Young children collecting water from a dugwell installed by PROJECT WELL
Project Well provides affordable, sustainable arsenic-safe water through modified dugwells in West Bengal, India

2001 - 2009
States in India:
- Uttar Pradesh
- Bihar
- West Bengal:
- Other states are Assam, Jharkhand and Manipur
Health effects of drinking water containing arsenic:
According to Epidemiological studies:

1 in 10 person may die if exposed to arsenic concentration of 500 ppb

and

approximately 1 in 100 if the concentration is 50 ppb. In West Bengal many people are unknowingly exposed to this level and higher.

(WHO, USA standard is 10 ppb and in developing countries it is 50 ppb).
Studies from all over the world have established that long-term exposure to arsenic causes:

> Skin Lesions and Skin Cancer;
> Internal Cancers – Bladder, Lung, Kidney, Liver;
> Neurological Effects;
> Hypertension and Cardiovascular Diseases;
> Pulmonary Disease;
> Liver disease;
> Peripheral Vascular Disease;
> Diabetes Mellitus.
The latest studies out of Chile show that exposure to arsenic during childhood or in the womb causes **childhood liver cancer**—usually a very rare disease in children.

Exposure to arsenic during childhood or in the womb has also been found to cause many diseases later in adulthood, such as **lung cancer**, **bladder cancer**, **kidney cancer** and **bronchiectasis** (a lung disease).
Skin lesions

Source: Juli S Das Xavier, Ramnagar, 2002
Mr. Nibas Ray, 56, had his right arm amputated up to the elbow as a result of arsenic exposure. Mr. Nibash had already lost his son, Dhiman Ray, 25, to arsenic poisoning.
Solution>>

Modern dugwells that are also chlorinated
SHALLOW, CONCRETE DUGWELLS ARE A GOOD SHORT-TERM SOLUTION THAT IS EASILY ADOPTED BY THE COMMUNITY
TRADITIONAL DUGWELLS: used bucket-and-rope system that was a major source of bacterial contamination.
MODERN DUGWELLS: measures taken to avoid any bacterial contamination
A new design was introduced in 2008 that makes water available throughout the year.
Visit the video page to see the video of dugwell construction in 2009 at Gaighata
See the video on tasting dugwell (PW68/JLS1) water during a routine dugwell site inspection on June 18, 2009
Training dugwell users to apply chlorine themselves

Measuring out the disinfectant solution that contains 5% chlorine

Learning to understand the chlorine dosing chart
In August 2006, Project Well began weekly health meetings. In November 2006, Project Well gave out earthen filters to improve the taste of dugwell water.
Donors to Project Well visited the dugwells of Gaighata in April 2008
Project Well has provided work for many in the community, such as:

1) diggers to dig modern dugwells
2) potters who make earthen filters used to remove chlorine odors and organic matter found in some dugwells.

Pottery: a family trade

A team of diggers
The founding members of Project Well

Dr. Meera M Hira-Smith, Geography, Director
(Researcher, University of California, Berkeley, USA)

Dr. Timir Hore, Hydrogeology, Advisor
(Vice President, C&H consultant, New Jersey, USA)

Mr. Protap Chakravarti, Geology, Advisor
(ex-director of Geological Survey of India)

Prof. Allan H Smith, Epidemiology, Advisor
(Professor, University of California, Berkeley, USA)
Other members and advisors of Project Well

Project Well advisors are from many disciplines

- Prof. Richard Wilson, *Physics, Harvard University, USA*
- Cynthia Green, *Environmental Chemistry*
- Dr. Xavier Savarimuthu, *Environmental Science*
- Jane Liaw, *Arsenic Health Effects Research group, University of California, Berkeley, USA.*
- *Mr. Saumendra Nath Banerjee, Geologist*

Former Advisors

* Mr. D.K Chakraborty, Civil Engineer, LKP
* Dr. D. N. Guha Mazumder, gastroenterologist, IPGME&R
* Dr. Dipankar Chakraborty, Chemistry SOES
* Dr. S Banerjee, Chemistry, CSME

Members of local West Bengal partner

*Aqua Welfare Society*

- Mr. Amal Ghosh, President,
- Mr. Uday Mukherjee, Secretary
- Mrs. Alpana Hira Davidson, Treasurer

Donors: Individual donors, Mosaique of Quebec, Canada, Rotary Club, Fogarty International and Blue Planet Run Foundation
Prof. Brenda Eskanazi of UCBerkeley SPH, visiting a dugwell in 2008

Patricia (volunteer) of Harvard SPH, conducting a health survey in the dugwell area in 2004
Since women are responsible for the kitchen and collecting water, they play a big part in the Community-Based Groups.
Women carrying water in earthen pots in Rajasthan
There are 112 PROJECT WELL DUGWELLS in WEST BENGAL, INDIA as of 2009.