

Uranium Removal from groundwater by INDION® USR

Introduction

The Ground water in India is an important source of drinking water. Studies have shown, many parts of India are affected with Uranium concentration above drinking water standards (30 ppb as per WHO & BIS 10500:2012). Elevated concentrations of natural uranium in well water are more likely to be found in drilled wells that obtain their water from the cracks and fractures of bedrock, rather than dug wells or surface water supplies. Reported concentration of Uranium in natural water is up to 700 ppb in India.

Product Description

INDION®USR (Uranium selective Resin) is a specialty media developed where uranium forms strong chemical bond on resin moiety. The uranium adsorbed on the resin surface does not leach out easily and the treated water consist uranium <30 ppb

Patent Application No: 202221064313

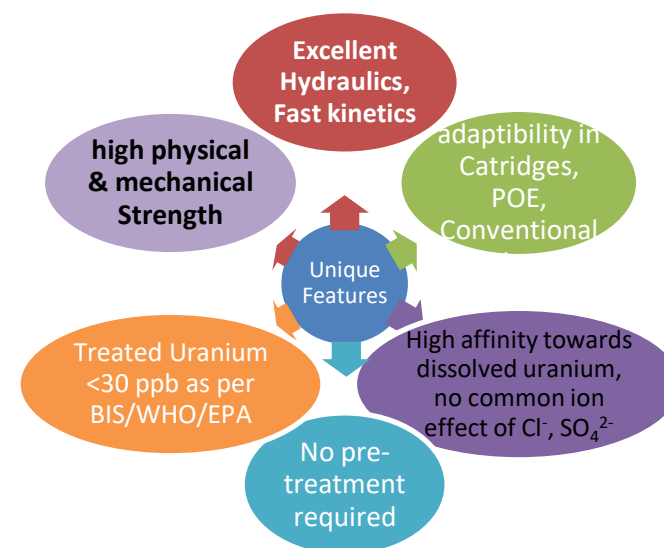
Permissible limits of Uranium for Drinking Water

EPA	30ppb
WHO.....	30 ppb
AERB (Atomic Energy Regulating Board, India)	60ppb

Features of INDION® USR

Considering average concentration of found U in Indian ground water, highly economic system with a resin life of 3-5 years can be designed.

Throughput (m3) produced by 1 ltr of USR against Inlet Uranium	
Inlet U, ppb	Throughput, m3
100	200-220
200	100-120
300	50-60
500	10-12



Advantages of INDION USR over other Conventional treatment

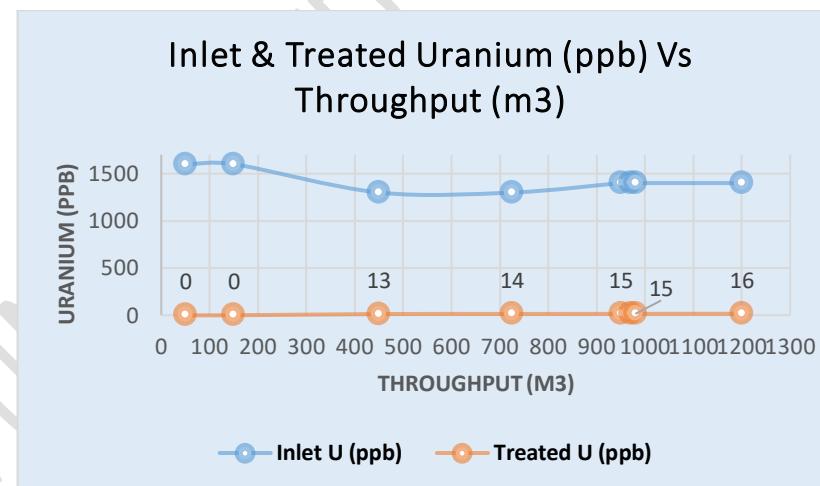
Parameter	IX Resin	RO	Zeolite – Adsorbent	INDION USR
Intermediate Regeneration	✓	x	✓	x
Waste Generation	✓	✓	✓	X
Effect of TDS	✓	x	✓	x
High Life	x	✓	x	✓

- ✓ Does not require intermediate regeneration like IX based resin
- ✓ No hazardous waste generation like IX & membrane process.
- ✓ No issue of reduced capacity post regeneration as faced in IX and zeolite based media
- ✓ No effect of competing ions as faced in IX and zeolite based media
- ✓ Zero Chemical Operating Cost as no chemical regeneration is required
- ✓ Low CAPEX as compared to RO

Field Performance of INDION USR at Badla Village

Field performance of media has been tested on field at Badla village , Punjab.

- Pilot plant operated at 1000 LPH flow rate.
- The results were tested by DWSS (Punjab) through ICP MS method.
- Post 1200 m3, the media still produces uranium <30 ppb.
- The Pilot plant performance was witnessed by BARC and well appreciated
- Uranium adsorption capacity exceeds 20 g/l



Disposal of Uranium loaded media: BARC/Ministry of Jal Shakti approved & safe procedure for disposal of uranium loaded resin is via cementization