

Abstract

The areas of Brittany (France) and Bohemian massif are very similar concerning their geological and morphological structure. Agricultural intensification in the post-war period has debased the groundwater quality in the both territories. The increase of NO_3 and other chemical element contents has occurred in waters. High nitrate concentrations in Coët-Dan (Brittany) experimental catchment occurs mainly in the shallow-aquifer compartment. NO_3 -depletion in the deep waters is explained partly by the mixing with old unpolluted water and partly by denitrification. The main factors which favour the autotrophic process at this locality are: presence of pyrite-bearing schists, water circulation in deep zones, presence of autotrophic denitrifying bacteria and possibility of catalyzing contributions of solid Pb and Cu forms occurring in the schists. The observed autotrophic denitrification kinetic is very high. The presence of heterotrophic denitrifying bacteria was also proved in the catchment. If the sufficient organic material is disposable, the heterotrophic denitrification process apparently takes place in reducing conditions with limited amount of oxygen. In Bohemian massif, the methodics of regional delimitation of territories with potential denitrification was applied on archive data from hydrogeological objects. The most of boreholes from the selected perspective area are situated in morphological depressions with fluvial and deluvial sediments. These deposits have the main water storage capacity together with subsurface weathered zone. Deep circulation of waters is rather rare. The most of these boreholes with potential denitrification has in common a presence of thicker impermeable layer with the content of organic matter. Reductive character of such a layer apparently affects geochemical conditions in the underlying aquifer, so the process of denitrification could exist in relatively shallow waters. For the confirmation of the really-proceeding denitrification and its influencing factors at the locality it would be necessary to realize other observations.