Queen's University scientists behind safer drinking water in US

March 1 2011

Dr. Bhaskar Sen Gupta of Queen's University Belfast, whose pioneering technology, which is transforming the lives of millions of people in Asia, is now being used to create safer drinking water in the United States. The award-winning system -- Subterranean Arsenic Removal -- removes arsenic from groundwater without using chemicals. It was developed by a team of European and Indian engineers led by Dr. Sen Gupta. The technology, based on the principle of oxidation and filtration processes, is already in use in six plants in West Bengal. And the technology has now been successfully tested in the United States, in a rural community outside Bellingham, in Northwest Washington State. Credit: Alan Richardson

Pioneering technology by scientists at Queen's University Belfast, which is transforming the lives of millions of people in Asia, is now being used to create safer drinking water in the United States.

The award-winning system – Subterranean Arsenic Removal – removes arsenic from groundwater without using chemicals. It was developed by a team of European and Indian engineers led by Dr Bhaskar Sen Gupta in Queen's University School of Planning, Architecture and Civil Engineering.

The technology, based on the principle of oxidation and filtration processes, is already in use in six plants in West Bengal.

And the technology has now been successfully tested in the United States, in a rural community outside Bellingham, in Northwest Washington State, where high levels of arsenic in the water had previously caused challenges for local residents.

Jeremy Robinson, a member of the Washington State installation team, said: "We first read about the SAR technology on Wikipedia. Initially, it seemed too good to be true. Arsenic is a significant problem for many of the wells in our area. None of the conventional approaches for arsenic treatment have worked well for us. But,
once we recognised the advantages and elegance of the SAR approach, we started preparing to test it here.

"With the generous help offered to us by Dr. Sen Gupta and Queen's University, we are now under way. Our early results have been very promising. We started the trial in January, on an abandoned well with alarmingly high arsenic levels. After three weeks, the arsenic level had dropped substantially. And now, after seven weeks, we are seeing arsenic levels at or below the US Environmental Protection Agency limit."

Dr Sen Gupta, who visited Washington State to oversee the installation, said: "I'm delighted that the Washington State plant testing has gone to plan. The key aspects of this life-changing technology are its affordability and simplicity of installation and operation. The cost of

setting up a plant to produce up to 6,000 litres of water a day averages under £2,500 ($4000) – less in the developing world – and the operational cost is £14 a month ($20).

"The estimated life of each plant is about 20 years without any mechanical maintenance, and the system is operated, quite simply, by the pressing of an electrical switch."

The technology has already attracted interest from other parts of the United States, and plans are now advanced for SAR plants to be set up in Cambodia, Vietnam and Mexico in the next six months.

The work of Dr Sen Gupta's team has won accolades from around the world. In November Queen's University was awarded the prestigious Times Higher Education Outstanding Engineering Research Team of the Year title.

The judges said: "Engineering at its core is about solving critical problems. The team from Queen's has exemplified this, finding an innovative solution to overcome arsenic contamination of groundwater and thus improve the quality of life in rural communities."

Dr Sen Gupta was also awarded the St Andrews Prize for the Environment and the World Bank Innovation Fair Championship in Cape Town in 2010.

Provided by Queen's University Belfast