The effects of a water purification method traditionally used in Sudan to treat turbid waters were studied with respect to removal of faecal indicator bacteria as well as selected enteric bacterial pathogens. Water treatment was performed with natural bentonite clays (rauwaq) from the banks of the Nile, and the technique employed corresponded closely to that used to clarify Nile water in Sudanese villages. Employing various types of waters a primary bacterial reduction of 1–3 log units (90–99.9%) was obtained within the first 1–2 h of flocculation. During the 24 h observation period bacterial multiplication in the water phase occurred consistently for Vibrio cholerae and test organisms belonging to the Enterobacteriaceae group, but not for Streptococcus faecalis and Clostridium perfringens. Some of the conditions influencing the hygienic effects obtained were examined. The potential and limitations of the method as a local alternative in water improvement are discussed.