

Water treatment and water supply by reverse osmosis and ion exchange

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Company profile

Name:	WWWS World Wide Water Systems AG
Type:	none public limited company
Established:	2000
Capital stock:	Euro 600.000
Location:	Hamburg - Headoffice Erftstadt - production facilities
WWWS Egypt	Cairo – Nasr City
Field of application:	drinking water and industrial process water treatment
Products:	Membrane systems (RO, UF, NF, MF), Ionexchanger, Softener, Softener control valves, Filtrationplants, Mixed- and Desalination-plants, Components

Fresh water – key for health & industrial growing

Scarcity of good drinking water

- causes diseases (e. g. cholera, typhoid, dysentery)
- limits the development of countries and areas
- limits the industrial growing

Scarcity of fresh water – an example from India

Field test in Koppal District

MG Institute of Rural Energy and Development, Bangalore
Institute of Solar Technology, Prof. Schwarzer, Univ. Jülich

Why Koppal District?

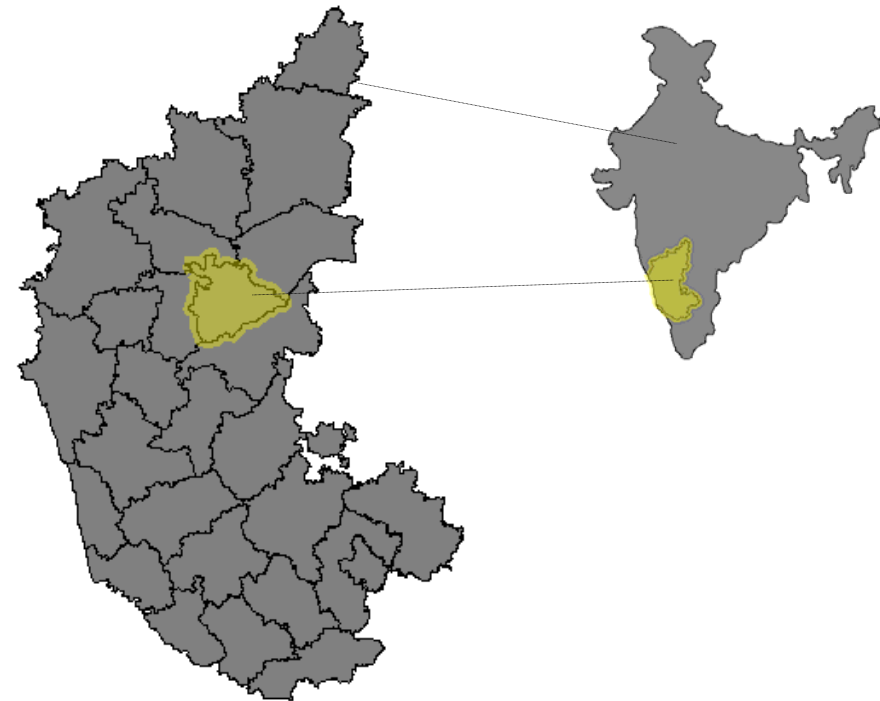
Koppal district / Karnataka is one of the highest affected areas in South-India

approx. 70% of all habitations suffer from a contamination of fluorides in their ground water sources.

drinking water sources are 100% based on groundwater

ground water is naturally contaminated with fluorides or arsenic, by the time of installation nobody tested for these anorganic minerals.

**the impact of a fluorides on the human organism can be realized after years only.
Max. permissable limit of flourides which is determined by the WHO and the indian government is 1,5 ppm.**



Example: Water supply in Karnataka

Problems

The actual problem is not the scarcity of water itself, but the scarcity of potable water due to bacteria and chemical contaminants

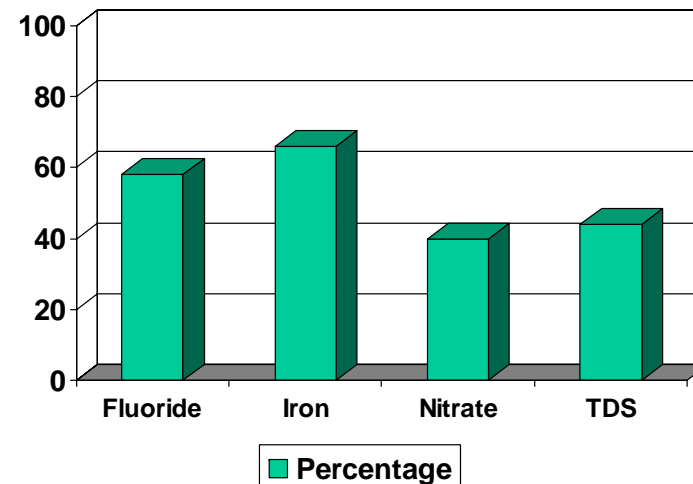
Bacteria and the natural presence of chemical contaminants such as fluoride, total dissolved solids (TDS) (= hard water) and nitrate are responsible for the lack of healthy water

Especially fluoride concentrations highly exceed the permissible limits in drinking water

In most cases fluoride contamination is natural and NOT due to environmental pollution

Fluoride causes several damages to the human body, more than 1,5 ppm fluorides causes tooth and bone-fluoroses

Water Contamination in Rural Karnataka



Source: MG Institute of Rural Energy and Development, Bangalore

Water sources - Karnataka



Fluoride- contamination



Dental fluorosis



Skeletal fluorosis

Thermal desalination by solar technology Installed System Teri- Institute, Bangalore



Solution: thermal desalination by solar technology
(eg. installed system in Nidasesi)



Water treatment systems offered by WWWS AG

Membrane system

- Reverse osmosis (potable water, industry)
- Ultra- , Nano- and Microfiltration

Ion exchanger

- demineralized water (pharmaceutical & semiconductor industry)
- mixed bed (glas industries)
- softener

Filtration plants

- iron and manganise removal
- multimedia filters (gravel filtration)

Seawater desalination

- by Reverse Osmosis
- small solar thermal systems (up to 3 m³/d)



Seawater desalination plant, 3 x 1.000 m³/day (total 11x1.000 m³/d), Sharm El Sheikh, A.R.E.



Seawater desalination plant, 1.500 m³/day (total 6.000 m³/d) , Sharm El Sheikh, A.R.E





BWRO - 60m³/h, Brackishwater treatment, Oman



RO system and duplex softener, Hospital Rotterdam



RO- 5 m³/h & Duplex softener



Nanofiltration 2 x 20 m³/h, Process water treatment



Double RO (2x20 m³/h), iron and manganese removal unit - Processwater treatment



**RO- 4 m³/h, container
Brackishwater, labour camp, Libya**

Conclusion

Water and wastewater treatment help

- **to reduce disease**
- **to keep and to increase peoples health**
- **to increase the food production**
- **to develop countries**
- **is necessary for industrial processes**
- **to reduce effluent from harmful industry production**
- **to protect our environment**

Thank you for your attention