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Original English Abstract (some explanatory terms added in *(italics)*)
of the German Report by the IFS Berlin on Russian EMF studies

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**Biological Effects on Humans of Electromagnetic Fields In The Frequency
Range 0 to 3 GHz
Results Of A Study of Russian Medical Literature From 1960 to 1996**

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There is a great deal of controversy about the biological and psycho-biological effects of electromagnetic fields on human beings. In the discussions of results of studies of western countries, which usually take place over a time period of only 1 to 3 years, Russian medical literature is neglected to a great extent. We analyzed about **1500 original works** of Russian medical literature from the years 1960 to 1996, in which the effects of electromagnetic fields on humans, animals, and plants were studied. The following evaluation summary has to do to a large extent with examinations carried out by company physicians involving several thousand industrial workers subject to effects from electromagnetic fields, radar stations, and high-voltage plants, where the periods of influence spanned a range of up to 20 years. The following symptoms are characteristic and appeared much more often and intensely in relation to the number of years of service by the worker in a plant

Objective findings:

Neurasthenia, neurotic symptoms
Arterial hypotension, bradycardia or tachycardia
Hypoglycemia
Vagotonic displacement of the cardiovascular system
EEG changes (deterioration of the alpha rhythm)
Hyperfunction of the thyroid
Potency disturbances
Passive tremor of the fingers
Disturbances in the hypothalamic-hypophyseal cortico-adrenal system
Digestive system disorders
Sleep disorders
Slowing down of the sensorimotor system
Hair loss

Subjective symptoms reported by the patients:

Exhaustion, weariness
Lack of concentration
Headache
Dizziness
Profuse outbreaks of perspiration
Spontaneous excitability due to hypotonic reaction conditions, especially under heavy work pressure
Heart trouble

A three-stage symptom complex was determined:

- **1st stage:**
Beginning symptoms which can last up to 3 years: without findings or a sympathicotonic reaction level
- **2nd stage:**

weakly pronounced symptoms lasting 3 to 5 years a reversal (*shift*) gradually occurs from the normal or hypertonic level to that of hypotonia.

■ **3rd stage:**

highly pronounced symptoms more or less distinct replications of the symptom complex mentioned above.

Whereas the symptoms at stages 1 or 2 can subside into remission, they become unremitting (*chronic*) at stage 3.

In extensive supplementary experiments on test animals, it was determined that the biological effects of electromagnetic fields depend on a number of factors:

Duration of subjection to influence
Individual sensitivity
Kind of electro-magnetic field
Dose

It also depends on the particular wavelength (when the dose is the same):

mm-waves cause hardly any biological effect at all,
cm-waves very little effect,
dm-waves a distinct effect,
m-waves a very highly pronounced effect.

It has also been shown from the results of animal experiments that electromagnetic fields (depending on the factors previously mentioned) trigger an unspecific biological reaction over a longer period of time (along the lines of Hans Selye) that later usually remain at a hypotonic level.

Comparisons were made between the symptom complex caused by electromagnetic fields and by CFS.

end of abstract