Medico-legal aspects of electro-magnetic fields

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At a recent APLA seminar, Dr Bruce Hocking, an expert in the possible effects of exposure to EMF, presented a paper to a group of APLA members.

After a necessarily brief description of what is meant by the term Electro Magnetic Fields (EMF), Dr Hocking proceeded to describe the possible health effects of Radio Frequencies Radiation (RFR).

According to Dr Hocking, the body absorbs RFR maximally at around 80 MHZ and if allowable exposure limits are exceeded by reason of proximity and exposure, there is a risk that the electric field component of RFR might affect the molecules in human tissues.

Dr Hocking said that rapid change in an electric field will, as a matter of basic principle, cause:

- polar molecules to spin and create heat
- charge particles to move and create current.

In some circumstances, the possible specific effects of the molecular dynamic referred to include:

- heating of prosthetic devices
- interference with devices such as pacemakers
- might possibly cause onset of cancer.

It is interesting to note that in an article in the Sydney Morning Herald on 5 March 1997, a New Zealand expert, Dr Neil Cherry of Lincoln University, is reported to have told a Sydney conference that:

"...the Australian government had allowed the telecommunications industry to set standards for Electro Magnetic Radiation from towers...(resulting)...in standards up to 1,000 times more lenient than levels indicated safe by studies in Australia, Britain and the United States."

Dr Cherry is said to have described this as a "scandal".

Dr Cherry is also reported to have said:

"...research showed that residents living near phone and television towers had a higher risk of leukaemia, sleep disruption, chronic fatigue syndrome and changes in blood pressure."

Implications for tort liability may well be of interest to APLA members.

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Slipping and sliding

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People can walk on almost any surface provided they receive visual and tactile feed back on the surface conditions. The step size a person takes is dependent on the slipperiness of the surface – a very slippery surface small steps are taken to maintain balance. Increase the surface slipperiness without adequate warning, people fall.

I have acted as an engineer expert witness in a number of slipping cases and have come to the realization that there is no possible technical (engineering) defense that can be provided.

The Australia Standard AS/NZS 3661.1 1993 Slip resistance of pedestrian surfaces Part 1: Requirements considers that a coefficient of friction of 0.4 is adequate. The Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities, published in the federal Register July 26, 1991 recommends a static coefficient of friction of 0.6 and 0.8 for ramps. The American Act recommendations for the floor coefficient of friction is 150% greater than the Australian requirements. The slipperiness of a surface is related to the coefficient of friction – a surface is slippery when the coefficient of friction is low.

I have great difficulty comprehending how the Standard's Committee arrived at the value of 0.4 being acceptable coefficient of friction when compared with the American requirements. The committee that developed AS/NZS 3661.1:1993 had fifteen members representing 22 interest groups. Nine of the interest groups could be considered to be from the flooring industry, that is the floor industry has over 40% of the representation on the committee.

When a coefficient of friction is quoted it is important to understand the test procedure used. For example, thirty (30) tests, on a 200 by 200 millimetre ceramic floor tile, were performed. The coefficient of friction results ranged from 0.29 to 0.99. The next problem is to realise that these tests, in general, do not quantify the floor slipperiness – the tests are only a guide for the building designer in the selection of the floor surface.

There are no tests available to quantify the slipperiness of floor due to the presence of foreign material, for example water, oil, pumpkin seeds, plastic bags, fruit juice, grapes, loose stones, cleaning products etc. The maintenance procedures adopted by the building manager or the Local Government determines the actual slipperiness of the pedestrian surfaces.

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