



CSIR-CENTRAL SALT & MARINE CHEMICALS RESEARCH INSTITUTE

HOLLOW FIBER MEMBRANE DOMESTIC FILTER FOR WATER CLARIFICATION AND DESALINATION

CURRENT ISSUES & BACKGROUND



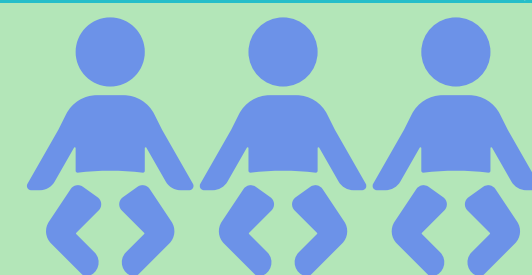
Only 82% of Indian population get access to water



Only 32% of population gets treated potable water



70 % of water resources in India are contaminated



1.5 Mn children under age of five dies due to drinking of contaminated water

STAGES IN THE DEVELOPMENT OF HOLLOW FIBER DOMESTIC FILTER/ CROSS-SECTIONAL VIEW OF SINGLE HOLLOW FIBER



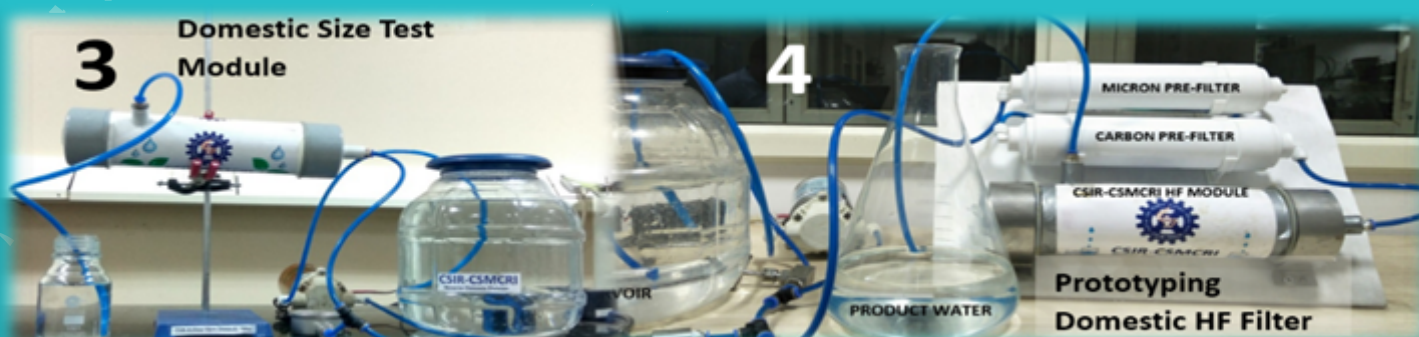
1

Hollow fibers



2

Test module of 30 fibers



3 Domestic Size Test Module

4

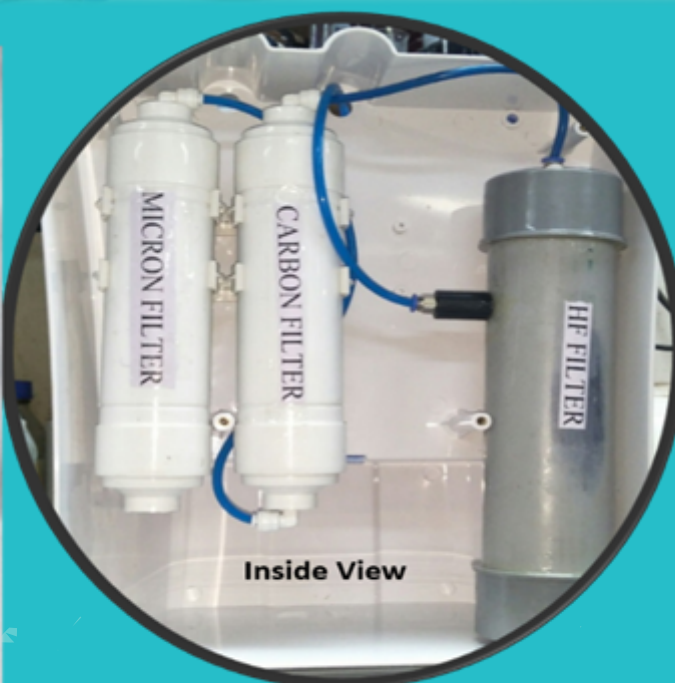
Prototyping Domestic HF Filter



5

Front View

Hollow Fiber Domestic Filter (Prototype)



Inside View



Polymer-inorganic hybrid ;
Outer Diameter = 1200-2450 μm
Inner Diameter = 600 - 1700 μm ;
Unit water Outflow rate= 1.5L/min; MWCO = 100kDa

Bacterial reduction level: 6 log
Virus reduction level: 4 log
NTU removal: 99%

WHY CSIR-CSMCRI PROTOTYPE?

AFFORDABILITY

Cheaper compared to Commercially available water purifier in the market

SCALABILITY & SUSTAINABILITY

Used in urban as well as rural areas, compactness & easy maintenance

UNIVERSAL

Make in India (Indigenous)
High water permeability allows treatment of turbid water containing suspended particles, pathogens and other harmful organisms

A.S.S.U.R.E.D.

RAPID

Higher productivity @ 1.5 l/min with the mechanical strength of HF membranes in the range from 40 – 70 psi

EXCELLENT

Based on simple gravity-assisted separator
No energy input needed

DISTINCTIVE

Ideal for scaling up at the community level
Very limited makers, early-bird advantage

*Reference - Dr Mashelkar's indices of ASSURED innovation framework (Affordability, Scalability, Sustainability, Universal, Rapid, Excellent, Distinctive)

MORE ABOUT CSIR-CSMCRI PROTOTYPE

PATENT STATUS

Indian Patent Filed
(IN Pat App:
202111045227)

TECHNOLOGY READINESS LEVEL

TRL 9

COMMERCIALIZATION STATUS

1st generation HF
already commercialized

PRESENT THRUST

The Know-How on "Manufacturing of Hollow fiber membranes & development of cost-effective, gravity-assisted hollow fiber domestic fiber operated without any electrical energy input" is an advanced technology and very limited entrepreneurs are expected in the market, hence a certain level of monopoly may be enjoyed.

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