CASE STUDY

Arsenic Free in Argentina

Remote Andean town reduces arsenic with new treatment system

San Antonio de los Cobres, a community of 6,000 residents in the Andes Mountains in Argentina, faced a challenging arsenic concentration of up to 290 ppb in its water supply. It needed a solution to reduce the level to below the maximum contaminant level set by the World Health Organization (WHO) of 10 ppb. In 2006, His Heart Missions, a nonprofit organization dedicated to international community service projects, contacted AdEdge Water Technologies to design and manufacture an arsenic treatment system to augment the existing water treatment system to reduce the arsenic concentrations to less than 10 ppb.

The system consists of a two-step process to remove arsenic using coagulation filtration followed by a polishing step with adsorption technology. The two treatment units are manually operated and capable of treating a flow rate of up to 200 gallons per minute. The first step of the process utilizes ADGS+ filtration media with the aid of iron augmentation. ADGS+ is a silica-based media with a hybrid manganese dioxide component. This technology efficiently co-precipitates and removes arsenic from water as it passes through the fixed media bed.

The process uses a continuous feed of an existing sodium hypochlorite injection and a new ferric chloride addition to achieve the designed treatment goals. Both the sodium hypochlorite and the ferric chloride are injected far enough ahead of the filters to allow the chemicals to mix with the raw water and have adequate contact time to oxidize the arsenic, iron, and manganese.

STATS

Customer: San Antonio de los Cobres

Location: Argentina

Challenge: Reduce high arsenic levels

Flow Rate: 200 gpm

Products:

- ADGS+ coagulation filtration media
- E33 adsorption media
- ADIN chemical feed system

Results: Since startup in November 2013, arsenic levels have been lowered to less than 10 ppb.

For more information on these solutions, visit us online at www.adedgetech.com

Engineers provide operator training for the new arsenic treatment system.

CASE STUDY

The coagulation filtration unit consists of two 60-inch diameter carbon steel vessels in parallel configuration, including flow control valves, flow meters, pressure gauges, and sample ports. The unit receives influent water with arsenic concentrations of 220 ppb and produces pretreated effluent water with arsenic concentrations of 11 ppb.

Pretreated water from the coagulation filtration unit enters a polishing process with adsorption technology utilizing Bayoxide E33 granluar ferric oxide adsorptive-based media. The media has a high capacity for arsenic and is delivered in a dry, non-crystalline form. It is robust and easy to handle, is stored and shipped dry, and has received NSF approval for use in drinking water systems under Standard 61.

The adsorptive treatment system consists of two 54-inch diameter carbon steel tanks in parallel configuration. This unit also includes flow control valves, flow meters, pressure gauges, and sample ports. The unit polishes the pretreated water, reducing arsenic levels from 11 ppb to non-detectable levels. Both treatment systms are modular and manually operated to accommodate the design flow of 200 gpm.

In November 2011, AdEdge engineers traveled to San Antonio de los Cobres to start up the system and train locals in the operation and maintenance of the new filtration plant. On November 5, 2011, arsenic-free water flowed down the pipeline to every man, woman, and child in this remote Andean town.

Since startup, water quality test results show the system is operating successfully and reducing arsenic levels to less than 5 ppb. Helping Hands for Water, a non-profit organization started by a group of AdEdge employees, coordinated the logistics and communication between AdEdge, His Heart Missions, Aguas del Norte, and the San Antonio de los Cobres municipality.

The superintendent of San Antonio de los Cobres presented His Heart Missions and AdEdge an official declaration of thanks and recognition of the significance of the arsenic treatment system donation in providing a better quality of life for the citizens in his community.