

# Powerfrequency EMFs and Health Risks

This article is separated into 12 sections, each of which can be individually downloaded. It is a 'work in progress' incorporating new information whenever time permits.

## Section 6

### Electronic surveillance systems

1. Introduction; electricity consumption; measuring meaningful exposure; static electric field from high voltage direct current transmission; precautionary recommendations; EMFs interacting with the environment or other substances; geomagnetic field (GMF) changes; a French study in 2009; residential exposure; mitigating biological effects; campaigning organisations
2. Occupational exposure; occupational research
3. Cancer; leukaemia; Sources of magnetic field exposure and cancer risk; brain cancer; breast cancer; neuroblastoma; other cancer; immune system effects; tamoxifen, doxorubicin and other drug effects; similarities to other chemical effects
4. Cellular changes and potential mechanisms; DNA breaks and changes; EEG changes; other cellular changes; potential mechanisms for interaction between exogenous EMFs and biological processes; free radical effects; effects on other cellular processes; airborne pollutant effects; other potential synergistic effects
5. MRI; contrast enhancement; individual experiences of reactions; MRI vs CT; cardiac scan; the European Physical Agents Directive; research
6. Electronic surveillance systems in shops, airports, libraries, etc.
7. Light at Night and Melatonin; circadian rhythm disruption; clock genes; plant, animal and insect effects
8. General reproductive effects; miscarriage and other effects of female exposure; powerfrequency exposure and male sperm; protective treatments
9. Other effects; ageing; amyotrophic lateral sclerosis (ALS); animal affects; anxiety; asthma; autism; bacteria; behaviour changes; birth defects; effects on blood; bone changes; brain damage; cardiovascular effects; dementia; developmental effects; depression and suicide; EEG changes; energy metabolism; eye effects; gastric effects; genetic defects; hearing effects; heart; insulin and electric fields; interference problems; kidney effects; learning and memory effects; lung, spleen and liver; medical implants; mental health problems; nervous system; neurobehavioural effects; neurodegenerative effects
10. Other effects; obesity; olfactory effects; other neurological and psychological effects; pain perception; Parkinson's disease; protective effects of EMFs; skin; sleep; synergistic effects; teeth; thyroid; weight change; some experimental problems; government advisory bodies

11. Positive health effects; apoptosis; cancer treatment; cell survival and differentiation; wound healing

12. References – 937 references

## **Electronic surveillance systems in shops, airports, libraries, etc.**

We have become familiar with the places in our towns and cities that have installed ‘pillared walkways’ at the entrances to help prevent theft from the premises.

There may be two of these pillars with a walkway between, or there may be a series of them covering a wider entrance.

Going between the two pillars will expose people to electromagnetic fields of varying intensity. This may be significant for employees, who pass near them frequently, or customers who are particularly sensitive to EMFs. Magnetic fields have been associated with childhood and adult leukaemia, adult brain cancer, female and male breast cancer, depression and suicide, Amyotrophic Lateral Sclerosis (ALS – a form of motor neurone disease), miscarriages, and other health problems (Neutra’s California report [2001](#), O’Carroll [2006](#), and other studies listed in the article ‘Powerfrequency EMFs and Health Risks’). They are likely to initiate electrical hypersensitivity in a vulnerable proportion of the population.

People whose work places are in these high fields may find their health is affected because their immune systems become less effective. Some research has found miscarriages more common in women who are briefly exposed to high magnetic fields in the course of their day (Li [2002](#)).

Because of the placing of these pillars, customers may occasionally have to spend some time by them, whilst waiting to pay for purchases. Customers who are pregnant may also be affected.

Children may be more vulnerable as their head as well as their body can often pass between the pillars, especially young children, walking through, or being pushed in a push chair.

A survey of different public facilities including a library and various commonly found high street stores in a city in 2006 revealed a wide variation in the field levels that could be found between and near the electronic article surveillance (EAS) systems in use. The fields were measured at 1 metre from the floor. At 1 metre away from the detectors the magnetic field levels varied from 0.1 microtesla ( $\mu\text{T}$ ) or less to well over 2  $\mu\text{T}$ . It is accepted internationally, even by the very conservative UK Health Protection Agency, that magnetic field levels of 0.4  $\mu\text{T}$  are associated with a doubling in risk of developing childhood leukaemia.

Various studies have demonstrated that magnetic fields higher than 1.2 microtesla prevent the anti-cancer drug Tamoxifen from working.

Electric fields were quite low at most places measured and seemed to be well contained.

If you work in an environment in close proximity to such equipment, you may decide to measure the field levels to ensure that you spend most of your time in magnetic field levels of 0.5 microtesla or less (preferably lower than this if you are pregnant, or have a compromised immune system) .

When out shopping, we recommend that children are kept as far as possible from these security systems. Care may be needed when paying for purchases, as checkouts can, at times, be quite close to the pillars.

In a comparative study of different electronic surveillance systems (Joseph [2011](#)), for the detection gates, the spatially averaged fields exceeded the reference levels for 5 of the 6 investigated systems. If the system type is unknown, we recommend keeping at least a metre away, to ensure you are exposed to less than the current reference levels which may be too high anyway.

Airport security systems have been found to interfere with implanted medical devices, with sometimes serious repercussions (Hours [2013](#)).

Electromagnetic interference effects were found on two implantable pacemakers and one implantable neurostimulator for exposure field strength comparable to actual walk through metal detector (WTMD) field strength. The observed effects were transient and the personal medical electronic devices returned to pre-exposure operation within a few seconds after removal from the simulated WTMD exposure fields (Guag [2017](#)).