

Dynamics of changes in the level of contamination of soil with eggs of *Toxocara* spp. (Nematoda: Toxocaridae) in Poland over a 20-year period

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This study, conducted within 1994–2013 allowed to determine the distribution of *Toxocara* spp. eggs in the soil of different types of urban and rural areas in Poland, to establish the seasonal and multi-year dynamics of soil contamination with *T. cati* and *T. canis* eggs and to analyse selected factors influencing the level of soil contamination. Out of 3361 soil samples examined altogether, 14.7% contained the eggs and average density was 3.387 eggs/100 g of soil. The level of soil contamination was the highest in cities (frequency 16.9% and 4.55 eggs/100 g soil), lower in villages (frequency 13.2% and 1.83 eggs/100 g soil), and the lowest in towns (frequency 4.7% and 0.56 egg/100 g soil). Both, in urban and rural areas, the zones most heavily contaminated with *Toxocara* spp. eggs were in the proximity of houses (backyards) with frequency of 25.8% and density 7.75 eggs/100 g soil. Recreation areas (parks, playgrounds, lake beaches, and children's sandpits) were significantly ($p < 0.0001$) less contaminated than backyards with frequency at 9.3% and density 0.14 egg/100 g soil. In urban areas we found several times more eggs of *T. cati* than of *T. canis*, while in rural areas the opposite was true. The examination of one of the cities and one of the villages over two of consecutive years showed that within a year's time the number of eggs in a given area can significantly ($p < 0.0001$) change – either increase or decrease. In urban backyards from 1994 to 2002 the number of *Toxocara* spp. eggs dropped overall from 52.5% positive samples and 5.13 eggs/100 g soil to 12.5% and 1.72 eggs/100 g but there was no regular pattern of decline in the level of soil contamination (the number of eggs fluctuated). The monitoring of backyards in the city of Poznań showed that in the old part of the city *Toxocara* spp. eggs were significantly present in the soil in every month of the year; their number was lowest (16.1% positive samples, 2.63 eggs/100 g soil) in July and highest (50% positive samples, 48.21 eggs/100 g soil) in December. Not the surprisingly it was also found that in three closed backyards the soil contamination was twice as low (20.0 % frequency, 3.76 eggs/100 g) as in open backyards (42.6% frequency 19.71 eggs/100 g). Efforts undertaken to prevent and control zoonoses transmission from pets to people appear to have given visible results in the improvement of the sanitary state of the soil.