

Workshop „Pharmaceuticals in Soil, Sludge and Slurry” of the German Federal Environment Agency (18th June to 19th June 2013)

TITLE: Veterinary Pharmaceuticals in slurry, soils manured with slurry, ground water and vegetables

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Abstract:

Introduction and objectives

Veterinary pharmaceuticals are widely used in livestock husbandry. By application of slurry as fertilizer they enter the soil and possibly other parts of the environment. Due to the antibiotic effects of these compounds, an assessment of the potential risk for soil, ground water and vegetables is necessary.

Methodology approach

To assess the concentration of veterinary pharmaceuticals in slurry, soils, ground-water and vegetables three investigations to detect tetracyclines, sulphonamides and fluoroquinolones have been carried out in North Rhine- Westphalia. In 2008 soils fertilized with slurry and ground-water in the catchment area of these plots have been investigated at 21 sites. 34 slurries were taken and analysed in 2009. In 2011 vegetables from 20 sites which have been fertilized with slurry and soil samples from these sites have been analysed.

Results and conclusions

The antibiotics have been determined in 62 % of the slurries. In soils sulphonamides and fluoroquinolones could not be found. However tetracyclines have been detected in 12 topsoils with maximum concentrations of 13,6 µg oxytetracycline/kg, 44,4 µg chlorotetracycline/kg und 38,6 µg tetra- cycline/kg and in three soil samples of the layer 30 – 60 cm. These concentrations are below the value of 100 µg/kg soil (EMEA/VICH) which is used as an alternative. In ground-water tetracyclines and fluoroquinolones could not be detected; just in one sample one active ingredient of the sulphonamides, sulfamethoxazole, has been found. However no active ingredient of the sulphonamides could be detected in the soil from the corresponding farmland. No antibiotics have been determined in the vegetables analysed in 2011. The soil concentrations showed similar values as 2008.