

Elaboration of the recommendations by the VROM State Secretary with regard to overhead high-voltage power lines

Introduction

This memorandum pertains to the recommendations by the VROM State Secretary as expressed in the letter of October 2005 with reference SAS/2005183118 to the Municipal and Provincial Executives, the IPO (Association of Provincial Authorities), the VNG (Association of Netherlands Municipalities), the electricity grid administrators and EnergieNed.

In order to implement these recommendations, a number of terms need to be explained in more detail and clarified. This will also guarantee a uniform approach.

Clarification and Explanation of Terms:

1. Magnetic field zone

The recommendations and this memorandum are restricted to the magnetic fields due to overhead high-voltage power lines¹. The strength of the magnetic field is expressed in microtesla (μT).

The magnetic field zone is the area which extends along both sides of the overhead high-voltage power line and within which the magnetic field is, on average over a year, higher than 0.4 μT or can become so in the future.

The maximum distance with regard to the heart of the line along which magnetic fields of more than 0.4 μT can occur, is often half the width of the magnetic field zone at the location, although the zone can also be asymmetric.

The magnetic field around an overhead high-voltage power line is dependent on a number of properties of the line. One important determining property is the line's capacity. This is, in turn, determined by the line's voltage level and the current that can be carried by the line. Because the current carried by an overhead high-voltage power line varies with time (for example depending on the time of day and the day in the year), it is best to calculate the annually averaged magnetic field strength. RIVM (National Institute for Public Health and the Environment) has drawn up Guidelines on how to perform this calculation. These Guidelines are enclosed with this memorandum and the most up-to-date version (in Dutch) can be found at <http://www.rivm.nl/hoogspanningslijnen>.

¹ This memorandum does not, therefore, apply to the fields caused by underground high-voltage lines, the distribution network and all kind of electrical equipment such as vacuum cleaners, razors and electric blankets and the fields generated by broadcasting systems such as those for mobile telephony or radio and television.

2. Indicative and specific zones

This memorandum differentiates between the ‘specific zone’ and the ‘indicative zone’ around an overhead high-voltage power line.

The ‘specific zone’ is the magnetic field zone calculated according to the Guidelines drawn up by RIVM (see Annex 2).

It is important to point out that the Guidelines assume fields as might occur in the future, in accordance with the design capacity² of overhead high-voltage power lines. The present fields may, therefore, be lower, but they can increase further towards the limit of the zone without modifications on the power line. It is only necessary to determine the specific zone around an overhead high-voltage power line whenever new developments occur near the line in a spatial sense, or if changes to the line are necessary (see also below for the description of the term ‘new situation’). In order to acquire, on the one hand, an insight into what is understood by ‘in the vicinity’ and, on the other hand, to avoid having to calculate all the current zones, KEMA (Testing, Research and Engineering Consultants to the Electric Power Industry), RIVM and TenneT have laid down indications of the distances around overhead high-voltage power lines within which magnetic fields exceeding 0.4 µT may exist. The areas between these distances are referred to as ‘indicative zones’.

The indicative zone is the magnetic field zone calculated on the basis of a number of conservative estimates.

The indicative zones are included for each overhead high-voltage power line on the <http://www.rivm.nl/hoogspanningslijnen> site.

3. Long-term exposure of children and sensitive designated uses

International epidemiological research has shown a statistical link between children aged up to 15 who live near overhead high-voltage power lines and an increased risk of leukaemia.

In this memorandum ‘children’ are people aged between 0 and 15.

Strictly speaking, the term ‘long-term stay’ could, on the basis of the research, be limited to *children* who live in the *magnetic field zone* around an overhead high-voltage power line. As a precaution, the term ‘long-term’ has been interpreted more extensively to include schools, crèches and day-care centres.

² The design capacities as included in the Capacity Plan at the end of 2005 by the Office of Energy Regulation of the Netherlands Competition Authority determine the calculation of the specific zone
http://www.dte.nl/nederlands/elektriciteit/transport/kwaliteitsplannen/Capaciteitsplannen_Netbeheerders.asp).

As regards ‘*long-term exposure*’, the assumption is *children* who live or spent time in schools, crèches or day-care centres that are located in the magnetic field zones.

Dwellings, schools, crèches or day-care centres are designated ‘*sensitive designated uses*’.

Locations at which children may be but where the duration of stay can be branded short in comparison to homes, such as sports fields, playgrounds, swimming pools, etc. are not, therefore, designated as sensitive designated uses.

4. New situations

The policy recommendations are restricted to ‘new situations’.

The following are regarded as ‘new situations’:

- a. New spatial plans, or changes to the existing ones;**
- b. New overhead high-voltage power lines, or changes to the existing ones.**

If a new *sensitive designated use* is to be realised in accordance with a prevailing spatial plan, this is designated an ‘existing situation’ and not, therefore, as a ‘new situation’. Existing rights remain intact.

The same also applies to existing overhead high-voltage power lines. To each line belongs a *specific zone* outside of which no annually averaged magnetic field of more than 0.4 μT occurs. By analogy with the situation in the case of new construction, in accordance with a prevailing spatial plan, it also applies that changes in accordance with the line’s original design are not designated as a new situation. In the calculation of the specific zone it must be taken into account that the design capacity of the line may be completely filled in the future. In addition it applies that, if a overhead high-voltage power line has to be adapted in a way not covered by the design specifications because, for example, there is a need for increased capacity, such must be possible if the *specific zone* does not increase as a result (for example through the implementation of additional measures).