

# Electromagnetic Fields Fact Sheet

## New Zealand Reviews

There are ongoing studies around the world looking into the effects of Electromagnetic Fields on the body.

## Interagency 6 Monthly Report

New Zealand has a committee headed by the Group Manager, National Radiation Laboratory that report to Government on a 6 Monthly basis and includes reviews of notable studies being carried out around the world. This committee is known as the Interagency Committee.

### ***Committee Composition***

“The membership of the Committee will include representatives from the following agencies, organisations, and sectors:

- Ministry of Health (including the National Radiation Laboratory)
- Ministry of Economic Development (including Energy and Communications)
- Ministry for the Environment
- Occupational Safety and Health Service of the Department of Labour
- public health service
- local government (Local Government New Zealand)
- academics/scientists
- consumers
- electrical industry (transmission and supply): up to two representatives
- telecommunications industry: up to two representatives.

The Ministry of Health will provide the Chair and secretarial support for the Committee.”<sup>1</sup>

## Conclusion of Interagency 6 Monthly Report November 2004

“Overall, the Committee considers that no new research has been reported which would cause it to change its previous advice to Ministers, and the Committee continues to endorse the application in New Zealand of exposure guidelines published by the International Commission on Non-Ionizing Radiation Protection.”<sup>2</sup>

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<sup>1</sup> Interagency Advisory Committee on the Health Effects of Electromagnetic Fields: Report to Ministers November 2004 p22

<sup>2</sup> Interagency Advisory Committee on the Health Effects of Electromagnetic Fields: Report to Ministers November 2004 p 4

## ICNIRP Guidelines

New Zealand currently complies with the exposure guidelines published in 1998 by the International Commission on Non-ionizing Radiation Protection (ICNIRP). “ICNIRP is an international scientific body which is recognised by the World Health Organisation for its expertise in this field. The ICNIRP guidelines have been widely adopted around the world...”<sup>3</sup>

The ICNIRP sets “basic restrictions and reference levels for occupational and public exposures to 50Hz electric and magnetic fields.

Exposure characteristics	Basic Restriction Induced current density (mA/m <sup>2</sup> )	Reference Levels		
		Electric field strength (Volts per metre)	Magnetic flux density (microtesla)	Magnetic flux density (milligauss)
Occupational	10	10,000	500	5000
General Public	2	5,000	100	1000

Note: all values are rms (root-mean-square, a kind of average)<sup>4</sup>

## National Radiation Laboratory- Recordings in MainPower Area

In late 2004 MainPower engaged the National Radiation Laboratory to carry out electric and magnetic field recordings at an existing 33kV to 11kV substation and in the vicinity of an existing 66kV overhead line.

A summary of the findings were as follows:

Location	Typical electric field (Volts per metre)	Typical magnetic field (Microtesla)
At perimeter of substation	50 and 100	0.4

Location	Maximum electric field (Volts per metre)	Maximum magnetic field (Microtesla)
Beneath 66kV line	73.6	0.21

“All readings were below the public reference levels of 5000 volts per metre and 100 microtesla recommended for the public by the International Commission on Non-Ionising Radiation Protection (ICNIRP). The ICNIRP recommendations were published in 1998, and are based on a review of the health effects research and include a safety factor.”<sup>5</sup>

<sup>3</sup> Interagency Advisory Committee on the Health Effects of Electromagnetic Fields: Report to Ministers November 2004 p5

<sup>4</sup> Electric and Magnetic Fields and Your Health- An information brochure on electric and magnetic fields associated with transmission lines, distribution lines and electrical equipment-National Radiation Laboratory, Ministry of Health 2001

<sup>5</sup> Measurement of extremely low frequency electric and magnetic fields at Bennetts and Southbrook substations, Rangiora-Technical report 34/04, National Radiation Laboratory Dec 2004.

Substation measurements were also taken at one-metre intervals along a line headed from the substation away into the neighbouring section. Results showed a substantial drop in readings with distance.

Location (metres from substation)	Electric field (Volts per metre)	% of ICNIRP Guidelines- (5,000Volts per meter)	Magnetic field (Microtesla)	% of ICNIRP Guidelines- 100 microtesla
1	99.6	2.0	0.24	0.2
5	70.2	1.4	0.11	0.1
10	41.4	0.8	0.07	0.1
15	17.3	0.3	0.05	0.1
20	8.7	0.2	0.03	<0.1
25	6.1	0.1	0.03	<0.1

Line measurements were also taken at one metre intervals perpendicular to the 66kV line. Results showed a substantial drop in readings with distance.

Location (metres from line)	Electric field (Volts per metre)	% of ICNIRP Guidelines- (5,000Volts per meter)	Magnetic field (Microtesla)	% of ICNIRP Guidelines- 100 microtesla
1	73.6	1.5	0.21	0.2
5	72.4	1.4	0.21	0.2
10	56.4	1.1	0.19	0.2
15	34.7	0.7	0.17	0.2
20	21.1	0.4	0.14	0.1
25	14.5	0.3	0.12	0.1

## Typical Electric and Magnetic Levels in the Home

Item	Location (distance from Item)	Electric field (Volts per metre)	% of ICNIRP Guidelines- (5,000Volts per meter)	Magnetic field (Microtesla)	% of ICNIRP Guidelines- 100 microtesla
Electric Blanket	On top of	N/A	N/A	0.1 to 0.5	0.1 to 0.5
Appliances	1 metre from	1 to 10	0.02 to 0.2	0.01 to 1.0	0.01 to 1
Household Background	N/A	2 to 30	0.04 to 0.6	0.03 to 0.3	0.03 to 0.3