

MEASUREMENTS OF INDOOR MAGNETIC FIELDS IN APARTMENT BUILDINGS WITH IN-BUILT TRANSFORMER ROOMS

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Background and Aims Transformers in apartment buildings might represent an important source of magnetic field exposure for inhabitants. Previous research has indicated that classification of apartments into those directly on top or further away from the transformer room might provide a simple approach for classification into “high” and “low” exposure categories for use in epidemiological studies, as proposed for the international epidemiologic investigation of childhood leukaemia (TransExpo). However, transformer room and building layouts may differ across regions /countries and these results do not necessarily apply everywhere. We aimed at assessing magnetic flux density in buildings with in-built transformers in The Netherlands.

Methods: We performed measurements in 35 apartments in 14 buildings. We took spot measurements of the magnetic flux density in the apartments; 0.5m above the floor, 1.4m from corners and in the middle of each room.

Results: Spot measurements of magnetic flux density yielded a median of 0.17 μ T (IQR 0.06-0.45) in the apartments (n=7) located directly on top of transformer rooms, 0.09 μ T (IQR 0.05-0.15) in apartments on the second floor (n=5) and 0.06 μ T (IQR 0.04-0.10) in apartments located further away (n=23). Apartments placed adjacent to a transformer room had a median of 0.09 μ T (IQR 0.06-0.38). Maximum magnetic flux densities were encountered in an apartment on top and in an apartment adjacent to a transformer room with 5.7 and 18.8 μ T, respectively.

Conclusions: Placement of an apartment relative to the transformer room provided a maximum two-fold contrast in median exposure. Higher, very localized exposures were observed in apartments on top or adjacent to transformer rooms.

Whether or not magnetic field exposure from a transformer room adds considerable to an individual's exposure would therefore depend highly on where most time is spent in the apartment.