

# **EMF regulation and research in Latvia**

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**by**

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# CENELEC (EUROPEAN PRESTANDARDS)

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- ENV 50166-1

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELD -  
LOW FREQUENCY (0 Hz TO 10 kHz).

- ENV 50166-2

HUMAN EXPOSURE TO ELECTROMAGNETIC FIELD –  
HIGH FREQUENCY (10 kHz to 300 GHz)

In 1998 Latvia accepted the EC standards as its State standards  
LVS ENV 50166-1 and LVS ENV 50166-2

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# EMF regulation:

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The Ministry of Communication of the Republic of Latvia

The Ministry of Environment of the Republic of Latvia

The Ministry of Health of the Republic of Latvia

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# **Electronic Communications Office**

of

## **The Ministry of Communication of the Republic of Latvia**

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Radio Licenses

Radio Communication Equipment Assessment

List of Amateur Stations

Amateur examinations

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# **Latvian Environment Agency (LEA)**

**of**

## **The Ministry of Environment of the Republic of Latvia**

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is the governmental institution subordinated to the Ministry of Environment of the Republic of Latvia.

The aim of LEA is to implement environmental policy in the area of environmental data and information compilation, processing and dissemination.

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**Radiation Safety Centre (RSC)**  
**of**  
**The Ministry of Environment of the Republic of Latvia**

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is a governmental institution established on 9 July 2001.

RSC is subordinated to the Ministry of Environment and is responsible for radiation protection and nuclear safety.

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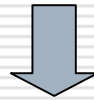
# The Ministry of Health of the Republic of Latvia

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**Agency of Public Health**



**Department of Environment Health**



**Chemical laboratory**



**Sector of Researches for factors of environment and risk**

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## **In results:**

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**Standards approved in 1998 were not implemented all this time due to the lack of legislative basis.**

**The Rules of the Cabinet of Ministers, regulating the use of standards in practice were not accepted too.**

**At present the Sector really checks up only base stations of mobile communications since it is needed by construction instructions.**

**Nobody controls all the rest EMF sources.**

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## **Conclusions:**

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- Latvia lacks a distinct policy with respect to the control of non-ionising EMF**
  - Latvia has insufficient control of the EMF level**
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# The studies of electromagnetic fields in Latvia

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**Medical**

**Ecological**

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# Skrunda's radar in Latvia

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*The impulse type Skrunda RLS for space control was built in the Venta River Valley, Western Latvia. It was composed of two sectors, each with receiving-transmitting apparatus that ensured the RLS function in four independent sectors.*

*The transmission parameters of the Skrunda RLS are: pulse power of each of four transmitters – 1.25 MW; pulse duration – 0.8 ms; duty cycle – 50; frequency range – 154-162 MHz; polarisation of the transmitting signal – horizontal.*

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**Magone, I.**

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The effect of electromagnetic radiation from the Skrunda Radio Location Station on *Spirodela polyrhiza* (L.) Schleiden cultures. *The Science of the Total Environment* 180(1):75-80. 1996.

*A sensitive clone of Spirodela polyrhiza (L.) Schleiden was used as a test organism. Plants were exposed to electromagnetic radiation (0.6 V/m to 2.6 V/m) for 1 to 5 days. Effects on vegetative reproduction and morphogenesis were observed.*

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**Balodis, V., Brūmelis, G., Kalviškis, K.,  
Nikodemus, O., Tjarve, D. and Znotiņa, V.**

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**Does the Skrunda Location Station diminish the  
radial growth of pine trees? *The Science of the Total  
Environment* 180(1):57-64. 1996.**

*70 permanent plots have been established in forest stands around the  
Skrunda radar and in control areas.*

*Tree core samples for dendroecological analysis were removed from 60 to  
100-year-old pine trees. The results demonstrated that the mean relative  
additional annual increment [Balodis et al.,1995] of pine had decreased in  
plots that received electromagnetic radiation from the Skrunda RLS  
(Fig.1). This decrease is significant ( $\alpha < 0.01$ ) 3-5 years after the  
beginning of operation of the RLS and continues to the end of the period  
of study.*

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**Selga, T. and Selga, M.**

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Response of *Pinus sylvestris* L. needles to electromagnetic field. Cytological and ultrastructural aspects. *Proceedings of the Latvian*

*Academy of Sciences*, Section B, 51(5/6):267-269. 1997.

*Adverse effects were reported due to a pulsed EMF (154-162 Hz) emanating from the Skrunda RS in Latvia. Observed leaf and cell anatomical changes and increased resin production in pine trees exposed to pulse levels of 0,4 mW/cm<sup>2</sup>.*

*The authors interpreted their observation as unspecific stress responses due to EMF from the radar.*

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## Liepa, V. and Balodis V.

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Monitoring of bird breeding near a powerful radar station. *Baltic Birds-7. Conference on the study and conservation of birds of the Baltic region.* Vilnius:39. 1993.

*Occupation of nest-boxes and breeding success of birds were recorded in 1992 at 6 plots, placed in a line at distances of 2 to 19 km from the RLS. Only 14% of the 600 nest-boxes were occupied by Pied flycatchers. Such an extremely low level of inhabitation differs significantly ( $\alpha < 0.05$ ) from the level observed in other parts of Latvia. The total amount of nesting Tits (Great and Blue) corresponds to that, recorded in other regions. Yet, the percentage of nest-boxes inhabited by Tits tends to correlate ( $r = 0.7$ ;  $\alpha < 0.05$ ) with the distance of a particular plot from the RLS. Apparently the adult birds choosing their nesting sites had reacted to the electromagnetic radiation as to a discomfort factor, different species being of different sensitivity to it*

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**Balode, Z.**

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Assessment of radio-frequency electromagnetic radiation by the micronucleus test in Bovine peripheral erythrocytes. *The Science of the Total Environment* 180(1):81-86. 1996.

*Blood samples were obtained from female Latvian Brown cows from a farm close to and in front of the Skrunda Radar and from cows in a control area. From each individual animal 2000 erythrocytes were examined for the presence of micronuclei. The counting of micronuclei in peripheral erythrocytes gave low average incidences, 0.6 per 1000 in the exposed group and 0.1 per 1000 in the control, but statistically significant ( $\alpha < 0.01$ ) differences were found in the frequency distribution between the control and exposed groups. Exposed cows with numerous micronuclei can indicate environmentally-caused genetical damage or abnormal haematopoiesis.*

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# **Brūvere, R., Heisele, O., Feldmane, G., Volrāte, Ā., Gabruševa, N. and Balodis V.**

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Effect of pulse radio-frequency radiation on the functioning of the immune system. *Proceedings of the Latvian Academy of Sciences, Section B*, 51(5/6):270-276. 1997.

*In total 108 persons living in the radiated zone, and 61 control individuals were investigated. The levels of immunoglobulins A, G, M were determined in peripheral blood sera by the single radial immunodiffusion method. The endogenic interferon titre in blood serum, and the ability of peripheral blood leukocytes to produce interferons after in vitro induction with phytohemagglutinin, double-stranded RNS and New Castle disease virus, were determined. The higher incidence of individuals with elevated (>3.5 g/l) immunoglobulin A levels in the exposed group was obvious ( $\alpha < 0.05$ )*

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**Kolodynski, A. and Kolodynska, V.**

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Motor and psychological function of school children living in the area of the Skrunda Radio Location Station in Latvia.

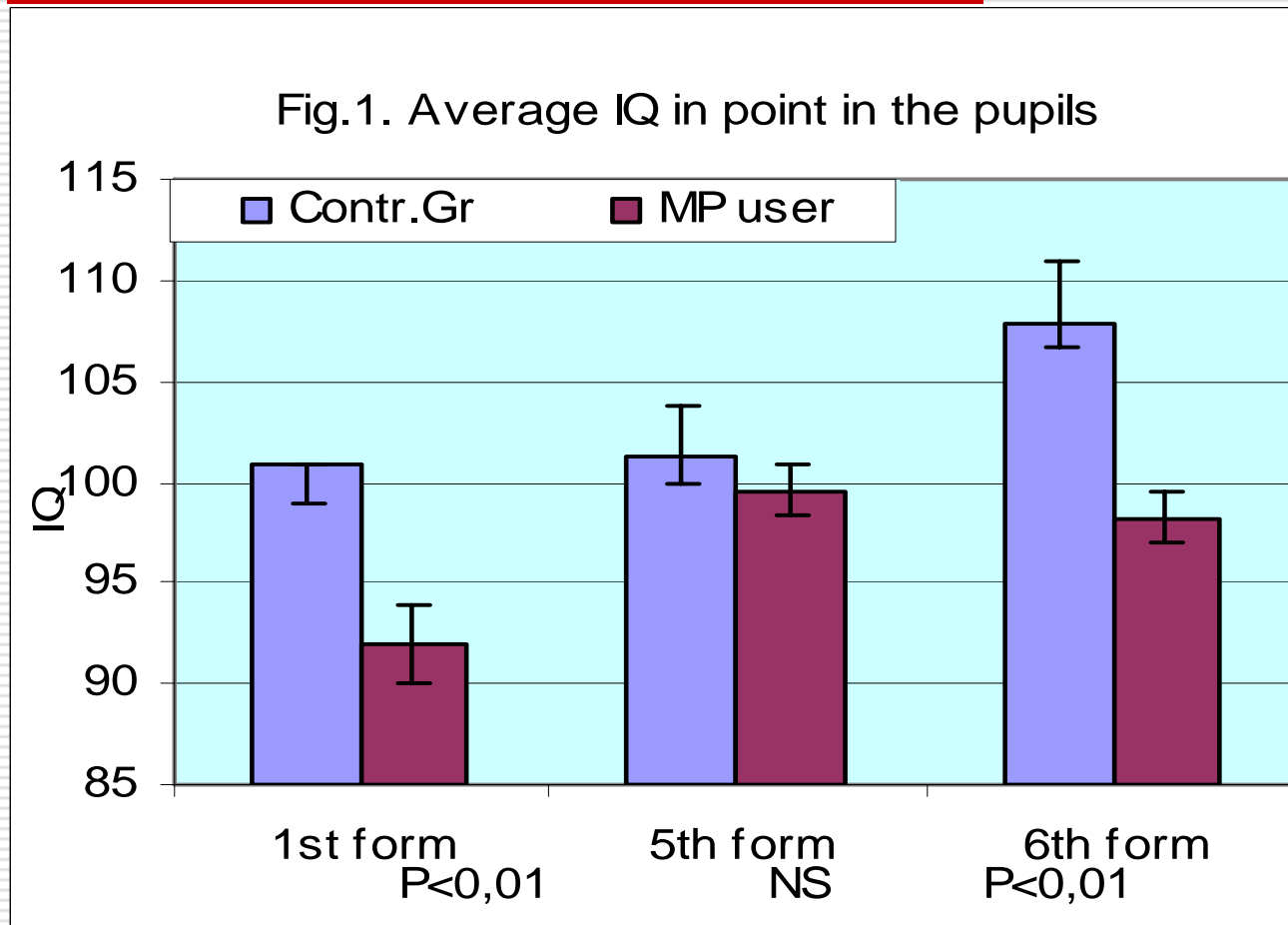
*The Science of the Total Environment* 180(1):87-93. 1996.

*The studies were performed on 966 children aged 9-18 years. Of these, 224 pupils live in directly exposed area. The studies were performed with psychophysiological diagnostic system 'Polytest-8802'. 11 test were used for each child.*

*The reaction time to both sound and visual stimuli in children living around Skrunda was somewhat longer than in control group children, for both girls and boys, although the differences are statistically only for younger groups. The duration of retention of keys in the pressed state was also significantly longer for all age in Skrunda, compared with control group. Memory and attention were considerably less ( $p < 0.05$ ) in the children living in front of the Skrunda radar.*

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# Potential Implications to Children Psychophysiological Functions Development from Mobile Communication Systems



# Potential Implications to Children Psychophysiological Functions Development from Mobile Communication Systems

