

High frequency voltage transients or spikes

A new way of assessing electro-magnetic radiation has been developed. This is to measure the high frequency voltage transients, or 'dirty electricity', found in mains wiring. The authors of the report think it could be classed as a 'universal carcinogen similar to ionizing [nuclear] radiation' because of the high number and wide variety of cancers it appears to cause.

Milham and Morgan's important study on high-frequency voltage transients originated in 2003 when teachers at La Quinta Middle School in California complained of high cancer rates. 16 out of 137 teachers hired from 1988 to 2005 were diagnosed with 18 cancers. The observed to expected (O/E) risk ratio for all cancers was 2.78, while the O/E risk ratio for malignant melanoma was 9.8, for thyroid cancer 13.3, and for uterine cancer 9.2. No association with cancer incidence showed from 60 Hz MFs but a new exposure metric, high frequency voltage transients, did show a positive correlation. A cohort cancer incidence analysis of the teacher population showed a positive trend of increasing cancer risk with increasing cumulative exposure to high frequency voltage transients on the classrooms' electrical wiring. The attributable risk of cancer associated with this exposure was 64%. A single year of employment at this school increased a teacher's cancer risk by 21%.

High frequency voltage transients or voltage spikes occur on electric cables from interrupted supplies. They are linked to 'dirty electricity', as found with dimmer switches, fluorescent lights, low energy bulbs etc, all of which interrupt the flow of electricity from 120 to 20,000 times per second. The voltage transients can be read on a Graham/Stetzer meter giving readings in the range from 0 to 1,999 GS units. >2,000 GS units represent overload. It is assumed that the adverse health effects are by capacitive coupling which induces electric currents in the human body, with the energy coupled proportionate to the frequency.

The case school had very high GS readings with 13 of 51 measured rooms with at least one electrical outlet measuring >2,000 GS units. These readings were high compared to a total of 631 rooms in another school, an office building and private residences which were surveyed. Of these 631 rooms, 17 (2.69%) had maximum >2,000 GS units reading. Applying this percentage to the 51 rooms surveyed at the case school, one would expect 1.4 school rooms to have maximum >2,000 GS units readings instead of 13 rooms (25%).

The cancer risk of a teacher having ever worked in a room with at least one outlet with an >2000 GS units reading and employed for 10 years or more, was 7.1. In this group there were 6 teachers with 7 cancers, compared with 4 without cancers. These 10 teachers were 7.3% of the total teachers but had 39% of the cancers. For those ever working in a room with overload GS readings regardless of length of employment, 8 had cancer and 32 did not, giving a risk ratio of 5.1, compared with 1.8 for 8 teachers with cancer and 89 without who had never worked in such a room.

