



Groundwater vulnerability in the District of Abidjan (Côte d'Ivoire)

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The District of Abidjan, located on the coastal sedimentary basin south of Côte d'Ivoire (West Africa) covers an area of 2,1 km². This sedimentary basin is composed of continuous groundwater aquifers in Quaternary, Tertiary and Upper Cretaceous rocks. Our study focuses on the unconfined Quaternary groundwater called the Continental Terminal which formations are composed mainly of lenticular stratification of coarse sands, clays, ferruginous sandstone and iron ore. This Continental Terminal aquifer is the main source of drinking water for the city of Abidjan. Indeed, the city of Abidjan is facing various pollution problems such as illegal dumping of household waste, waste oils garages, domestic and industrial wastewater, gas stations, public discharge Akouédo and the spill of approximately 500 tons of toxic waste from the ship "Probo Koala" the night of 19 August 2006. These toxic wastes have killed more than 10 people and several infections. The infiltration of these contaminants under the influence of rainwater in the basement is a serious threat to groundwater from the District of Abidjan especially as the rains are very strong in this part of the country. What would be the fate of pollutants such as organochlorines, hydrogen sulfide, sulfides and hydrocarbons contained in toxic waste, knowing that this aquifer is the main source of supply of drinking water to the city of Abidjan? It therefore seems necessary to study the vulnerability of groundwater of Abidjan District. The overall objective of this study is to assess the risk of groundwater contamination by organochlorines, sulfides, hydrogen sulfide and hydrocarbons. This project is to develop groundwater flow and contaminant transport models such as organochlorines models, hydrogen sulfide and sulfides with two digital codes, Visual Modflow and Feflow. Then several scenarios with different pollutants are finally made to realize maps of groundwater vulnerability from Abidjan to these contaminants.