



# FILTER TECHNOLOGY REDUCES ARSENIC POISONING IN WEST BENGAL



Skin lesions are the number one indicator of arsenic poisoning and appear after a minimum exposure of five years or more. Lesions can turn into painful ulcers that may develop into squamous-cell cancer. Without medical attention, these lesions can be deadly.



Local drama groups are used to demonstrate and educate community members about the consequences of drinking untreated water

By Nancy J. Haws

The naked eye doesn't see parasites in water that cause stomach aches or diarrhea. Yet, obvious effects of arsenical dermatosis on the hands, feet and torsos (with crusty red lesions and open sores) of the villagers living in West Bengal, India, still shocks first-time viewers.

After years of exposure to toxic levels of arsenic in the drinking water, people in India and neighboring Bangladesh suffer the blatant physical characteristics associated with arsenic contamination inside and outside their bodies. The well-documented effects of arsenic accumulation in the human body include skin lesions and disorders of the circulatory and nervous systems. Arsenic poisoning also manifests itself as hyperkeratosis and hyperpigmentation in palms and soles, skin cancers as well as gastrointestinal symptoms such as nausea, abdominal pain and diarrhea.

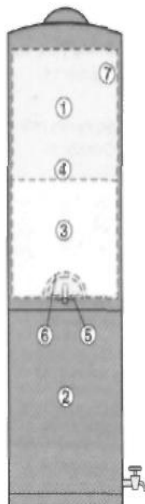
## Abundance of arsenic

The contaminated groundwater underlying the Bhagiarathi River in West Bengal and the Padma River in Bangladesh causes these grotesque health problems. Water analyses from hundreds of community hand pumps indicate arsenic concentrations exceed the permissible limit of 0.05 milligrams per liter (mg/L). Two West Bengal locations occasionally report amounts as high as 5.0 mg/L. As a result, the

arsenic-laden water creates a health crisis of devastating proportions.

The contaminated groundwater constitutes the only drinking source for two million people who use the hand pumps to draw water from the scattered wells. A couple of years ago, with the help of UNICEF, the state government started monitoring water quality from hundreds of hand pumps and identified a number from which water was not suitable for drinking. These contami-

This design has proved effective in removing deadly arsenic from well water.



1. Top chamber
2. Bottom chamber with tap
3. Activated alumina media
4. Perforated splash plate
5. Steel disc with opening
6. Steel mesh
6. Nylon bag

Figure courtesy of the Environmental Engineering Laboratory, Civil Engineering Department,

Bengal Engineering College

nated pumps were identified by painting the spout of the hand pump red. Although the painted red hand pump handle discouraged people from using them, it forced them to resort to digging their own water pits and waiting



Before and after: The arsenic removal pump (upper right) provides a healthier alternative to the hand-dug open pits filled with stagnant, filthy water.

Arsenic poisoning greatly affects



communities with low socio-economic status.