BEST PRACTICE

Prevent dental fluorosis and skeletal breakdown and comply with drinking water quality standards.

PROJECT:
WOP Tanzania

TOPIC:
Water quality standards

COP:
Water Production

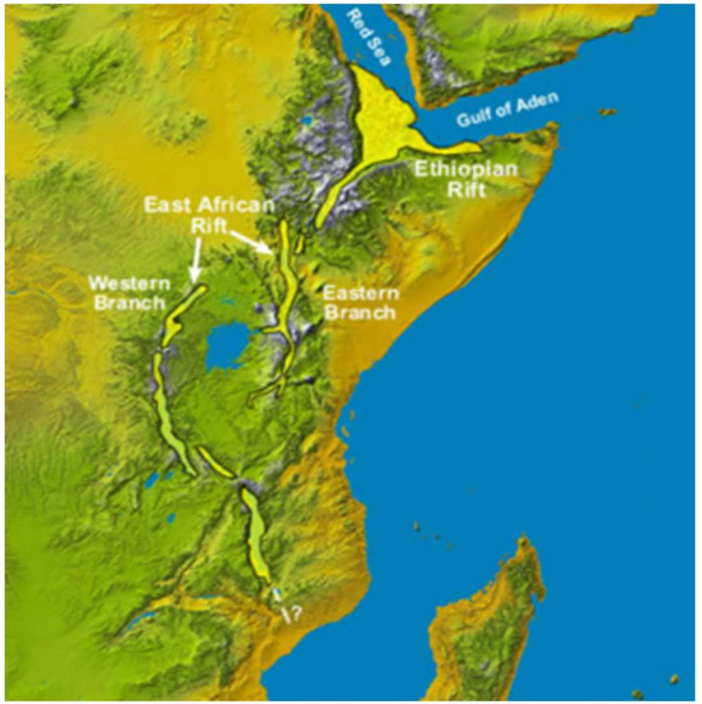
MORE INFORMATION:

CHALLENGE

Excessive fluoride in groundwater can be found along the entire East African Rift Valley throughout amongst others Kenya, Ethiopia, and Tanzania. High fluoride levels (up to 20 mg/L) create dental and skeletal fluorosis and may impose neurotoxic effects after long and persistent exposure. The success of the pilot testing for fluoride removal by the HAP technology now asks for its upscaling to ensure more people take benefit from it.Financing a full-scale plant is currently explored and may end the long lasting exposure of the local population to excessive fluoride levels in drinking water sources..

APPROACH

Removal of fluoride from raw water sources is technically possible but in Arusha, Tanzania there is a strong plea to develop a method that can be locally designed, operated and maintained at low unit cost. The innovative HAP technology has a proven track record in Kenya (Naivasha). Currently the technology is tested at pilot scale in Arusha prior to upscaling into full scale application. The HAP technology comprises the use of "indegionous" filter materials (Hydroxyapatite (HAP)-coated-limestone). Experiences in Kenya are most encouraging, not only from performance point of view but also its attractiveness for its ease in local operation and maintenance. AUWSA – Arusha is eager to develop operational human capacity to apply this technology for its people.



The East African Rift Valley with fluorosis prevalence

Effects of persistent exposure to excessive high fluoride levels in drinking water

RESULTS

The pilot plant was built with a treatment capacity of 6 m3/hr treating groundwater with 6 to 10 mg/L fluoride. After one year HAP proves easy to operate, has no water loss during filtration, has limited costs (OPEX/CAPEX) compared to alternatives (~ 0.08 $/m3 in the pilot), does not use chemicals, while manufacturing, installation, operation, and maintenance can be handled locally.

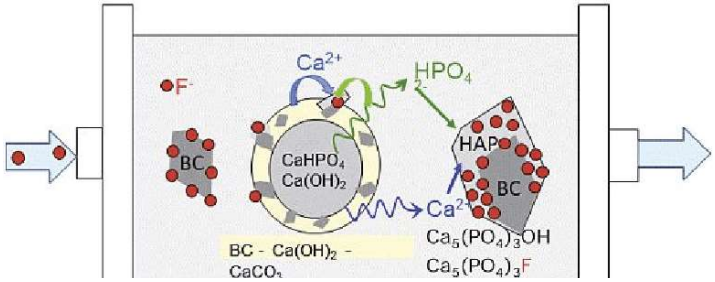
DOCUMENTATION

The Community of Practitioners has been established bringing together practitioners from water utilities all over the world. The Community works on UN GWOPA Workplace and currently has over 1000 active members. With expert support from the WaterWorX WOP program the 9 established expert CoPs accumulate valuable experiences and documents within its online library.

For further contact:
AUWASA staff: Alphonsina.Ntibingwa@vei.nl
Project manager Andries.vanEckeveld@vei.nl

SUCCES FACTORS

Main success factors were (i) the strong wish of consumers to address the fluoride health problems, (ii) the experiences obtained with HAP technology in Kenya, (iii) the open exchange of information with AUWSA, and (iv) the simplicity of the technology being able to be developed stand alone for boreholes.



OTHER

The Global Water Operators' Partnerships Alliance (GWOPA) helps water operators help one another to provide quality services to all. GWOPA is an international network alliance supporting water operators to engage in WOPs. WOPs are peer support exchanges between two or more water operators, carried out on a not-for-profit basis with the objective of strengthening operators' capacity and performance to provide better services to more people (www.gwopa.org).
WaterworX is a major Dutch WOP program engaging over 50 water operators in their joint effort to capacitate peers, strengthen their work processes, and ultimately improve performance (www.waterworxprogramme.com).