Electromagnetic fields (EMF) and health issues

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Electromagnetic fields (EMF) are generated in the vicinity of power lines, mobile phones, mobile phone towers, broadcast towers and similar transmitters. Whether or not EMF can harm human health is a controversial issue. One EMF source to have received significant media attention is the high-voltage power line.

Various studies have comprehensively investigated power lines and cancers (such as leukaemia) to see if there is a causal link. Some researchers maintain that EMF generated by power lines have frequencies which are too low to influence living cells or harm DNA. Other researchers disagree. They suggest that EMF from power lines can cause significant changes in a biological system via electric fields induced in the body. Scientific standards have been developed to limit public exposure to power-frequency EMF, so that induced currents are below those that occur naturally in the body.

Two decades of debate

In 1979, researchers investigating childhood leukaemia in Denver, Colorado (USA) found an association between high-current configuration electrical wiring near the home and an increased risk of childhood cancer (Wertheimer and Leeper). This initial work, however, did not measure electromagnetic fields, relying instead on distances from power lines and the type of wiring. Since then, researchers across the world have investigated power lines. To date, serious limitations have been identified in nearly all studies on power lines and cancer. It has not been possible to confirm whether or not there is a real association between EMF and cancer.

UK findings are inconclusive

The National Radiological Protection Board (NRPB) in the United Kingdom recently released a report which found some evidence that EMF exposures higher than 0.4 microtesla (µT) are associated with a doubling of the risk of leukaemia in children. The review found no evidence of any increased risk of cancer in adults. However, the NRPB was careful to explain that no causal link was found, and recommended that further studies are needed. The evidence for the effect was inconclusive because the key studies in the review might have suffered from selection bias or random variation.

No proof of harm

Despite the evidence for an increased risk of leukaemia in children exposed to higher than 0.4µT of EMF, a range of experimental studies have failed to provide clear supporting evidence for the claim that EMF can be harmful to health, including:

- No clear evidence that EMF affects biological processes.
- No evidence that EMF can change living cells or is genotoxic (harmful to DNA).
- No convincing evidence from animal studies to support the claim that EMF increases the risk of cancer.

Victorian government policy

The Victorian Department of Human Services supports the view that current guidelines on EMF and power lines are adequate, since the EMF generated by power lines is well below the recommended maximum limit of exposure. However, it is advisable to avoid heavy exposure, if possible.

Where to get help

- Your doctor
- Department of Health, Radiation Safety Team Tel. 1300 767 469

Things to remember

- Electromagnetic fields (EMF) are generated in the vicinity of power lines, mobile phones, mobile phone towers, broadcast towers and similar transmitters.
- Whether or not EMF can harm human health is a controversial issue.
- Scientific evidence does not demonstrate a causal link between typical exposures to EMF and adverse health effects.
- The Victorian Department of Human Services recommends that heavy exposure to EMF be avoided, if possible.

References

Wertheimer, N. & Leeper, E. (1979), 'Electrical wiring configurations and childhood cancer', in American Journal of Epidemiology, vol. 109, no. 3, pp. 273-
Environmental health

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab

- Environmental health basics
- House and garden
- Chemical and metal pollutants
- Air and water quality
- Food quality and safety
- Technology and man-made risks
- Bushfires, floods and extreme weather
- Climate change
- Public health and disease control

Environmental health basics

- After a flood – returning home safely
  
  When returning to your home after a flood, take precautions to reduce the possibility of injury, illness or disease.

- Air pollution
  
  Around 75 per cent of Melbourne’s air pollution is caused by vehicle emissions.

- Allergies explained
  
  Allergy occurs when the body overreacts to a ‘trigger’ that is harmless to most people.

- Disease clusters
  
  Disease clusters are rare but can cause community concern about the possible effects of exposure to environmental hazards.

- Emergencies - floods
  
  You and your family should work out an emergency plan in case of flood.

- Food safety and storage
  
  High-risk food should be kept at 5 °C or below, and above 60 °C to avoid the temperature danger zone and food poisoning.

- Hazardous waste
  
  It can be dangerous to dispose of hazardous wastes through regular rubbish collections.

- Smoke and your health - science summary (video)

- Smoke and your health (video)

House and garden

- Asbestos and your health
  
  When asbestos fibres become airborne, people working with asbestos may inhale particles which remain in their lungs.

- Asbestos in the home
  
  Asbestos fibres breathed into the lungs can cause a range of health problems including lung cancer and mesothelioma.

- Bedbugs
  
  Bedbugs have highly developed mouth parts that can pierce skin.

- Edible gardens - saving water
  
  Saving water in the garden not only saves money, but also helps protect the environment.

- Gardening safety
Gardening is an enjoyable form of exercise, but you need to take care...

• Gas heating - health and safety issues
  If you service your gas heater regularly and use it correctly, it will be safe and economical to use...

• Greywater - recycling water at home
  When handled properly, greywater can be safely reused for the garden...

• Hazardous waste
  It can be dangerous to dispose of hazardous wastes through regular rubbish collections...

• Mosquitoes - protect your home a checklist
  Use this simple checklist and take action to prevent mosquitoes from entering your home. The best protection from mosquito-borne diseases is to avoid mosquito bites...

• Mould and your health
  The way to control indoor mould growth is to control the source of moisture...

• Passive smoking
  Passive smoking means breathing other people's second-hand tobacco smoke. Passive smoking increases the risk of serious illness in both children and adults...

• Pest control in the home
  If you use pesticides to control pests around the house, make sure you use as little as possible...

• Pest control services
  If you have pest problems that you cannot manage yourself, you may need to hire an authorised pest control operator...

• Sewage overflows at home
  Sewage contains harmful microorganisms such as bacteria, viruses and protozoa...

• Wood fires and breathing problems
  The smoke from wood fires can affect air quality and may affect people's health...

Chemical and metal pollutants

• Hazardous waste
  It can be dangerous to dispose of hazardous wastes through regular rubbish collections...

• Arsenic mine tailings and health
  Mine tailings near goldmines may contain high levels of arsenic...

• Cadmium
  Low-level exposure to cadmium over a long period of time may cause health effects because cadmium can accumulate in the body...

• Chemicals and spray drift
  Sprayed chemicals can drift over neighbouring properties or water sources, and can affect human health, animals or the environment...

• Copper chrome arsenic (CCA) treated timber
  CCA treated timber should not be used to build children's play equipment, patios, new garden furniture, decking or handrails...

• Farm safety and handling agrochemicals
  To reduce risks on the farm, use hazardous chemicals according to manufacturer guidelines or replace them with less dangerous options...

• Lead exposure and your health
  Long-term exposure to low levels of lead may produce symptoms including irritability, lack of energy and loss of appetite...

• Look after your health at harvest time
  Farmer health, wellbeing and safety are often neglected when facing the pressures of harvest. Simple safety measures can dramatically reduce the risk of injury and illness...

• Mercury exposure and poisoning
  Preventing or minimising exposure to mercury in your environment is the best way to reduce the risk of mercury poisoning...
Mercury in fish
Pregnant women and young children should limit consumption of fish that contain high levels of mercury.

Pest control in the home
If you use pesticides to control pests around the house, make sure you use as little as possible.

Pest control services
If you have pest problems that you cannot manage yourself, you may need to hire an authorised pest control operator.

Air and water quality

Air pollution
Around 75 per cent of Melbourne’s air pollution is caused by vehicle emissions.

Beaches and water quality
Water quality of natural water sources, such as beaches and rivers, can vary greatly. Keeping a lookout for poor water quality (such as water that is discoloured, murky or smells unpleasant) will help.

Cleaning up ash after a fire
After a fire, many homes may be affected by ash residue from smoke. This ash can be harmful, particularly for children or people with heart or lung conditions. This factsheet has tips and advice for.

Dental care - fluoride
Fluoride in your drinking water is like a constant ‘repair kit’ for your teeth.

Greywater - recycling water at home
When handled properly, greywater can be safely reused for the garden.

Harmful algal blooms
Some types of blue-green algae produce toxins that can harm humans and animals when swallowed, inhaled or touched. People and pets should not enter the water at locations affected by blue-green algae.

Healthy swimming (video)
We can keep our pools safe, healthy, and most importantly fun.

Legionnaires' disease
Legionnaires' disease is a rare form of pneumonia.

Look after your health at harvest time
Farmer health, wellbeing and safety are often neglected when facing the pressures of harvest. Simple safety measures can dramatically reduce the risk of injury and illness.

Passive smoking
Passive smoking means breathing other people's second-hand tobacco smoke. Passive smoking increases the risk of serious illness in both children and adults.

Swimming - keeping the water clean
There are simple steps for all visitors to follow to keep pool water clean for healthy swimming.

Water from natural resources
Drinking untreated water, such as creek water, bore water and sometimes even rainwater can lead to illnesses including gastroenteritis.

Wood fires and breathing problems
The smoke from wood fires can affect air quality and may affect people's health.

Food quality and safety

Avoid food poisoning - Cook Safe (video)
Learn how to prepare and cook food safely at home...

- Avoid food poisoning - Store Safe (video)
- Learn how to store food safely in your fridge at home...

- Eggs
  The humble egg is a powerhouse of nutritional goodness. Eggs are full of things your body needs. They are a great source of protein, antioxidants, vitamins and minerals (such as vitamin A, vitamin D...).

- Fishing - eat your catch with care
  People who fish in the Lower Yarra and Maribyrnong rivers need to be careful about eating their catch because of the risk of chemical exposure...

- Food allergy and intolerance
  Food allergy is an immune response, while food intolerance is a chemical reaction...

- Food - pesticides and other chemicals
  Chemicals such as pesticides, antibiotics and hormones are used to boost food production and ensure adequate food supply...

- Food poisoning - prevention
  You can minimise the risk of food poisoning by taking simple precautions...

- Food safety and storage
  High-risk food should be kept at 5 °C or below, and above 60 °C to avoid the temperature danger zone and food poisoning...

- Travel health and safety tips (slide show)
  We all love travelling to new and exotic places, but unfortunately illnesses and unforeseen events can ruin the trip of a lifetime. With a little effort, take a few of these simple precautions to make...

Technology and man-made risks

- Asbestos and your health
  When asbestos fibres become airborne, people working with asbestos may inhale particles which remain in their lungs...

- Cancer and asbestos
  Long-term exposure to asbestos is a cause of lung cancer and other serious illnesses...

- Electromagnetic fields (EMF) and health issues
  The effect of electromagnetic fields (EMF) from power lines and other sources is a controversial issue...

- Legionnaires' disease
  Legionnaires' disease is a rare form of pneumonia...

- Mobile phones and your health
  Using a mobile phone while driving greatly increases the risk of traffic accidents...

Bushfires, floods and extreme weather

- After a flood - returning home safely
  When returning to your home after a flood, take precautions to reduce the possibility of injury, illness or disease...

- Bushfire aftermath - safety tips
  Houses, sheds and other buildings or structures burnt in a bushfire can leave potential health hazards...

- Bushfire preparation advice
  Being prepared for a bushfire helps you cope better in an emergency...

- Bushfires and water tanks
  Debris, smoke, ash and dead animals from a bushfire can contaminate water tanks...

- Bushfire smoke
  Bushfire smoke can reduce air quality in rural and urban areas, and may affect people's health...

- Cleaning up ash after a fire

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After a fire, many homes may be affected by ash residue from smoke. This ash can be harmful, particularly for children or people with heart or lung conditions. This factsheet has tips and advice for:

- **Emergencies - floods**
  You and your family should work out an emergency plan in case of flood.

- **Extreme heat (video)**
  Extreme heat can affect anyone, including the young and healthy.

- **Heat stress and heat-related illness**
  Heat kills more Australians than any natural disaster. Find out how you can treat and prevent heat-related illness.

- **How to cope and stay safe in extreme heat**
  Know the effects of extreme heat, who is at risk and how you can prepare yourself and others.

- **Mould and your health**
  The way to control indoor mould growth is to control the source of moisture.

- **Sewage overflows at home**
  Sewage contains harmful microorganisms such as bacteria, viruses and protozoa.

- **Smoke from planned burns**
  Bushfire smoke can reduce air quality in rural and urban areas, and may affect people’s health. Planned burns are an important part of reducing the risk of bushfires.

- **Survive the heat**
  How to cope and stay safe in extreme heat.

- **Talking to children about bushfire risk**
  Children can be affected by information regarding bushfire risk and they may become concerned about issues of safety. Talking to children openly in a way that suits their age, while also involving...

### Climate change

- **Beaches and water quality**
  Water quality of natural water sources, such as beaches and rivers, can vary greatly. Keeping a lookout for poor water quality (such as water that is discoloured, murky or smells unpleasant) will help.

- **Climate change and health**
  The effects of climate change will have a serious impact on the physical and mental health of people around the world.

- **Climate change - what you can do**
  There are many things you can do to tackle climate change and live a more sustainable lifestyle.

- **Edible gardens - saving water**
  Saving water in the garden not only saves money, but also helps protect the environment.

- **Urban flash floods - FAQs**
  Urban flash flooding can happen quickly and without warning. Heavy rain causes runoff to collect in dips, car parks and roads, and there is a risk of contamination, injury and disease.

### Public health and disease control

- **Disease clusters**
  Disease clusters are rare but can cause community concern about the possible effects of exposure to environmental hazards.

- **Harmful algal blooms**
  Some types of blue-green algae produce toxins that can harm humans and animals when swallowed, inhaled or touched. People and pets should not enter the water at locations affected by blue-green algae.

- **Healthy swimming (video)**
  We can keep our pools safe, healthy, and most importantly fun.

- **Mosquitoes can carry diseases**

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You can reduce the risk of mosquito bites if you get rid of potential mosquito breeding sites around your home.

- Mosquitoes - mozzie-proof your holiday a checklist
  
  Use this simple checklist and take action to prevent mosquitoes from spoiling your holiday. Mosquitoes can carry diseases be prepared and avoid mosquito bites.

- Mosquitoes - protect your home a checklist
  
  Use this simple checklist and take action to prevent mosquitoes from entering your home. The best protection from mosquito-borne diseases is to avoid mosquito bites.

- Needlestick injury
  
  A needlestick injury means the skin is accidentally punctured by a used needle. Diseases that could be transmitted by a needle or needlestick injury include human immunodeficiency virus (HIV).

- Travel health and safety tips (slide show)
  
  We all love travelling to new and exotic places, but unfortunately illnesses and unforeseen events can ruin the trip of a lifetime. With a little effort, take a few of these simple precautions to make.

Related Information

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Related information on other websites

- High-Voltage Power Lines: Are Victorians at Risk?

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