

This issue spotlights the partnership of Ion Exchange (India) Ltd. (IEI) with government bodies and a NGO in two water treatment projects in Kerala and Madhya Pradesh for iron removal powerpump and fluoride removal handpump units respectively.

Sucessfully Installed

INDION® Community-based Iron Removal Plants in Kerala

IEI installed its first community-based iron removal powerpump plant at Zamzam beneficiaries group and Khizuparamba gram panchayat of Malappuram under 'Jalanidhi'. This project, for mitigation of iron contamination, is controlled by Kerala Rural Water Supply & Sanitation Agency (KRWSA).

The plant has a capacity of 6 m³/h and will be operated and maintained by IEI for one year.

Kerala faces a huge problem of iron contamination in ground water. A water analysis project conducted across the state to find the levels of iron contamination in various cities showed that Calicut, Thrissur, Palakkad and Malappuram are cities with particularly high iron content in ground water.



INDION Iron Removal Powerpump Unit

Developed

INDION® MnSR Manganese Specific Resin

IEI has developed INDION MnSR Manganese Specific Resin for treating manganese and iron dissolved in ground water, for domestic and industrial purposes. Processed to provide catalytic properties, INDION MnSR effectively

and economically removes dissolved manganese and iron from ground water. The media can treat feed water with concentration as high as 2.5 ppm, to reduce the level of manganese to <0.05 ppm and of iron to <0.3 ppm, to meet drinking water standards. INDION MnSR is an insoluble catalyst, which oxidises manganese and converts the soluble manganese into insoluble manganese dioxide, which can be filtered through the media. Backwash of the media removes precipitated manganese particles. INDION MnSR can be effectively used in handpump, point-of-entry (POE) and point-of-use (POU) units.

Sucessfully Commissioned

INDION® Fluoride Removal Handpump Units

IEI, with over four decades of experience in water and waste water treatment, has developed a state-of-the-art resin FR10 for fluoride removal. Using this resin, IEI has devised fluoride removal units for handpumps as well as larger powerpump units. IEI has also developed an activated alumina based domestic point-of-use defluoridation unit.

Madhya Pradesh is among the states worst hit with acute fluoride contamination in ground water.

At some sites the level of fluoride in ground water

is as high as 14 ppm as against the WHO specified limit of 1.0 ppm. Bind, Morena,



Children affected by fluorosis

Guna, Jhabua, Chindwada, Seoni, Mandla, Vidisha and Dhar face a severe problem of villagers suffering from fluorosis - a bone debilitating disease caused due to high level of fluoride in ground water. Fluoride in drinking water causes metabolic disorders, mottled teeth, dental caries (tooth decay), stiffened joints and brittle bones, paralysis and eventually death. It severely affects children and the aged. It has no medical treatment; prevention is the only cure. The government of Madhya Pradesh has taken this problem seriously. This gave IEI an opportunity to partner with **Madhya Pradesh Public Health Engineering Departments (PHEDs)** for installation of fluoride removal Units.



Villager suffering from fluorosis

Collaborative Effort

IEI received the first order for supply and commissioning 20 INDION fluoride removal handpump attachment units each in Jhabua and Dhar districts through Madhya Pradesh Laghu Udyog Nigam (MPLUN).

The installation was completed successfully with the help of a local NGO



INDION Fluoride Removal Handpump Unit

and involvement of panchayat bodies. **Fluoride contamination at some sites was as high as 14 ppm whereas the treated water from INDION fluoride removal handpump attachment unit was less**

than 1.0 ppm conforming to WHO standards. The operation and maintenance of units is being taken care by the local panchayats and NGO, who are also educating the village community on proper care and handling of unit as the villagers are ultimate users and beneficiaries.

Working Together for Improvements

The fluoride removal units were partially buried for better flow of water from the outlet of handpump to the unit.



Reinstalling the unit

However, after successful installation of units the PHED officials suggested a few changes for permanent fixture. Instead of submerging the units, a permanent structure of a pit with a concreted inner wall was constructed and the unit installed inside the pit on a hard surface. The NGO also carried out the following beneficial modifications:

- A control valve was provided in the outlet line of the unit by which the villagers can isolate the treated water and use it exclusively for drinking/cooking, and use untreated water for other purposes.

- The NGO is now constructing a platform for the unit to facilitate collection of treated water.

IEI, with help of the local panchayats and NGO, is educating the village community on the adverse effects of fluoride on health and the benefits of using fluoride removal handpump attachment units.

PHEDs from various districts of Madhya Pradesh are sending their requirements for treatment units to MPLUN. This project is a good reference for other states too, to alleviate the problems of fluoride contamination in ground water.