retailers and relevant authorities which suggests that an overall improvement in product safety is needed in terms of design, product recall and traceability. Generally, retailers take a highly responsible approach. However, the difficulty in identifying the owners of products subject to recall remains both a major concern and a challenge. Effective use of all communication channels, as well as information from online sales, will be key to making significant improvements.

The research detailed in this document was presented, reviewed and discussed with a steering group at key stages. We are extremely grateful to the members of this group, who are:

- Schnieder Electric
- The Department for Business, Innovation and Skills
- RecallUK
- British Retail Consortium
- Trading Standards Institute
- British Standards



2. Executive summary

The aim of this research project was to develop recommendations designed to promote consumer safety.

This was done by ensuring that products found to be unsafe are dealt with efficiently and effectively. This was undertaken by investigating how safety is integrated into the design of electrical products and how traceability and product recall procedures are currently undertaken.

Our research was based on an assessment and analysis of publicly available data and sector interviews. Three key sources of information were considered:

- Regulations, product standards and associated literature.
- Data relating to fires, injuries and domestic electrical product recalls.
- Management information obtained from interviews with manufacturers, retailers, consumer associations, the European Commission and the UK Trading Standards Institute.

Where possible, UK/GB data and management information has been used, such as the Incident Recording System (IRS Fire data)³ and RAPEX recall data². For injury data, the Dutch Injury Surveillance System¹ was used, as it is widely recognised to be the most comprehensive in Europe, and there is no equivalent UK database available.

Product safety, human behaviour and design

The behaviour and risk awareness of individuals play a major role in heat and fire-related injuries. Our research found that this is particularly the case where the risk is not obvious and where individuals are 'multi-tasking' while using an electrical appliance.

For some hand-held appliances, such as those used for skin and hair care, improved communication of risk could help to significantly reduce injury rates. Building in additional safety features, through improved product design, could also reduce risk without affecting the performance of appliances, and without substantially increasing development and production costs.

For appliances designed to be left working unsupervised (for example, fridges, freezers, washing machines and dishwashers), a robust 'fail safe' performance is essential. Current improvements to product standards are addressing many of the issues traditionally related to safety design and component fatigue but there is still room for continuous improvement.

There has been a recognised and significant improvement in developing safety standards to meet the needs of vulnerable consumer groups. But it can be argued that they do not fully address the needs of children, the elderly or disabled people in relation to 'reasonably foreseeable' incidents.

Recommendation

The General Product Safety Directive (GPSD) requires products to be safe under reasonably foreseeable conditions of use⁴. Given this, we recommend that:

- The European Harmonised series of standards – EN 60335⁵ for household and similar electrical appliances – should be more inclusive, by addressing the needs of vulnerable groups. This is particularly important for products that are used either on, or close to, the body, and where products are likely to be used near vulnerable people such as young children.
- Harmonised International and European standards should also specify pre-market risk assessment and communication of risk to the public, where hazards are known to exist; and strengthened technical requirements to guard against reasonably foreseeable hazards and carelessness that may occur in normal use.

Recall capability

A product recall should be the last line of defence for protecting consumers from unsafe or substandard products. Although the General Product Safety Directive (GPSD)⁴ requires manufacturers to develop product recall procedures, recall effectiveness remains low.

Independent research shows that most product recalls are usually no higher than 20% effective, with many achieving in the order of 10%⁶. This means that many defective products can remain in the domestic environment, posing sustained risk to the public. There are, however, some exceptions. High price items (such as white goods) often achieve a higher recall rate, because there tends to be greater traceability through to the consumer.

Guidance on building recall capability is available from a range of sources. The European Union (EU), for example, has produced *A guide to corrective action, including recalls*⁷; there is also advice available in the US Consumer Product Safety Commission's Recall Handbook⁸. Two new International Standards for product safety and recalls have also been recently published. These provide guidance on ways to reduce potential safety risks before the products enter the market and how to plan and execute timely and cost-effective recall

programmes. The standards are entitled ISO 10377:2013, *Consumer product safety – Guidelines for suppliers*⁹, and ISO 10393:2013, *Consumer product recall – Guidelines for suppliers*¹⁰. While these provide a good introduction to best practice recall procedures, more needs to be done by industry to promote and adopt their use.

We believe that even minor changes could make a significant difference to product recall effectiveness. These could include the sharing and promotion of best practice and industry support for establishing and maintaining minimum performance standards. Similarly, building on an existing industry culture of continuous improvement would enhance brand development and consumer protection.

Penalties for manufacturers who delay or take inadequate action in a recall situation are currently set at £5,000. This level of penalty may be appropriate for smaller manufacturers, but acts as no deterrent for larger manufacturers. For penalties to be an effective deterrent they need to have an impact on the company. Tougher penalties based on a percentage of profits from the recalled product, with a minimum level of £5,000, would help to ensure manufacturers respond quickly and effectively in recall situations.

Recommendation

Recall systems incorporating statutory minimum requirements for planning, capability and performance – that companies must meet before bringing products to the market – need to be established. An industry-led drive to improve product recall rates is also required. However, this kind of initiative will need to exploit a range of communication channels to increase consumer contact and promote consumer engagement in the recall process.

Penalties for delaying recalls or for inadequate recall action need to be toughened. To act as a proportionate but appropriate deterrent, legislation should be changed to base penalties on a percentage of profits from the recalled item, with a minimum level set at £5,000.

Traceability performance

Traceability is essential to enabling effective recall, particularly for reaching consumers in the possession of defective or dangerous products. Opportunities exist to explore methods by which both manufacturers and consumers can more easily be identified.

Article 5 of the GPSD already places certain demands on all economic operators in relation to traceability⁴. Although these requirements are not reinforced or specified in the Low Voltage Directive (LVD)¹¹, they will be included in the forthcoming alignment to the New Legislative Framework for Community Harmonisation Legislation for Products¹².

Many of the issues relating to traceability and EU performance requirements are referenced in a recent report by the EU Informal Expert Group on product traceability¹³. For EU-based product and supply chain traceability performance, it remains exceptional for relevant authorities to be able to fill all the information on “product identification” and “traceability” when reporting on and dealing with remedial actions. This makes it difficult for Member States to identify products and assess the situation in order carry out an effective product recall.

Often, even the most basic requirements – such as where the product is made, or proof that it meets regulations – are not being met. A critical step in the traceability process, for a competent authority, is the scrutiny of a technical file. The file comprises all the information proving the safety of the product and is held by the person or organisation bringing the product to market. However, despite being a legal requirement, such files often do not exist or are unavailable. Without this primary data, a rigorous assessment of the scale of the risk posed by a particular product is impossible. Government and industry need to work in partnership to improve this situation.

One of the barriers to effective traceability is the UK Data Protection Act, which presents legal restrictions. Engagement with credit institutions, to gain consumer trust, is one way that access to personal data might be obtained. An Electrical Safety First survey¹⁴ found that consumers failed to return product registration forms because they feared it would be used to inundate them with marketing information. Permission to use personal data might be granted if the use is purely for recall or other safety purposes. A form of loyalty card could also be established to promote online storage of personal data for agreed purposes.

Recommendation

There is a need for traceability requirements for electrical products – particularly through to the consumer – to be made explicit. Requirements set out in the GPSD, in addition to those being introduced in the LVD, should be enforced through effective market surveillance. Minimum and continuous improvement targets should be established for the traceability of all products on the market, and through to the consumer.

UK enforcement

The current economic climate in the UK and Europe has reduced the ability of authorities to ensure compliance with the safety and related regulations for electrical products. Austerity measures in the UK have decreased resources available to Trading Standards, whose activities have contracted following the removal of previously ring-fenced resources and funding.

This reduction in enforcement activities has occurred despite the fact that the EU Regulation on Accreditation and Market Surveillance (usually referred to as RAMS)¹⁵ requires the UK and other member states to fulfil a national market surveillance programme to be compliant with its provisions.

Although these financial pressures are likely to remain for some time, a robust enforcement regime is essential to ensuring that faulty and non-compliant electrical appliances are kept off of retailers' shelves and out of consumers' hands.

Insufficient resource for proper enforcement dilutes the legal deterrent for less scrupulous traders, which is likely to increase the number of non-compliant and potentially dangerous electrical products on the market. Businesses might also place less priority on having the capability to undertake recall or corrective action (which can range from a repair programme to product withdrawal) than they would during times of economic growth. Inevitably, this would limit their ability to respond should things go wrong.

Some trade associations have documented and proven minimum recall requirements which their members are expected to meet. Several also share best practice for recall and traceability across their membership. This can help motivate businesses and should be encouraged and adopted more widely. However, there also needs to be a better and broader understanding of legislative and compliance requirements across the whole supply chain – particularly by small to medium sized importers and distributors. The development and dissemination of simple-to-follow guidance for buyers – such as top tips when sourcing consumer electrical products – could lead to real improvements in recall rates.

Recommendation

Voluntary schemes and codes of practice should be promoted and encouraged by UK authorities, to ensure that any reduction in enforcement and market surveillance does not lead to a lowering of safety standards. A far greater level of 'producer responsibility', prioritisation and self-regulation is therefore needed.

3. Research findings & analysis

This section summarises the primary data and sources used in Safer Products, Better Business.

They are:

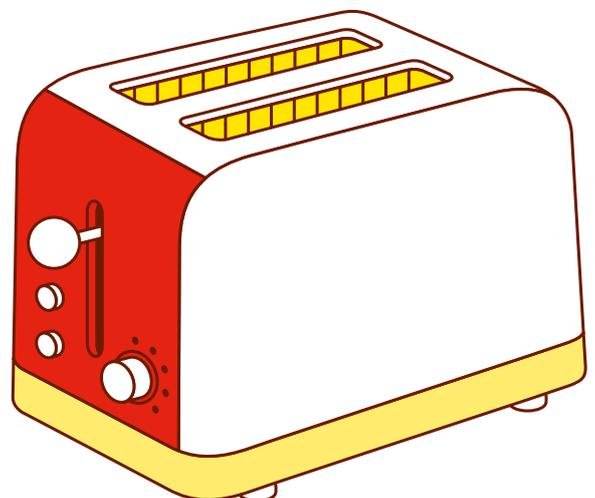
- UK/GB* fire and fire injury data from the Department for Communities and Local Government (DCLG)³.
- Findings extracted from the injury research carried out at Veiligheid NL by C.Stam & A. Bleomhoff, as reported in *Accidents with Electrical Consumer Products – 2010*¹.
- A review of RAPEX – The European Rapid Alert System for non-food products posing a serious risk².
- A review of relevant standards, legislation and literature (listed in full on pages 20 & 21).
- Sector interviews with representatives from organisations involved in the manufacture or retail of electrical products, compliance management and the enforcement of electrical product safety.

3.1 UK/GB fire and fire injury data

UK/GB fire data from 2006 to 2011³ shows that, when all fires related to electrical appliances are divided into risk categories¹⁶, the number of events per category remains almost identical every year. Kitchen equipment (particularly those with a heat source) is the main category for fire and fire-related injuries, accounting for 70-74% of all electrical appliance-related fires. The other main contributory category – cables and connections – accounts on average for 10-16% of fires arising from electrical appliances.

In 2010/11, misuse of equipment was the main cause of electrical appliance fires, responsible for approximately 60% of all incidents. Faulty appliances and leads were the next largest category, causing 30% of such fires in this period.

However, while the fire to injury ratio is highest for kitchen equipment [See Table 1, page 11], it has the lowest injury to death ratio (150:1). The category with the most significant ratio of injuries to fatalities is health and beauty products (around 18:1). One reason for this could be that the kitchen is acknowledged as a hazardous area. In contrast, health and beauty products – particularly those involving rapid heating and cooling, such as hair straighteners – might be considered less dangerous and may not be so well ‘monitored’.



*Until 2010, this data is UK-wide but for 2010/11 it is presented for Great Britain only

UK/GB fire statistics

By analysing fire data from the Department for Communities and Local Government (DCLG)³, it can be seen that there was a fall in the number of electrical appliance-related fires between 2006 and 2008. Since then, the number has remained relatively constant (see Figure 1). One reason for this reduction is a decrease in the number of cooking-related fires. Between 2006 and 2010/11, such fires fell by over a third (10,911 in 2006 to 6,510 in 2010/11). Around 45 deaths each year are due to electrical appliance-related fires, as shown in Figure 2.

Despite the slight drop in rates, the pattern of incidents occurring year to year is essentially constant. This gives a strong indication that they are linked to both human behaviour and certain types of products. This pattern is illustrated in Figure 3 and Table 1, opposite. These show that the highest proportion of incidents occur in relation to kitchen equipment.

Figure 1: Number of electrical appliance fires against year 2006-2011

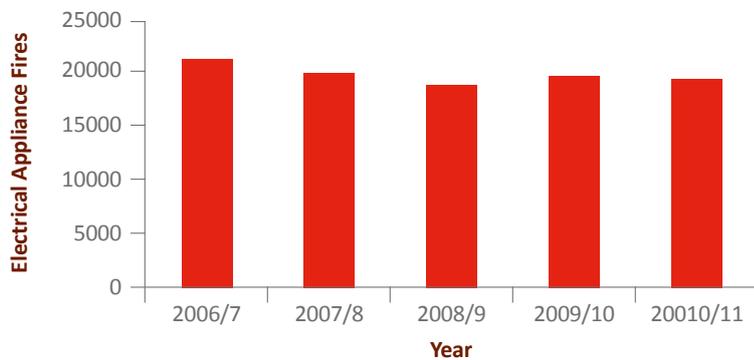


Figure 2: Total fatalities against year 2006-2011

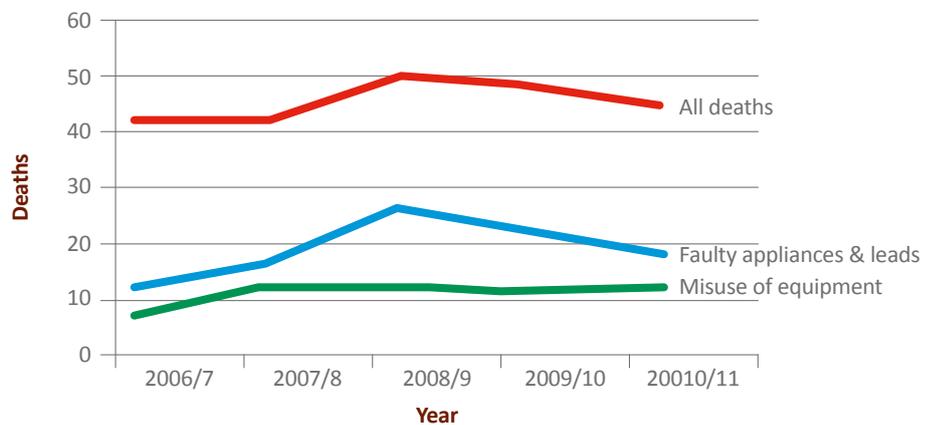


Figure 3: Accidental fires by category 2010/2011 – 17718 fires

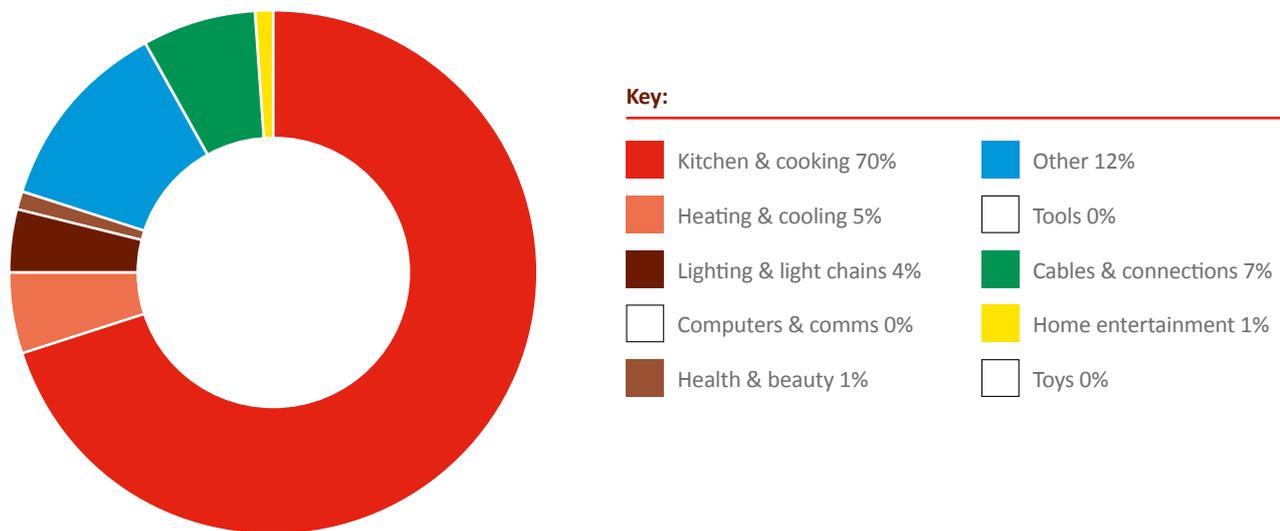


Table 1: Breakdown of fires fatalities and injuries by category, 2010/11

Category	Total Fires	Total Fatalities	Total non-fatal casualties	Fire incidence to fatality ratio
Health & beauty	149	3	39	14
Computers & comms	59	0	24	–
Lighting & light chains	644	6	81	103
Heating & cooling	894	10	247	24.9
Kitchen & cooking	12353	16	2142	163
Toys	0	0	0	–
Home entertainment	208	0	79	–
Cables & connections	1254	5	187	47.4
Tools	32	0	6	–
Other	2125	5	320	26
2010/11 Total	17718	45	3125	–

Looking at the ratio of fatal injuries, one can see that the health and beauty category presents a high risk. Table 1 indicates that an injury from a health and beauty product is more likely to result in a fatality than almost any other category. This is most likely due to the lack of active monitoring of such products when in use. This is particularly relevant to electric blankets, where the outcome of a malfunction occurring during sleep can be fatal.

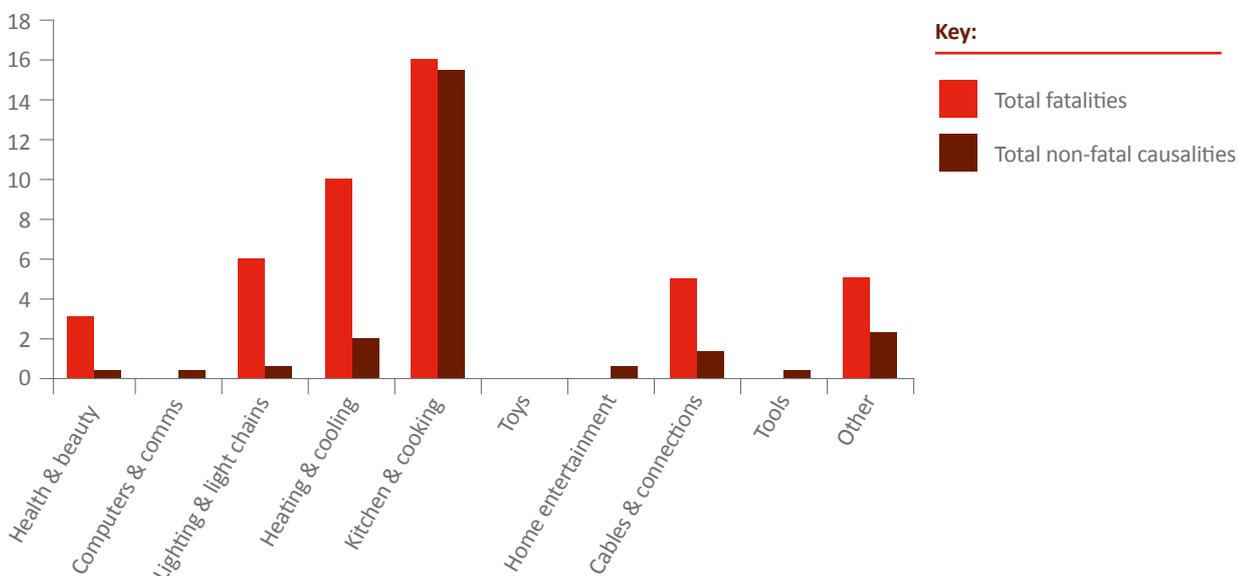
There is a similar issue with cables and connections. It was noted in the course of steering group discussions that many fires are caused by cable damage, which can arise from a number of sources, including gnawing by rodents. These fires can spread quickly, causing fatalities and extensive damage to a property.

An overview of deaths and non-fatal casualties per product category is shown in Figure 4.

It is important to note that UK/GB statistics show fires caused by the misuse of equipment are higher than those caused by a product fault. This suggests that fires caused by electrical appliances often owe more to human behaviour than product malfunction – a hypothesis corroborated by comparison with the Dutch Accident & Emergency data.

However, the statistics also show that, year-on-year, fires from faults cause more deaths than fires from misuse. This further reinforces the assumption that electrical product fires are particularly dangerous where there is a lack of active monitoring and the user may be unaware of the potential risk (see Figure 2).

Figure 4: Fatalities vs. non-fatal casualties 2010/2011



3.2 Dutch injury data

The following data was derived from: *Accidents with Electrical Consumer Products; Injury Data*, by C. Stam & A. Bleomhoff, VeiligheidNL, Oct 2010¹. (VeiligheidNL is a well-respected and established private foundation, providing independent consumer information in conjunction with police, health care professionals, and other relevant experts).

The Dutch injury data system operates across twelve hospitals representing specific catchment areas, to allow national statistics to be extrapolated as accurately as possible. Focusing only on accidents directly involving electrical consumer products, researchers reviewed each incident

to ensure that where products were linked to an accident, but were not deemed responsible for it, they were removed from the analysis. It is estimated that only 1 in 10 people suffering electrical product-related injuries present themselves at A&E for treatment.

A financial analysis was undertaken using a model developed by the Erasmus Medical Center in Rotterdam, which incorporates direct hospital care costs, emergency ambulance costs, emergency medical help, and additional multi clinical help and after care. It should be noted that the costs presented by Stam and Bleomhoff are only those associated with the emergency health system and do not take into account the financial cost, such as loss of earnings.

Detailed analysis of Dutch injury data¹ shows an estimated 12,000 injuries – extrapolated to the Dutch population – per year directly related to electrical appliances. Table 2 shows the extrapolated number of accident and emergency (A&E) treated injuries by product group. Table 3 shows the extrapolated number of treatments by injury type.

Official data for 2010 puts the Dutch population at 16.78 million. If extrapolated to the UK population (approximately 62.4 million), the number of injuries would equate to 44,553 per year. It is estimated that these injuries cost the Netherlands €1.4 million in direct hospital and emergency costs. Based on the same cost-base, this equates to a UK figure of approximately £4.2 million.

Table 2: Extrapolated A&E treatments due to home and leisure accidents, by product group involved

Category	Number	%
Tools	4,800	39
Kitchen, cooking, cleaning & laundering devices	2,800	22
Heating & cooling devices	1,500	12
Computers/communications, office, home entertainment & photographic equipment	–	–
Lighting & light chains	1,300	10
Home entertainment	640	5
Cables & connections	180	1
Tools	70	<1
Tools	700	6
Other	600	5
Total	12,000	100

Source: *Dutch Injury Surveillance System 2010, VeiligheidNL¹*

Table 3: Extrapolated A&E treatments due to home and leisure accidents, by injury mechanism

Category	Number	%
Fall	2,800*	23
Tripping	810	7
Fall from height	330	3
Fall from stair or ladder	300	2
Slipping	230	2
Spraining, twisting	180	1
Contact with object	7,300*	59
Cutting / sharp object	4,500	36
Moving object	1,700	13
Stationary object	840	7
Crushing object	250	2
Other	2,300*	18
Thermal reaction	960	8
Foreign body	670	5
Physical overexertion	230	2
Electricity, radiation, explosion	140	1
Total	12,000*	100

*Note: Figures include unspecified incidents and those which are attributed to more than one category.

Source: Dutch Injury Surveillance System 2010, VeiligheidNL¹

It is important to note in Tables 2 and 3 that in some cases it is not possible to attribute accidents directly to a single category of product or injury type, as an accident may involve a number of factors which makes definitive interpretation difficult. In addition, the accident may not be directly related to the product outlined, as there may be other causative factors involved. Consequently, the total number of injuries will differ from the total number of recorded accidents – but this does not affect conclusions.

Table 3 shows that 8% of injuries were due to burns and 1% due to electricity. The vast majority of accidents are related to some other form of physical injury where an electrical product is involved.

Detailed analysis of injury reports show that all forms of heat sources account for high injury levels. In areas where there are potential hidden hazards or poor hazard awareness, the chance of injury is significantly increased, particularly for children. 27 cases reviewed from 2010 related to burns caused by contact with the hot surface of an appliance (curling tongs/hair straighteners), with 8 cases of injuries befalling children up to the age of four.

Very few electrical burns or radiation injuries – or outbreaks of fire – were related to tools. This is likely to be due to consumers being more aware of the dangers of using such products, so more care or ‘monitoring’ is undertaken.

Qualitative and quantitative analysis

The Dutch research encompassed both a qualitative approach and a quantitative analysis of all reported accidents from 2010.

Quantitative research

Electrical consumer products caused 1,410 registered injuries. When applied to the UK, this would equate to around 44,500 cases, after scaling up for the significantly larger UK population of 62.5 million.

Injuries to children up to the age of four represent 19% of all those recorded, meaning that this group has the highest number of injuries per year of all the age groups. The age-group with the highest overall injury incidence is 20-29 years, with 22% of all recorded injuries in this category. However, this statistic is spread over nine years while the children's category is spread over four years. This data clearly shows that small children are the most vulnerable to injury.

The division of injuries by product category (shown in Table 4), highlights the fact that most injuries occur when using kitchen equipment and are prevalent wherever there are heat sources or access to sharp edges.

Qualitative analysis

The qualitative analysis reviewed 624 cases between 2006 and 2010 where there was clear association between electrical appliances and burns or electrical exposure. Table 5 provides a summary.

Table 4: Injuries by product category

Category	Incident percentage %
Kitchen & cooking	51
Tools	12
Cables & connections	10
Computers & home entertainment	6
Lighting & light chains	6
Health & beauty	5
Heating & cooling devices	5
Tools	0
Other	5

With burns and exposure to electricity, arms, shoulders and hands are the areas that are most often injured.

Table 5:

Injury cause	Incident number	Percentage %
Thermal exposure	493	79
Radiation exposure	60	9.6
Electricity	57	9.1
Explosion	12	1.9
Other cause	2	0.3
Total	624	100

3.3 European recall data

RAPEX is the acronym for the European Rapid Alert System for non-food Products Posing a Serious Risk.

An analysis of RAPEX was undertaken covering the period January 2012 – September 2012². A review of references to electrical consumer products was undertaken and the information then categorised to provide consistency with other data used in this report.

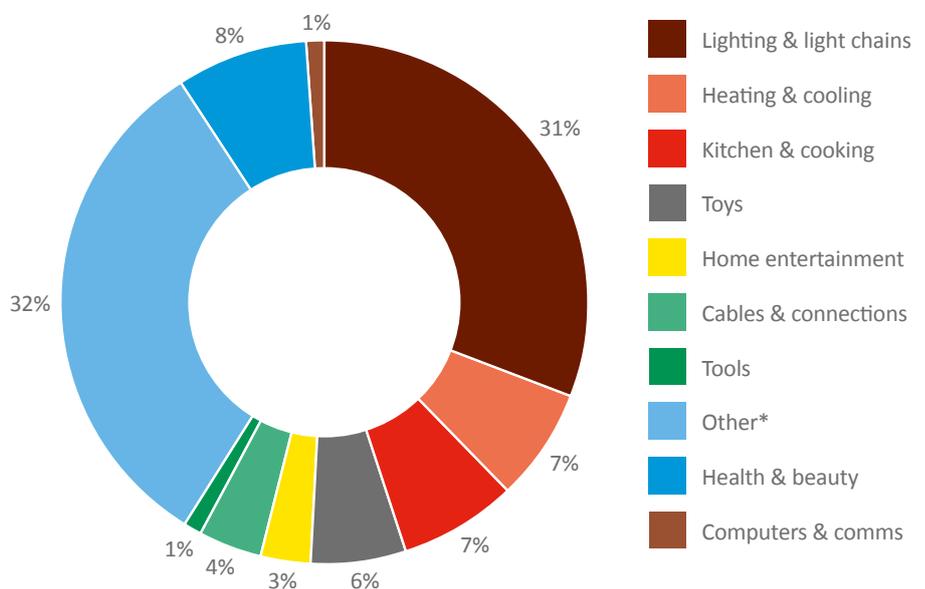
The following categories were established:

1. Health & beauty
2. Computers & communications equipment
3. Lighting & light chains
4. Heating & cooling
5. Kitchen & cooking aids
6. Toys
7. Home entertainment equipment
8. Cables and connections
9. Tools
10. Other*

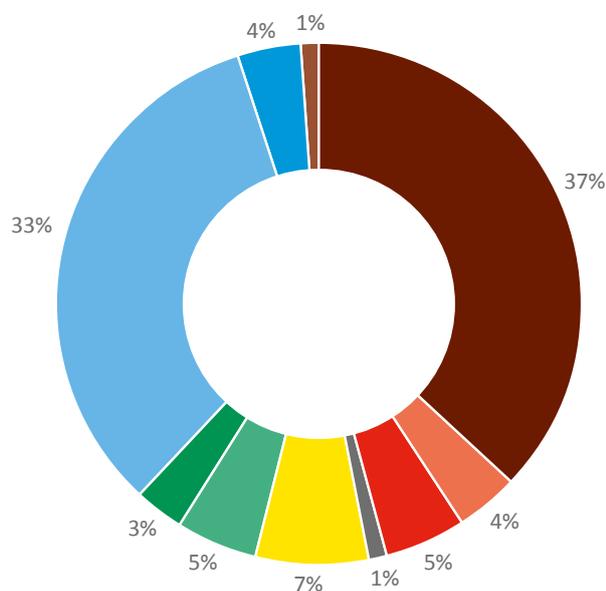
* For category 10 (Other), Chargers/inverters/transformers represent 12.7% of all reports for 2011/19.8% for 2012

Figure 5 & 6: Breakdown of recalled products by category for 2011 & 2012

Total 2011 – 244 reports



Total January to September 2012 - 243 reports



The European RAPEX database reveals a high number of recalls in the lighting and light chain categories. Recall notices for travel adaptors and chargers of various types also appear frequently. For these items, there is strong evidence that LVD requirements and European Standards are not being followed. In addition, such products often do not conform to other (non-safety) related directives and standards for electrical products, such as the Waste Electrical and Electronic Equipment directive (WEEE) – despite bearing the CE mark, indicating conformance to EU ‘New Approach’ directives.

Most of the products in Figures 5 & 6 originate from China; and the majority of recall notifications relate to small and medium sized product importers, rather than large brands. This indicates that regulations and standards are not being properly complied with in this business sector.

It is difficult to interpret the severity and impact of the RAPEX data but, when cross-referenced with the DCLG UK/GB fire data and the Dutch injury data, it can be seen that higher risks arise from: kitchen appliances, health and beauty products, lights and lighting chains, and cables and connections. In a significant number of cases, the design of the product also failed to meet the essential safety requirements of the LVD, and was therefore seen as being electrically unsafe.

The UK has experienced a number of high-profile recalls – particularly from fridge-freezers and dishwashers produced between 2000 and 2006 – where there have been known and recorded fire and safety implications. (Media and web references to various high profile recalls can be found in the bibliography in Appendix 1). As some of the media coverage shows, unfortunately, manufacturers may have to deal with the impact of a recalled product some years after the recall process was initiated. In some cases this has led to a reissue of consumer notifications.

The recall notifications for the fridge-freezers and dishwashers referred to above were issued because of a fire risk due to potential component overheating. This underlines the risk and danger of products that are designed to be left switched on to perform for long periods of time, without supervision. It also reinforces the need for:

- Comprehensive risk assessment of all types of potential failure under foreseeable use. This not only relates to the initial design phase but also to continuous improvement.
- A high standard of traceability from the retailer to the consumer – essential in the event that a serious safety issue is discovered.
- Preparedness for recall action.
- Clear guidelines on how and when a recall should be undertaken.
- Tough penalties for delaying or inadequate recall action.

It is not possible to determine the number of products affected by a recall – or its success – by simply looking at the RAPEX listings. Also, anecdotal evidence suggests that there have been instances where potentially unsafe electrical products have been subject to corrective actions but this has not been officially notified as being recalled by the manufacturer. It seems the reputational risk inherent in a product recall can reduce business transparency and inhibit industry from sharing best practice advice.

Although recalls are often seen by manufacturers and suppliers as commercially-sensitive issues, they are essential to protect consumers and to support corporate reputation. To this end there should be significant industry-wide motivation to share and improve performance in this area. The complexity of an effective recall process requires best practice guidelines, located within an industry culture of best practice and information sharing.

3.4 Review of regulation, standards and other literature

A review of regulations and standards considered the following:

- The General Product Safety Directive (GPSD), 2001/95/EC⁴.
- The Low Voltage Directive (LVD), 2006/95/EC¹¹.
- BS EN 60335 series of Product standards⁵.
- Standard ISO 10393: Consumer product recall guidelines¹⁰.
- Standard ISO 10377: Consumer product safety guidelines for suppliers⁹.
- Product Safety and Market Surveillance Package (proposed replacement for the GPSD)¹⁵.

The EU GPSD establishes a general basis for the safety of consumer products sold in the EU. It requires all products on the market to be safe for 'reasonably foreseeable' use⁴. A technical file must be compiled for all electrical products, which includes details of how the product has been assessed for compliance and safety. This file must be available to relevant authorities on request, in the event of a safety investigation.

The GPSD also requires producers and distributors to take appropriate action if products are deemed unsafe⁴. This includes having adequate methods for product identification and traceability, to ensure items can be withdrawn from the market, if necessary. Suppliers are also required to notify the competent authorities of any product that they have placed on the market that poses a danger to the consumer, and action they have taken to prevent the risk. As detailed in Annex 1 of the GPSD, the relevant authorities should be provided with the following:

- Information allowing a precise identification of the product or batch of products.
- A full description of the risk that the products in question present.
- All available information relevant to tracing the product.
- A description of the action undertaken to prevent risks to consumers.

The forthcoming alignment of the LVD to the New Legislative Framework is expected to introduce new requirements for product traceability, reinforcing the requirements imposed by the GPSD⁴.

However, current market surveillance rules are piecemeal, spread across several different elements of EU legislation, creating complexity and difficulties for economic operators and market surveillance authorities alike. The lack of clarity created by this fragmentation has been widely criticised by regulators and other authorities.

Consequently, the European Parliament and the European Council have been invited to adopt a new Product Safety and Market Surveillance Package of measures, intended to unify and simplify the safety rules applying to non-food products. They are also intended to streamline market surveillance procedures and better meet the challenges of a globalised market.

The package is expected to come into effect from 2015 and will reinforce, among other things, the obligation placed on all economic operators to ensure traceability of products throughout the whole distribution chain. However, this obligation does not include sales to end-users – arguably the most important link to ensure overall recall effectiveness.

Designing for foreseeable use

Harmonised standards and specifications are used to provide a presumption of conformity with the LVD¹¹. However, the LVD does not explicitly cover conditions of foreseeable use. It only requires protection against hazards that may arise when the product is used in applications for which it was made – the 'intended use' concept.

The EN 60335 series of standards, which covers household and similar electrical appliances⁵, claims to deal with reasonably foreseeable hazards presented by appliances that are encountered by all persons. However, certain groups of individuals are excluded from this, including vulnerable people and children, who are still likely to use

electrical products. As such, additional consideration may need to be given to address specific risks, over and above the safety provisions of those standards.

It is, therefore, essential that manufacturers using standards to benefit from a presumption of conformity should carefully check compliance with all the safety requirements of the LVD as part of their pre-market conformity assessment procedure. They should also perform a risk assessment at the design stage to ensure that the risk of injury which is associated with the foreseeable handling, use or misuse of their product is taken into account and adequately addressed.

There has been recognised and significant improvement in developing safety standards for domestic electrical appliances to meet the needs of vulnerable consumer groups. But it can be argued that they do not fully address the needs of children, the elderly or disabled people, in relation to 'reasonably foreseeable' situations¹⁷.

Traceability and recall capability

Traceability and recall of products, although required under the GPSD, are in general not performed to an acceptable standard across the industry.

A recent EU discussion group report on consumer product traceability performance in the EU¹³ highlighted the growing importance of traceability, due to the integration and globalisation of markets and the global sourcing of products.

Although the GPSD contains general obligations for producers to ensure traceability⁴, it is up to each Member State to adopt specific measures to ensure those obligations have been met. While the number of notifications through RAPEX where the product manufacturer is untraceable has decreased significantly in recent years, it is clear that substantial improvements are still required. Products which pose a serious risk to consumers – and whose country of origin is unknown – accounted for 10% of all RAPEX notifications in 2010. Products where the brand (or means of identification) was missing accounted for 16% of notifications. In addition, 93% of authorities had difficulties identifying the manufacturers of a dangerous product (with 17% reporting this as a frequent problem). A similarly high percentage – 78% of authorities – had the same problem with importers (15% saw this as a frequent issue)¹³.

A thorough review of product recall effectiveness was carried out by the US Consumer Product Safety Commission (CPSC) in 2003¹⁸. The review highlighted that there are many aspects of communication and human behaviour that need to be understood, in order to improve recall performance. To be effective, a recall requires the same high degree of planning and strategic focus as it does to bring products to market.

Key aspects of building recall capability are set out clearly in *Product Safety in Europe – A Guide to corrective action including recalls*⁷, published by the EU Commission. If widely adopted, this guide would help manufacturers and retailers to plan and build capability as an important part of their product safety and crisis management systems. Absence of these systems leaves manufacturers and distributors with minimal capability to effectively deal with defective and potentially dangerous products in the marketplace. The EU Commission's guide is now being further underpinned by the ISO 10393¹⁰ standard on recalls, which will help build industry-wide product recall capability.

It is imperative that all interested organisations, responsible retailers and manufacturers work together to promote these guides and standards. Not only will this enhance consumer protection, it will also raise standards throughout the industry and promote innovation.

3.5 Sector interviews

As part of the primary research for this report, a series of discursive interviews were undertaken with representatives from a range of organisations involved in the manufacture or retail of electrical products, compliance management and the enforcement of electrical product safety.

Below are summaries of their responses to a series of questions relating to traceability, product recall and enforcement. A list of interview questions is provided in Appendix 4.

3.5.1 Retailers

Product development

Retailers are usually not involved in the product development process. Their function involves reviewing and selecting products they wish to stock. However, own label or own brand products generally come from suppliers who have met standards and requirements set by the retailers.

Retailers can be key to the product recall process, as safety issues and calls for corrective action are typically fed back by them to suppliers, as part of a continuous improvement process. Some retailers have the capacity to undertake further product testing based on consumer feedback, returns data and assessments from the technical and safety teams. These tests can include pre-production life tests, accelerated life tests and in-house trials.

Respondents noted that navigating the complex regulatory system is more difficult with products which combine functions, and therefore require cross referencing from several different areas of legislation. A quick reference guide would be useful to clarify this process.

The retailers interviewed had good relationships and two-way engagement with Trading Standards and, in some cases, their local authority Trading Standards Officer (TSO), who would attend the retailers' monthly safety and risk review meetings.

Risk assessment and technical files

A technical file is required for each product and they are usually held and reviewed as necessary by the retailer's technical/safety team or the supplier. Retailers normally require suppliers to make technical files available within a specified time period, typically 48 hours. All the retailers interviewed confirmed that they carry out internal risk reviews on products where necessary.

Continuous safety improvement process

This is usually linked with the analysis of product returns data. One respondent uses in-store emergency incident response triggers, graded red, amber and green, to cover issues such as personal injury, property damage, overheating or fire – with all amber and red incidents being reviewed by senior management. Any recommendations produced by these reviews are fed into the appropriate corrective action.

The adequacy of the regulatory framework

Although the regulatory framework is seen as being generally adequate, the harmonised approach to standards and legislation is considered complex. For example, issues have arisen with plugs, cords and sockets, due to the different approaches taken across Europe. The differences in European voltage standards were also mentioned as presenting a potential safety issue.

One retailer suggested that a simple guide, to aid the first stage of compliance for different product categories would be helpful. This could also include case studies focusing on compliance and safety issues.

Responding to safety issues

All of the retailers interviewed actively manage customer complaints. Protocols for responding to serious or recurring product safety issues relating to product design are usually facilitated through consumer returns and other complaint mechanisms. Retailers tend to have a strong risk management approach, and take remedial action when necessary, to ensure both consumer safety and the sustainability of their business.

Product traceability and recalls

Traceability is normally present at batch level in the production process. The weak link in the traceability chain is the ability to directly contact consumers. Typically, recalls are communicated through press notices but the success of most recalls is just 10 – 15%. Data collection, via online sales and home delivery, are two ways in which better intelligence could be gathered to improve product traceability.

Product component traceability is usually a supplier's responsibility (and part of their key performance targets) and tends to be annually audited by a third party. Any remedial actions identified are then dealt with when there is a review of suppliers.

3.5.2 Manufacturers

Product development

All those interviewed stated that consumer safety is considered at every stage of the manufacturing process, including product design being reviewed by a safety committee. Safety considerations were considered fundamental to the design process and an integral part of company culture.

Regulations – compliance and adequacy

Compliance with safety standards was considered the bare minimum for products. It was felt that, although standards establish safety and performance criteria, they are based only on current knowledge. Consequently, new technologies and innovations are not always properly covered until standards are revised – which can take some years. However, what happens after products leave the factory or point of sale, particularly potential problems which may be encountered in the course of their use, is rarely considered.

The manufacturers we interviewed felt that more consistency is needed between national and international standards. There was also concern that some UK TS Officers may not be knowledgeable enough to enforce all of the areas in their remit. This was a particular concern in relation to electrical products.

Risk assessment

Risk assessment is seen as a fundamental part of the design process. Although foreseeable use is considered to some extent, manufacturers find it difficult to know where to draw the line.

The broad principle currently used is whether they can legally defend not having considered a form of misuse – i.e. that it was extremely unlikely or unexpected. What the designer and manufacturer may reasonably expect a product to be used for can vary considerably from actual customer use or the focus of a retail promotion. There was acknowledgement that, in order to have a truly holistic approach, manufacturers need to incorporate the fact that customers may knowingly misuse, or continue to use broken or obviously unsafe products, into their product development process.

Response to safety issues

Tracking and analysis of product safety issues is fed back into the design and development process. Those manufacturers interviewed have a response protocol in place to ensure that management works closely with the standards and compliance, customer service and legal teams, to allow any problems to be dealt with quickly.

Product traceability and recalls

According to interviewees, both complete products and component parts can, to some extent, be traced. All completed products have serial numbers, allowing them to be tracked until they enter point of sale, when it becomes increasingly difficult. Products which offer a 5-year guarantee also achieve a higher than average return rate of completed warranty cards from customers. Component parts, such as electric motors, have their own serial numbers, meaning that whether they are manufactured in-house, or by external suppliers, they can still be traced.

However, when recalls occur as a result of a serious and dangerous risk to users, customer response can still be slow or non-existent. Even recalls on high value, low volume items, like cars – which typically have a higher success rate and better traceability – can have a slow consumer response. A recent recall on a faulty car brake system, for example, took 18 months to achieve a 90% success rate.

To improve traceability and recall effectiveness, it was suggested that developing point of sale/customer interaction could increase consumers' response to recalls. Knowing exactly where a product has gone, and using customer data effectively, would support any recall process. Online retailers, for example, have full customer details on record, showing what was purchased and where the customer lives. It was also suggested that 'reverse marketing' techniques could help achieve better recall rates. Some product marketing is highly targeted, and utilising these techniques to publicise a recalls could also enhance response rates.



3.5.3 Trading Standards (TS)

Product safety

The general view expressed was that customer behaviour, use of products and the need to communicate risk effectively are all important issues that have yet to be properly addressed. However, they also represent a significant opportunity to improve consumer safety. This is particularly the case with items such as hair straighteners, where it is evident from the latest injury research that many accidents could be avoided through better risk communication. Traceability and recall capability are viewed as the 'last line of defence' and interviews bore out the view that significant improvement in their execution is needed.

Recalls

There is a disparity between recalls listed on the EU rapid alert system (RAPEX) and the Trading Standards (TS) UK recall register. This is due to the fact that not all UK recalls are submitted to RAPEX. This occurs for two reasons.

Firstly, in cases where the issue is purely UK-based, there is no requirement to notify RAPEX. Secondly, all recalls that go onto RAPEX from the UK are currently routed through the UK government's Department for Business, Innovation and Skills (BIS). However, due to resource issues within TS and the complexity of

the process, this does not always occur. The system is stretched to the limit, with entire countries and national responsibilities now managed by a single person rather than by a team, as was the case. TS is not authorised to register recalls direct to RAPEX – although this limitation will soon be rectified.

With increasing online sales, traceability to consumers is improving, as indicated by some recent recalls. Nevertheless, only approximately 20% of affected products – at best – are being returned, making this a key area for improvement. Traceability to manufacturers and component suppliers remains problematic and is generally very poor. The problem often begins with a lack of information in a product's technical file but can extend back to product manufacture itself.

A high standard of traceability allows an early identification of potential issues and for the response to them to be much more measured. Without a clear traceability process, it is likely that the scope and scale of a product recall will tend to be higher and more intense than necessary – as will the business cost and potential reputational damage.

3.5.4 EU Directorate for General Health and Safety (DG SANCO)

Recalls

There was a view that, although the UK frequently reports non-compliant products through RAPEX, the EU's risk assessment model (detailed in the EU Official Journal L22 'Legislation'¹⁹) is not always used – particularly in the case of electrical products. Failing to follow a robust risk assessment process creates an inconsistent approach to corrective action by member states. Some recalled products could also be identified as posing a higher or lower risk to users than may actually be the case.

It was also highlighted that not all 'potentially unsafe' electrical products are notified through RAPEX. One reason given for this relates to the need to cross-reference the GPSD and the LVD when considering if a product is considered to pose a serious risk, and the difficulty that generates.

Within the Directorate, RAPEX is viewed as a consumer facing communication channel. There was, however, a general agreement that the RAPEX database could be made more user or consumer-friendly, and that more should be done to increase awareness of its existence among consumers.

3.5.5 Testing and inspection industry

Our industry interviews included a discussion with a testing and inspection provider to the electrical consumer product market.

Performance and compliance testing

Most third-party testing is carried out on products at the upper end of the market, as the lower end is less profitable. Some clients also request accelerated aging tests to be carried out on products, to determine sustainability of performance and identify ways the product might fail.

Again, the capacity for market surveillance authorities to police and enforce regulations was considered to be an issue by this aspect of the industry.

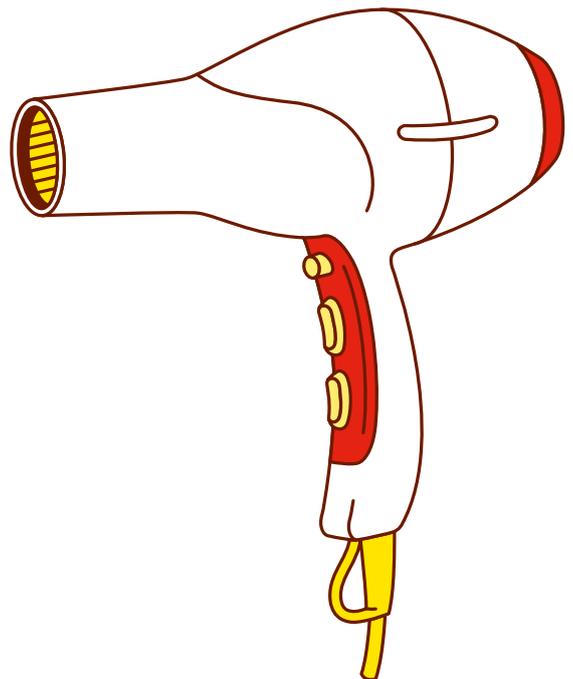
Compliance understanding

It was asserted that many importers and distributors have gaps in their knowledge of regulatory requirements, including those which should be well known to the industry (such as the LVD). However, both major retailers and branded manufacturers have greatly improved their understanding of, and engagement with, the compliance and safety process.

It was proposed that the concept of continued misuse should be investigated further in some areas. This would be particularly helpful in developing a better understanding of the hazards presented by products thought to carry a higher risk to users.

Product safety

The product safety performance of the electrical consumer goods industry was perceived overall to be good but improvement is still required, particularly in preventing injuries and fires where human behaviour was a key factor.



4. Conclusions

Product safety in the UK is generally considered to be of a relatively high standard but, as our research has shown, there are several areas where significant improvements could be made, to increase consumer safety and raise industry standards.

These include:

- The understanding and communication of risk, particularly for products which are used on or near the body, and to which children and other vulnerable people could be exposed. Examples of such products include health and beauty items, such as hair straighteners and curling tongs.
- The risk assessment and safety design of products that are intended to be left switched on and unmonitored, such as fridge-freezers, dishwashers and other white goods.
- The ability to deal effectively with non-compliant and dangerous products in the market or supply chain. Effective recall and traceability procedures are essential to achieve this.

All of these points are considered in more detail in our recommendations in Section 1 of this report.

We believe a better understanding of product compliance requirements is needed across the industry – including SMEs, importers and distributors. An industry-led collaborative and proactive approach, through businesses and trade associations, is needed to promote this.

The ability of market surveillance authorities to police compliance is severely challenged by austerity measures in the UK and Europe. This is likely to produce an increase in non-compliant and potentially unsafe electrical products being placed on the market. It can also result in businesses placing less importance on the need to maintain safety standards and corrective action capability.

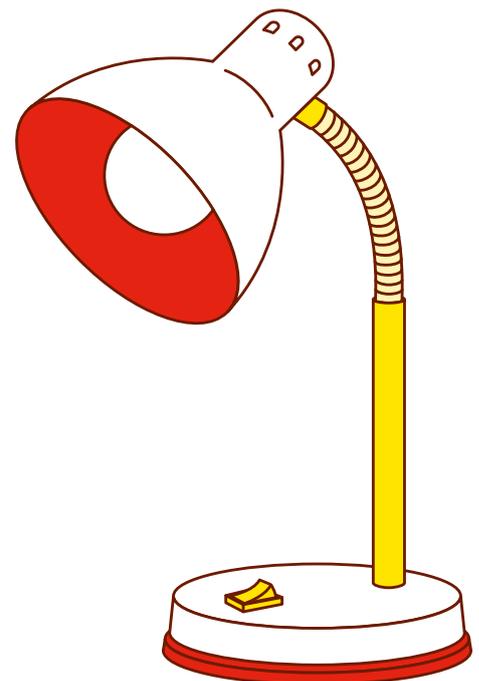
The recommendations from this research will be used as the foundation for consumer and industry focused campaigns. Our aim is to help improve consumer safety through both direct and indirect preventative action, in collaboration with industry partners and like-minded safety organisations.

Appendices

Appendix 1: List of acronyms

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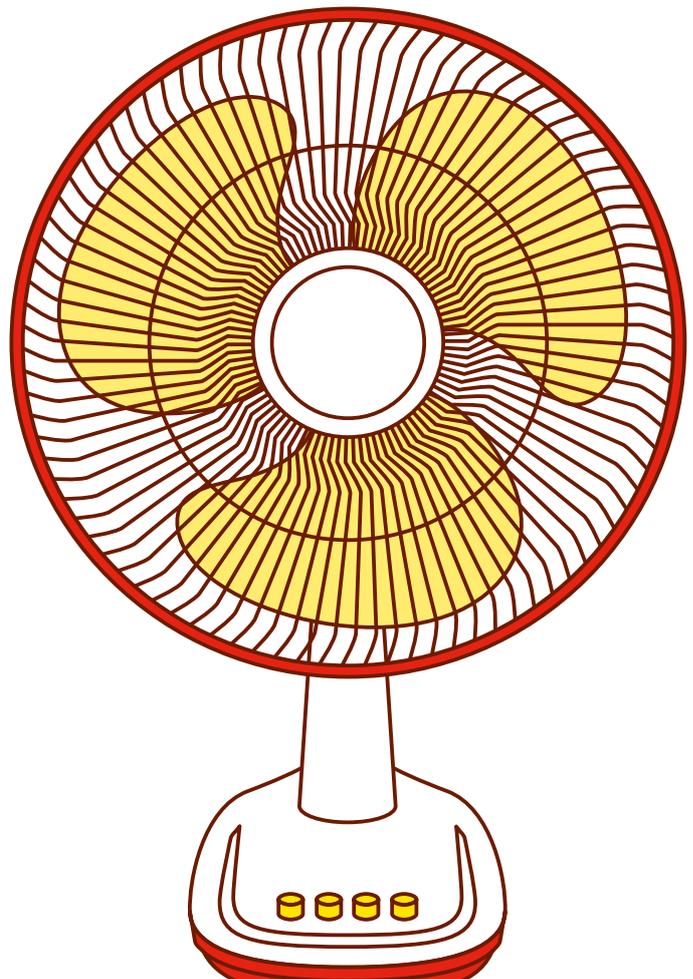
AMDEA	Association of Manufacturers of Domestic Appliances
CPSC	Consumer Product Safety Commission (USA)
CE	Conformance to European Modern Approach Directives
DG SANCO	European Director General for Public Health
EU	European Union
EU IDB	European Union Injury Data Base
EN	European Norm
GPSD	General Product Safety Directive
ISO	International Organisation for Standardisation
IRS	Incident Recording System
KPI	Key Performance Indicator
LVD	Low Voltage Directive
RAPEX	European Rapid Alert System for Non-food Products Posing a Serious Risk
REACH	Registration Evaluation Authorisation and Restriction of Chemicals Directive
RoHS	Restriction of Hazardous Substances Directive
WEEE	Waste Electrical and Electrical Equipment Directive



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Appendix 4: Question framework for semi-structured interviews

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Question areas for branded manufacturers/retailers:

Product development

- At which stage of the innovation process is safety considered?
- Is safety integrated throughout the innovation process?
- What process is used to assure regulatory compliance to safety standards?
- Is a risk assessment carried out and is a technical file established for each product design?
- Is foreseeable use considered within the risk assessment? i.e. potential miss or false use of the product?
- Is there a process of continuous design improvement to respond to any potential safety issues?
- Do you think that the current regulatory framework is adequate to guide product safety and respond to potential safety issues adequately?
- What changes if any would you advocate to the current regulatory framework?

Response to safety issues

- Do you collect and analyse consumer complaints?
- Do you have a response protocol to deal with serious or recurring potential product safety issues in terms of potential design enhancement?
- Is tracking and analysis of product issues fed back into the product development process to enable continuous improvement?

Product traceability and recall

- Is traceability established on all finished products?
- Does traceability exist on product components?
- Does the approach to traceability link to supply chain quality and integrity? i.e. identification of potentially defective products if components are affected.
- What aspects of product traceability could be improved to enhance recall efficacy?

Questions for competent authorities:

Trading standards

- What are the current statistics regarding the incidents of non-compliant electrical products?
- What is the nature of defects you are seeing and are there any patterns?
- What in your view should branded manufacturers and retailers focus on to improve performance?
- Do you focus mainly on compliance or do you consider other risk factors in your assessment and judgement with regard to potential safety issues?
- Do you feel that traceability of electrical consumer goods is adequate?

EU DG SANCO

- The performance and benefit of the RAPEX system
- Progress in the development of competent authorities
- Level of connectivity between country competent authorities to focus into issues relating to defective products across borders and EU wide
- Recall actions
- Effectiveness of recalls
- Work to promote traceability and recall effectiveness

Your notes

Electrical Safety First

The UK's electrical safety experts

Electrical Safety First is the UK charity dedicated to reducing deaths and injuries caused by electrical accidents. Our aim is to ensure everyone in the UK can use electricity safely.

electricalsafetyfirst.org.uk

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