

ELF magnetic fields and childhood leukemia

A case of precaution in the Netherlands

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Gezondheidsraad



Health Council report



- Power lines and childhood cancer
- Requested by Deputy Minister of Environment
- Published 18 April 2018
- <https://www.healthcouncil.nl/documents/advisory-reports/2018/04/18/power-lines-and-health-part-i-childhood-cancer>



What did we do?



- Update 2000 report
- Systematic search literature distance power lines / magnetic field strength
- Systematic quality analysis all original papers (including those in previous pooled analyses – Greenland, Ahlbom, Kheifets)
- Meta-analysis selected studies
 - Distance / magnetic field strength
 - Childhood leukemia / brain cancer / lymphoma



Results childhood leukemia



- Confirmation previous findings
- Distance: no clear association; ~1.2x increased risk <50 m
- Magnetic field strength: increased risk >0.3-0.4 μT , slightly higher than previous (~2.7) for studies with all addresses between birth and diagnosis (most complete)
- EPA classification: causal relation possible

Results other cancer



- Brain cancer:
 - Distance: no association (few data)
 - Magnetic field strength: slightly increased risk (~ 1.4)
 $>0.3-0.4 \mu\text{T}$
 - EPA classification: causal relation possible
- Lymphoma:
 - No analysis possible (few data)
 - EPA classification: not possible to conclude on causal relation

Recommendations



- Continue precautionary policy overhead power lines
- Expand to underground cables and transformer stations and transformer houses



Precautionary policy



- Issued in 2005
- New situations: prevent longterm exposure of children to $>0.4 \mu\text{T}$
 - In dwellings, schools, kindergartens
- New situation: not covered by existing spatial plans
- Question: what is longterm?
- HCN: 14-18 h/day during at least 1 year
- Calculation magnetic field zones for entire grid by National Institute for Public Health and Environment (RIVM)

RIVM interactive grid map

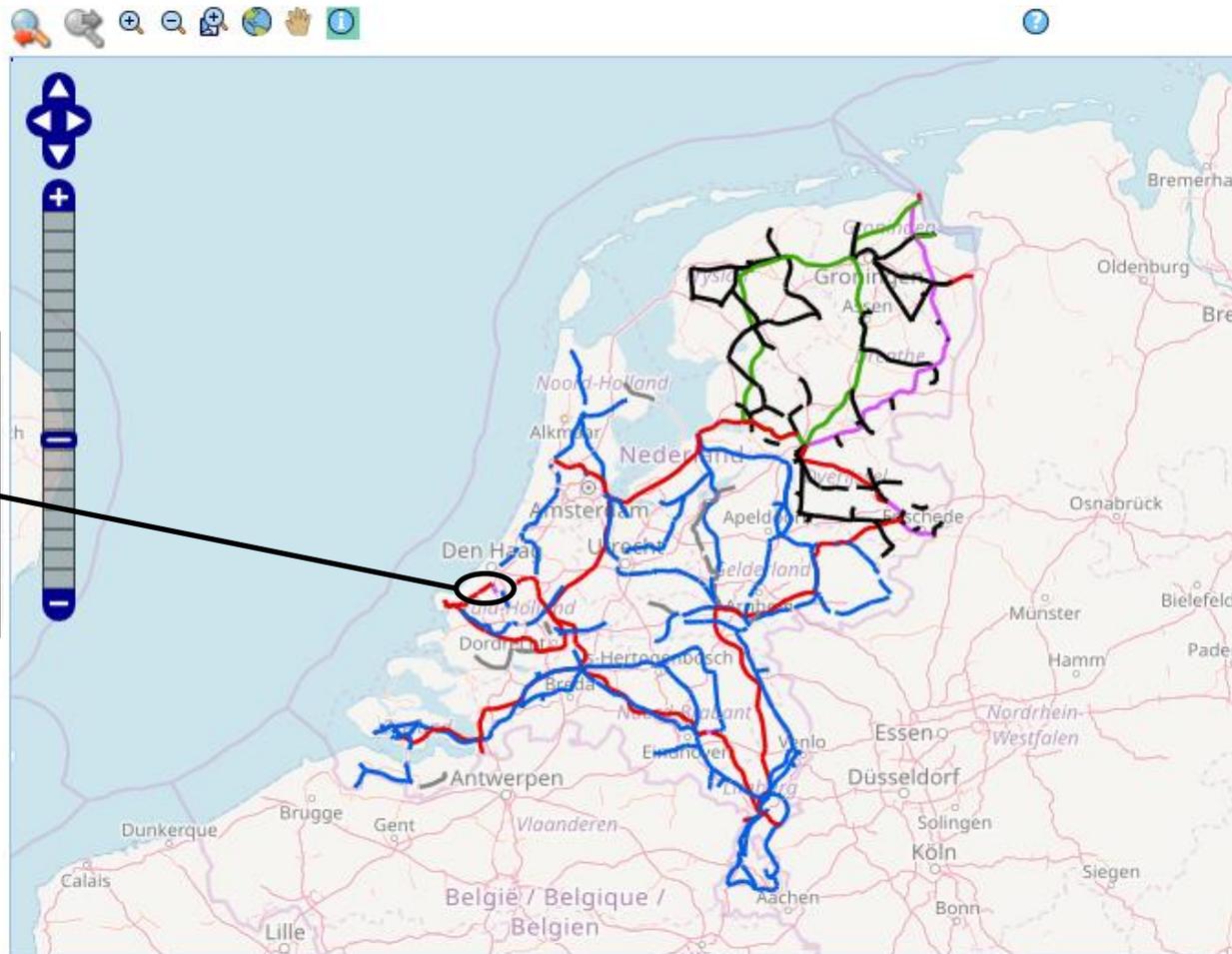


Spanning

- 380 kV
- 220 kV
- Combillijn
- 150 kV
- 110 kV
- 50 kV

Informatie

| | |
|------------------|------------------------|
| Lijnnaam | Wateringen - Westerlee |
| Spanning | 380 kV |
| Indicatieve zone | 2 x 95 meter |
| Netbeheerder | TenneT |
| Contact | 0800-8366388 |



In practice

- Houses still built near / under power lines
 - Covered by current spatial plans
- New lines constructed using slimmer, higher towers (Wintrack): tighter magnetic field zone



Other policy



- Government decision 2013:
 - Buy-out houses directly underneath 380-220 kV power line
 - Undergrounding as much as possible at end-of-life



Current situation



- Study into effects of expanding precautionary policy to cables, transformer houses
- Increased public awareness, concern
 - 3x opening item prime-time news



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