



## **Sphere of influence of seepage of biologically treated waste water**

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In Austria approximately 14 percent of the households are not connected to public sewage system. Due to the low population density in some areas it is expected, that in future, for economic reasons, five percent of the households will not be connected to public sewage system. One possibility of sewage disposal in these areas is treatment in small sewage treatment plants. If there is no receiving water, infiltration of the treated effluent into the subsurface is one possibility under specific conditions.

To examine these conditions, model calculations of the spreading of the waste water in subsurface were carried out for typical hydrogeologic situations in Austria and for a range of chemical and hygienic substances. The unsaturated and saturated zone were represented separately by analytical model approaches. Monte Carlo simulations were performed where soil parameters, concentrations of the treated sewage, transport parameters and boundary conditions varied.

The results of the simulations show that for low permeabilities the chemical substances determine the critical spreading length. With increase permeabilities the hygienic parameters play increasingly role. This is because of the reduced filtering of viruses. Based on these results a procedure for estimating the sphere of influence of seepage of treated sewage is being derived that complies with the quality requirements of drinking water.

This work has been supported by the Austrian Ministry of Agriculture, Forestry, Environment and Water Management