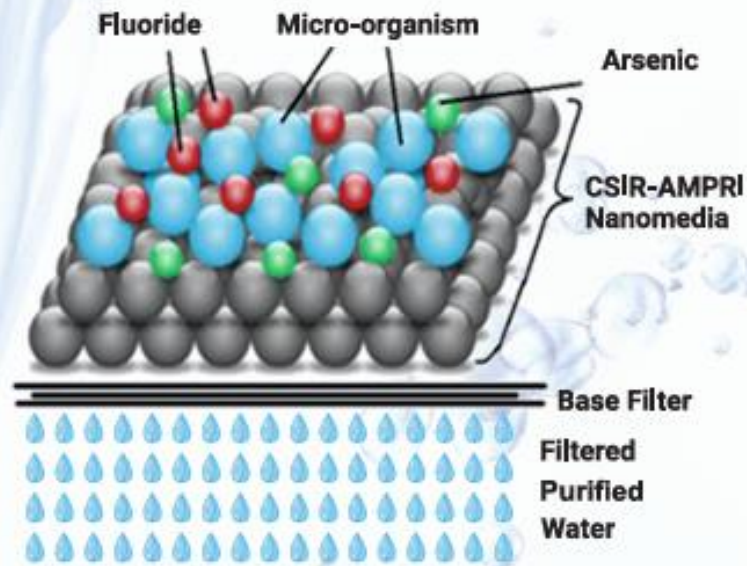




सीएसआईआर- एम्प्री
CSIR-AMPRI

Nano-adsorbent Based Filter for the Arsenic and Fluoride Free Drinking Water



Simple, Safe and Efficient Technology

for the Common People

DEVICE DEVELOPED

UNIQUENESS OF THE DEVELOPED DEVICE

- 💧 No electricity requirement
- 💧 High fluoride and arsenic removal efficiency
- 💧 Retains all essential mineral ions
- 💧 No wastage of water
- 💧 Cost effective, Usable in domestic and small community level
- 💧 User friendly technology
- 💧 Safe and sustainable device



Volume of Arsenic and Fluoride Water Can be Treated by One kg of CSIR-AMPRI Nano H₂O Care Media







Arsenic in raw water (TDS < 400 mg/l, pH 6.5 to 7.5)	Treated water (l/kg) in one cycle	Treated water (l/kg) after three regenerations
50 -100 µg/l	7000-12000	15000-30000
100-250 µg/l	3000-7000	7000 -15000

Fluoride in raw water (TDS <400 mg/l, pH 6.5 to 7.5)	Treated water (l/kg) in one cycle	Treated water (l/kg) after three regenerations
2.5 -5 mg/l	1600-4000	6500- 12000
5 -10 mg/l	750-1600	3000-6500

EFFECT OF FLUORIDE AND ARSENIC ON HUMAN HEALTH







FLUORIDE IN DRINKING WATER

Excess fluoride in drinking water causes severe health issues. According to BIS 10500 the permissible limit for fluoride in drinking water is 1.5 mg/l. Human body when exposed to water having fluoride more than permissible limit causes:

-   **Dental Fluorosis**
-  **Skeletal Fluorosis**
-  **Cancer**
-  **Genetic Damages**
-  **Neurological Problems**

ARSENIC IN DRINKING WATER

According to BIS 10500 the permissible limit of arsenic in drinking water is 10 µg/l. Presence of arsenic in drinking water in more than permissible limit leads to serious medical threats. Unfortunately, in India, around 50 million people are affected due to excess As containing drinking water. This causes:

-   **Cancer**
-  **Loss of Appetite**
-  **Asthma**
-  **Diarrhea**
-  **Thyroid**

CSIR-AMPRI NANO H₂O CARE MEDIA BASED FILTERS ; SOLUTION FOR FLUORIDE AND ARSENIC FREE DRINKING WATER

CSIR- AMPRI after an extensive research developed a nanomedia based on nanoalumina particles that possess excellent removal capacity for fluoride and arsenic. The developed nanomedia was then used to develop domestic water filter that provides treated water suitable for drinking and cooking purposes and possess fluoride and arsenic in concentration below the permissible limit. The treated water has quality as prescribed by IS 10500. The device developed is very simple, as nanomedia incorporated in to the conventional sediment removal filter through nanocoating methodology, from which water filter via passing through nanopores (pore size 3-4 nm) of the nanoparticle.

ABOUT CSIR-AMPRI NANO H₂O CARE MEDIA

- 💧 CSIR-AMPRI Nano H₂O care media is based on use of nanoalumina particles
- 💧 The developed nanomedia can be synthesized on bulk scale by a cost effective process
- 💧 Nanomedia has particle size of 10-20 nm
- 💧 The developed media is insoluble in water
- 💧 Possess surface area of ~250 m²/gm
- 💧 High fluoride and arsenic removal capacity
- 💧 No Al leaching
- 💧 Can be regenerated for 2-3 times
- 💧 Developed nanomedia can be incorporated in domestic and community filter
- 💧 Filters fluoride and arsenic in low contact time

CSIR-AMPRI Nano H₂O care media (15-20 mg/g) is ~10-15 times more efficient in fluoride adsorption compared to the traditionally available and used activated alumina (1-3 mg/g).

Fluoride Affected Areas



Village: Himmatgarh dist. Dhar (MP)
Village: Khanankhurd dist. Dhar (MP)

Arsenic affected areas



Village: Patakot
dist. Chhindwara (MP)

Village: Aasta
dist. Sehore (MP)

Village: Karkatpur dist. Gazipur (UP)

Antimicrobial water filters are in use at various states MP, UP, Delhi etc. and also in Patakot of MP. The filters are also been deployed in Karkatpur of Gazipur district providing arsenic free drinking water



For More Detail, Please Contact :

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