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From The Daily Telegraph: 10.05.05 (By David Sapsted)  
'RUBBER GLOVES SAVE WOMAN FROM LIGHTNING'

'A housewife's rubber gloves probably saved her life when lightning struck her home as she washed the dishes.'

'The bolt blew out electrical sockets and a telephone junction box, blasted a hole in her garden wall and scorched a poplar tree.'

'Angela Edwards, 64, of King's Lynn, Norfolk suffered a huge shock but survived without serious injury or any burns because of her gloves and rubber-soled shoes.'

'She said hospital doctors told her that she was very lucky and things could have been a lot worse if she had not been wearing gloves.'

'"I could feel this electric shock go through my right arm and then out of my right foot on the floor. It felt like I had put my hand in an electrical socket."'

'Her gloves and shoes were unmarked but the lightning strike caused a small fire in the roof of the house next door and blew out a window of a third property.'

Phew! Pretty scary stuff and, presumably, an Act of God. This report endorses two of my own recommendations:

1. Rubber is not to be underestimated as a product or as means of providing safety.
2. Washing up can be hazardous - that's why I try to avoid it.

Joking apart, this newspaper report set us thinking about gas and electricity and where the Guidance currently stands on this. It also seemed like a good opportunity to mention gloves, not in general terms, obviously, but in relation to safe gas handling.

Unfortunately, the current installation Guidance for gas cylinder manifolds and pipework is a little sketchy on the subject of electrical safety. It may reflect the fact that the Guidance has been drawn up by someone with a mechanical bias, but this seems unlikely.

Whilst it seems entirely sensible that any system (especially one designed to convey flammable gases) should be adequately earthed, we seem to have 'mis-placed' the numbers for what constitutes an 'adequate earth.'

From memory, a total earth loop impedance of 1MegOhm seems to sound like a fact (I think this was in the old version of CP 8: Hydrogen Safety, etc.). However, BCGA CP4 points out the following recommendations which may be of interest: these remind us that the Standards should be consulted and so should an [electrically] competent person...

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1. Safety distances - industrial gas installations: hydrogen and hydrogen mixtures, 5 metres from non-classified electrical equipment and 3 metres separation between LPG and non-classified electrical equipment.

2. "Where flammable gas manifolds are installed, electrical systems in the manifold room shall be in accordance with the recommendations of BS 5345."

Furthermore, "Flammable gas manifolds shall be electrically earthed in accordance with the requirements of BS 5345 Part 1. Manifolds and pipework carrying other gases should be cross bonded to earth in accordance with the requirements of BS 7671 and of the the current IEE Wiring Regulations."

3. "Flexible hoses shall...where used on flammable gas systems be electrically conductive with a resistance not exceeding 10 Ohms to give protection against electrostatic charging."

4. "Piping shall be at least 50mm away from any electrical power cables."

(This seems like an odd one to me, sensibly, perhaps this may be subject to Zoning calculations dependant upon mass-flow estimations of normal leakage and dispersal to < the L.E.L., from flanges or screwed fittings, etc.).

5. Cathodic protection is mentioned - presumably in relation to buried pipelines. Also, presumably, this would take the form of a sacrificial anode? Hopefully, this will be non-starter for most gas lines.

6. For hydrogen, methane, LPG, etc.

\*Electrical equipment shall be certified, selected and maintained in accordance with the current (no pun intended) standard

\*\*Electrical circuits shall be in accordance with the current (ditto) standard

\*\*\*Earth all lines and equipment where there is a possibility of electro-static discharge

(I have paraphrased point 6, above, because since this Guidance was published, the ATEX directive has come into force and, this should be considered).



Photograph 1. This was the kettle in my hotel room which exploded (the kettle, not the hotel room) on Friday 20.05.05 (at around 06:00 BST) - this set me up a treat for the day ahead (@ GSK, Beckenham). Interestingly, the kettle didn't carry a PAT Test label and the hotel didn't seem to be phased (no pun intended) by this incident (i.e. no discount offered!).



Photograph 2.  
Part Number: 99-002  
Price: £16.80/pr. + VAT  
Description:  
Cryogenic gloves: hide palm with hide/nylon back.



Photograph 3.  
Part Number: 99-001  
Price: £17.59/pr. + VAT  
Description:  
Cryogenic gloves: all hide.

Speaking, as we were, of the BCGA and gloves...

The current Guidance on the selection of gloves for cryogenic applications reads as follows:

"Non-absorbent insulated gloves, made from a suitable material such a leather, must always be worn when handling anything that is, or has been recently, in contact with the product. The gloves should be of loose-fit so that they can be easily removed. Sleeves should cover the ends of the gloves.

Gauntlet gloves are not recommended because liquid can drip into them."

From BCGA CP 27 & BCGA CP 30 ('transportable vacuum insulated containers of not more than 1,000 litres volume' and 'the safe use of liquid nitrogen dewars up to 50 litres', respectively).

For Guidance on CE marking requirements and the interpretation of the relevant 'scoring' of insulation and mechanical protection parameters, please contact us to find out more.

We are currently assessing a new addition to the range of cryogenic gloves that are available from BJ Industries Ltd (Gas Safety UK Division); so far so good - we'll let you in due course if we are going ahead with this slightly more expensive product.

Suitable gloves should also be worn during cylinder handling activities. Leather [rigger] gloves are quite popular but they can get soggy if it rains. Some people use the leather cryogenic gloves (see above) for cylinder handling - they are well cushioned (due to the insulation) and have good mechanical resistance to wear and tear.



That's enough for the time being.

Remember if you need advice or guidance then please ask - we're here to help without obligation.

I've also issued an information sheet on our training services alongside this Update. This may also be freely circulated amongst your colleagues who may be interested in our safety workshops for users of cylinder gases and cryogenic liquids like liquid nitrogen.

We are exploring the possibility of developing a safety workshop aimed purely at the use, handling and storage of liquid helium - this is highly specialised and there seems to be a burgeoning demand for a well-designed course, in order to meet the safety needs of a growing number of researchers who are working with this product. To this end, we have already discussed this matter with CCLRC (as a possible training centre) and one of the large pharma research companies...watch this space.

It may be a little while before we can produce the next Update as things are looking a bit busy on the projects side for the Summer - one project in particular for Cardiff University looks like being time consuming but should provide a good excuse to get away from the washing up and spend some time with our friends in South Wales.

Pip pip.

Best regards, David.

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