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FISUEL 11 May 2016









- 33 years fire service experience
- Firefighter to Deputy Fire Chief
- Led change in the Fire & Rescue Service to do both Prevention and Emergency Response
- Spoken internationally about ways of making citizens safer from fire
- MD of Fire Safety Platform (<u>www.firesafetyplatform.org</u>)





Project Brief



- Over the past decade, UK fire statistics in buildings have improved significantly. The purpose of this work order is to analyse these data with particular reference to electrical fires and develop a hypothesis on the reasons for this reduction. In short, the work order should answer the question: what story does the data tell us?
- An indicative trajectory for answering this question could be:
 - Collection of available fire statistics
 - Analysis and identification of the trends
 - Development of a hypothesis or series of alternative hypothesis on what may be causing the trend
- Deliverables
 - PowerPoint Presentation



UK Fire Trends, 'All', 'Dwellings' and 'Other'











- Faulty Appliances and Leads -Fall<30%
- Misuse of Electrical Equipment and Appliances - Fall<25%
- Faulty Appliances and Leads -Fall<40%
- Misuse of Electrical Equipment and Appliances - Fall<50%



Cause of Fires – Electrical (Fatalities/Casualties)





Sources of Ignition in accidental fires in dwellings, Great Britain, 2013/14p



Note: Other includes candles, central and water heating appliances, lighters, matches

p = provisional

(Source: DCLG Fire Statistics Great Britain April 2012 - March 2013)



FIRE SAFETY PLATFORM

Source of Ignition – Electrical





Insured Losses – RISCAuthority



- Another indication of the impact of fire comes from the UK Insurance Industry
- RISCAuthority is an annually funded research scheme supported by a significant group of UK insurers that conducts research in support of the development and dissemination of best practice on the protection of property and business.
- RISCAuthority gathers data from fires and other events many of which may not appear within the national fire recording systems
- The following information is extracted under a broad heading of 'electrical fires' but may contain a minority of events from other causes. Note, the data refers to 'large loss' fires (insured losses over £100k)





Insured Losses, Electrical Fires - RISCAuthority



- The data shows that the largest number of claims following an 'electrical fire' are from the **domestic environment**
- But the insured losses are highest in the warehouse sector
- Reasonable to conclude that placing more emphasis on electrical safety would reduce fires and reduce the losses from fire





Narrative - Dwellings

- Total number of fires and related deaths and injuries hugely reduced in last 10 years
- Main cause of dwelling fires remains misuse of equipment or appliances
- Faulty appliances and leads also leading cause
- Cooking appliances main source of ignition (52%) followed by other electrical (12%) and electrical distribution (12%)
- Change of recording explains 'spike' in 2009 followed by levelling out











Narrative – Other Buildings



- Total number of fires and related deaths and injuries hugely reduced in last 10 years
- Main cause of other building fires (25%) remains faulty appliances and leads
- Misuse of equipment and appliances also leading cause (14%)
- Electrical Distribution main source of ignition (25%) followed by other cooking appliances (20%) and other electrical appliances (19%)
- Change in recording method explains 'spike' in 2009 followed by levelling out



UK Regulatory Framework

- Building Regulations Part P, Electrical Safety in dwellings
- Pre 2005 All electrical work from approved 'NICEL' installer whether Nuclear Power Station or Domestic Dwelling
- **Post 2005 Competent Person scheme** for domestic work
- Philosophically, UK claim regulation control 'Conduct' through regulation whereas others may control 'Access'
- Building Regulations tend to set 'functional requirements' rather than prescribe
- Sets minimum standards for electrical installation in dwellings





UK Regulatory Framework

- Includes **'notified' scheme** for all but minor work
- Primary objective to minimise health/safety risks associated with electrical shocks and electrical fires
- Third party inspection of new works through registered electricians
- BS7671 provide the technical rules
- Work of greatest risks to be 'notifiable'
- Competent person scheme for DCLG registered persons

UK Regulatory Framework – Impact Assessment 2012

Rationale for intervention

- Nationally applied minimum standards welcomed
- Support for regulating through Building Regulations
- Criticism of cost and bureaucracy regarding operation of control regime

90 -	owenings
epartment for	IA No: DCLG 0084
ommunities and ocal Government	Lead department or a Department for Comr Government
	Summary: Interventio
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npact assessment	What are the policy or The primary objective as to minimise the hea proportionate and cost regime of higher risk e away from lower-risk b and certification of also promotion of the bene reducing the scope of
	What policy options Please justify profer Three policy options w amend Part P to reduc to reduce burdens. Ry cost-beneficial option 1 Policy Option 0 - Do h costs of Part P avid burainess of Part P avid
	Will the policy be rev
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Policy objective

- Deliver adequate standards of electrical installation
- Improve competence of domestic installers
- Reduce damage
- Make scheme more cost effective

UK Regulatory Framework – Impact Assessment 2012

Key figures

- 58,000 electrical contractors carrying out
 2.65 million jobs, 45% 'notifiable'
- 95% of notifiable jobs by registered installers
- DIY accounts for 0.95
 million jobs, 5% notifiable
- Average Regulation charge £251
- Average Registration for Competence fee £381

Costs and benefits

30. In developing this Impact Assessment, DCLG has drawn upon:

- · the cost/benefit methodology employed in the 2004 Regulatory Impact Assessment
- initial work undertaken for DCLG by EC Harris in February 2011 that sought to update Part P costs and benefits and a further update to this work including analysis carried out by Adroit Economics in 2012
- information provided by the Electrical Safety Council and Part P Competent person scheme operators
- information provided by expert members of the Building Regulations Advisory Committee (BRAC) Part P Technical Working Party.
- DCLG fire statistics³
- 31. Until 2012 the Building Regulations applied to both England and Wales and the figures in the 2004 Part P Impact Assessment reflect that. However, from 2012 the power to make these regulations in Wales has been devolved to the Welsh Assembly Government. Proposals in this Impact Assessment, which are for changes coming into force in 2013, relate to England only therefore.
- 32. The key figures that inform the monetisation of options in this Impact Assessment are:
 - 58,000 electrical contractors carry out 2.65 million jobs a year, of which 45% are currently notifiable
 - · 95% of these notifiable jobs are done by registered installers
 - DIYers carry out 0.95 million jobs a year, of which 5% are currently notifiable
 - the average building control charge is £246⁵ and the accompanying building notice takes 15 minutes (and therefore costs £5) to complete (so that the total cost of submitting a notifiable job to a building control body is £251)
 - the average registration fee with a Competent person scheme is £381⁶.
 - the cost for a registered installer to notify a job to a registration body is £3.50 (£1 in time to complete the form online, and £2.50 in the fee charged by the scheme operator to send the Building Regulations compliance certificate to the householder and a notification to the local authority).

Analysis by EC Harris with Adroit Economics on Costs of Part P

- Not clear how much incident reduction is down to Part P
- Expect that accident rates would fall as older installations modernised
- Conversely, potential hazards increase as more electrical appliances appear
- Gas Safe scheme shows lag between introducing measure and seeing impact on safety
- Analysing solely fires linked to electrical installation or wiring shows slight rise

Value of Prevented Fatality	£1,668,817
Minor Injury Prevented	£14,462
Serious Injury Prevented	£187,521
Fire and Rescue Cost	£5,820

PLATFORM

- Part P likely to have reduced electric shocks through promotion of competent person scheme
- RCD installation is main factor in reducing fatal electric shocks and Part P may have been a factor in increased use
- Part P helps prevent 2.6 fatalities/421 injuries from electric shock
- Part P helps prevent 2.8 fatalities, 10 serious and 77 minor injuries from electrical fires
- 40,000 firms registered with Part P scheme
- Survey of installers found 53% believed standards improved with Part P
- Sales of instruments for Part P testing increased by 35% in 2004 and 55% in 2005 then 15% annually implies increase in testing

UK Regulatory Framework – Revision 2013

- Building Regulations Part P considered costly and bureaucratic so amended
 - Allow **3rd Party Certification** of Electrical Work
 - Reduce scope of work that is 'notifiable'
 - Part P still a requirement but monitoring framework changed

Related Reports: Government English Housing Survey

- 4% of homes (1 million) assessed as High Fire Risk
- Private rented, older (half built before 1919), urban, terraced houses and flats were over-represented
- 42% of high risk houses have modern electrics compared to 57% in general stock
- 119,000 (12%) assessed as needing electrical remedial work

While the electrical safety of the English housing stock continued to improve there remains room for improvement

Related Reports: Electrical Safety First – Ageing Society

European Copper Institute

A Copper Alliance Member

Findings

- Older people less likely to contain features that reduce electrical hazards
- Over 65s increasing in private rented sector that has a poorer safety record
- Health issues amongst older people increase risk associated with electricity
- Older people prefer to 'age-in-place'

- Selected recommendations
 - Govt provide free electrical safety checks
 - Make mandatory 5 year inspections of electrical installations in private rented sector
 - Implement a 'Lifetime Homes Standard'
 - Mandatory 5 year electrical safety checks in Care Home Sector
 - Electrical safety to be part of an individual care plan
 - More use of assistive technology to reduce risk from fire and electrical hazards

Electrical Safety First – Product Recalls

- Success of electrical product recall very low at 20%
- Most offer risk of electrical shock or fire
- The electrical goods most often reported as faulty or dangerous are
 - Electrical chargers
 - Adaptors, including those used for travel
 - Extension and spare product leads
 - Hairdryers, tongs and straighteners
 - Small kitchen appliances like kettles, toasters and irons

Concerns extend to Cables led to 'Approved Cables Initiative (ACI)'

- 11 million metres of cable recalled from market
 - The suspension by BASEC remains in place and cables affected are:
 - Flat twin, single and 3-core with CPC (BS 6004 Table 8 and IS 201-4 Table 1, 1.0 sqmm 16 sqmm)
 - Single core unsheathed (BS 6004 Table 4a, 1.5 sqmm 35 sqmm)
 - Single core sheathed (BS 6004 Table 7, 1.5 sqmm 35 sqmm)
 - Cables affected by the HAR scheme certification licence suspension have also been found to have insufficient copper leading to high conductor resistance
 - Cables affected are H05VV-F type, PVC insulated and sheathed in sizes ranging from 0.75 sqmm to 4.00 sqmm and with 2, 3, 4 and 5 cores

- Reports of faulty cabling from concerned contractors earlier this year led the ACI to test samples of product from the Turkish cable manufacturer
- The samples were found to have insufficient copper leading to high conductor resistance and did not comply with appropriate British Standards
- Independent testing by BASEC later confirmed the ACI's findings and led to the suspension of Atlas Kablo's BASEC licence for a serious decline in quality across its range of products

 ACI estimate one fifth of all cable in the UK supply chain estimated to be either unsafe, non-approved or counterfeit

- Fire statistics support the claim fires relating to electrical supply and equipment are reducing in the UK
- Building Regs Part P has contributed to improve safety but not to the extent predicted
- Improvement in standards of electrical installers
- Greater use of modern electrics and circuit breakers
- Better knowledge of electrical fire hazards create potential for reducing risk
- Recent changes to Part P should reduce burden to business

Conclusions – Negatives

- Fire statistics show electrical related fires not reducing as quickly as other fires
- Some of the success attributed by Govt to Building Regs Part P is probably overstated
- Mandatory routine electrical system testing not in place and not even targeted at high risk groups
- Too early to judge the impact of 3rd party inspections
- Reports of significant amount of below standard electrical cable in UK supply chain
- Very poor performance in terms of successful product recall for electrical equipment

Strategic Approach – in the home

Effective Risk Reduction – People

Risk reduction programmes such as home fire risk assessments (HFRA);
 Delivered by agencies working with these sectors trained in basic fire risk assessment.

Effective Risk Reduction – Places

Risk from electrical fires of particular importance when inspecting older electrical installations;
 Mandatory, routine testing of electrical installations introduced and targeted at lower quality social housing where risk from fire is known to be higher.

Effective Risk Reduction – Products

I An electrical product registration scheme should promote confidence in the consumer that information will only be held and used for product recall;

I Consumers should have more information to inform encourage the purchase of 'genuine' electrical items.

Information and data sources

A National system to record fires involving electrical installations and products;
 Should be easily accessible and robust, secure, interactive and interrogative in its operation.

It is recognised that differences exist between developed and emerging economies and therefore, in any implementation of the outlined recommendations, different approaches may be required.

Strategic Approach – public/commercial Buildings

Effective Risk Management

Commercial properties must have a risk management system including a fire risk assessment based on probability and severity of fire;

I Electrical risk should be given greater priority.

Workforce education

Imployees should be adequately trained in the use of equipment and instructed in the hazards and risks associated with the use of that equipment. Such training can be part of a broader employee education programme.

Product safety

Companies should purchase cables and other electrical equipment constructed to approved standards and codes of practice which also facilitate product traceability;

Ilectrical installations should be subject to routine testing arrangements;

I Third party certification can also be an advantage provided it is applied in a proportionate manner so as not to unnecessarily increase the burden of cost.

Information and data sources

A National system to record fires involving electrical installations and products;
 Should be easily accessible and robust, secure, interactive and interrogative in its operation.

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Strategic Approach – Counterfeit/Faulty Products

Product design & manufacture

Codes of practice for product design based on appropriate functional standards; and
 Routine testing of installations/products to identify risks in design and production.

Market surveillance & enforcement

A trading 'area' should have a centrally controlled market surveillance authority (MSA);
 To underpin the role of the MSA, create and operate a database for market surveillance activities.

Information & data sources

example, to other agencies or consumers in general. Therefore:
A National system to record fires involving electrical installations and products;
Should be easily accessible and robust, secure, interactive and interrogative in its operation.

Consumer Actions

I An electrical product registration scheme should promote confidence in the consumer that information will only be held and used for product recall;

² Consumers should have more information to encourage the purchase of 'genuine' electrical items.

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