



ArsenX^{np} Point of Entry Program



Assuring Arsenic Elimination

ArsenX^{np} Point of Entry Program

- Assures arsenic-free water to protect your health
- Assures safe disposal of residuals to protect the environment
- Assures easy installation to eliminate complexity
- Assures easy maintenance to reduce problems
- Assures flexibility to fit most POE system needs
- Assures maximum economic use to reduce costs



Why a Program is Important

- An adsorbent is not enough when your health is at risk
- Arsenic is toxic - even at low concentrations over a long time
- The only way to be certain a system is working is to continually test
- There exists no reliable field test at low levels
- What do you do with the media when it is expired?



SolmeteX introduces the only **program** that provides the complete package:

- Fully instrumented hardware
- ArsenX^{np} – an advanced adsorbent media
- Continuous sampling
- Safe disposal of spent media



The Program

The program consists of three parts

- Hardware/Media
- Sampling/Testing/Historical Records
- Recycling/Disposal

The Hardware

- Two ArsenX^{np} Columns
 - Built in back-up
- Control Block with
 - Flow monitor and totalizer
 - Three pressure gauges
 - Three sample ports
- Bypass valve



The Instrumentation



Simple, yet complete

The Media

ArsenX^{np} is an advanced adsorbent

- Nano-particles of Iron
 - Selective for arsenic
 - High Surface Area = High Capacity
- Imbedded in a Polymer Material
 - Physically robust
 - No Backwashing
 - No pressure increase
 - No dust
 - Uniform bead size provides better flow patterns – reduces risk of channeling
 - Rapid kinetics = smaller systems = less waste



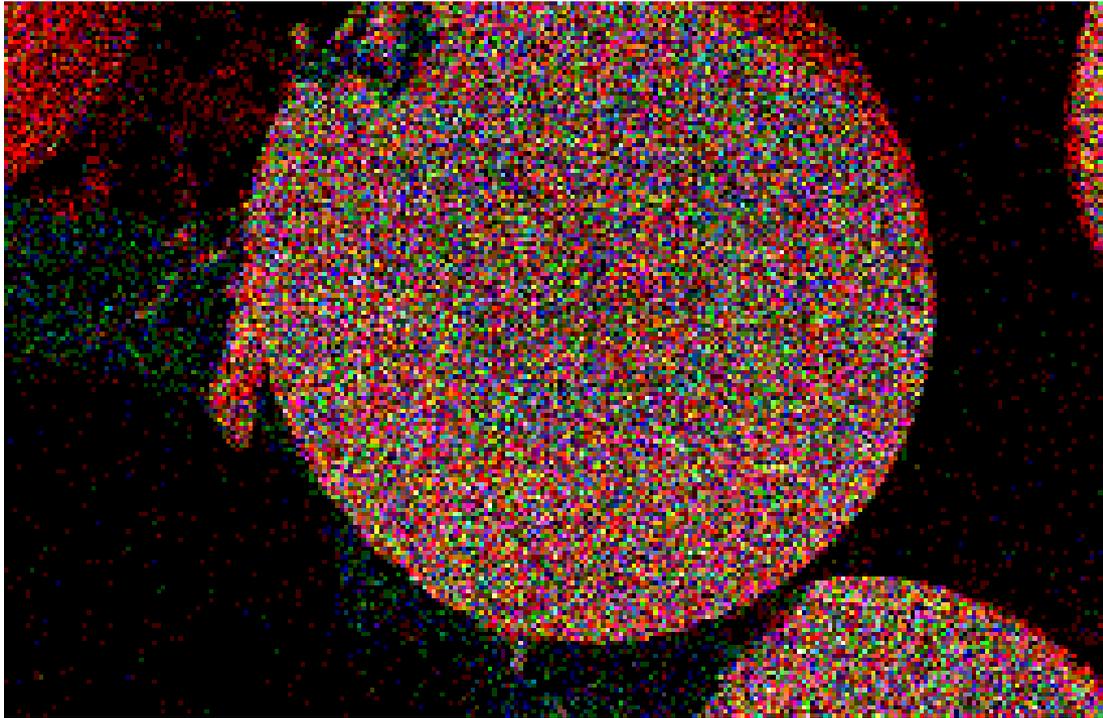
ArsenX^{np} Beads

Whole beads



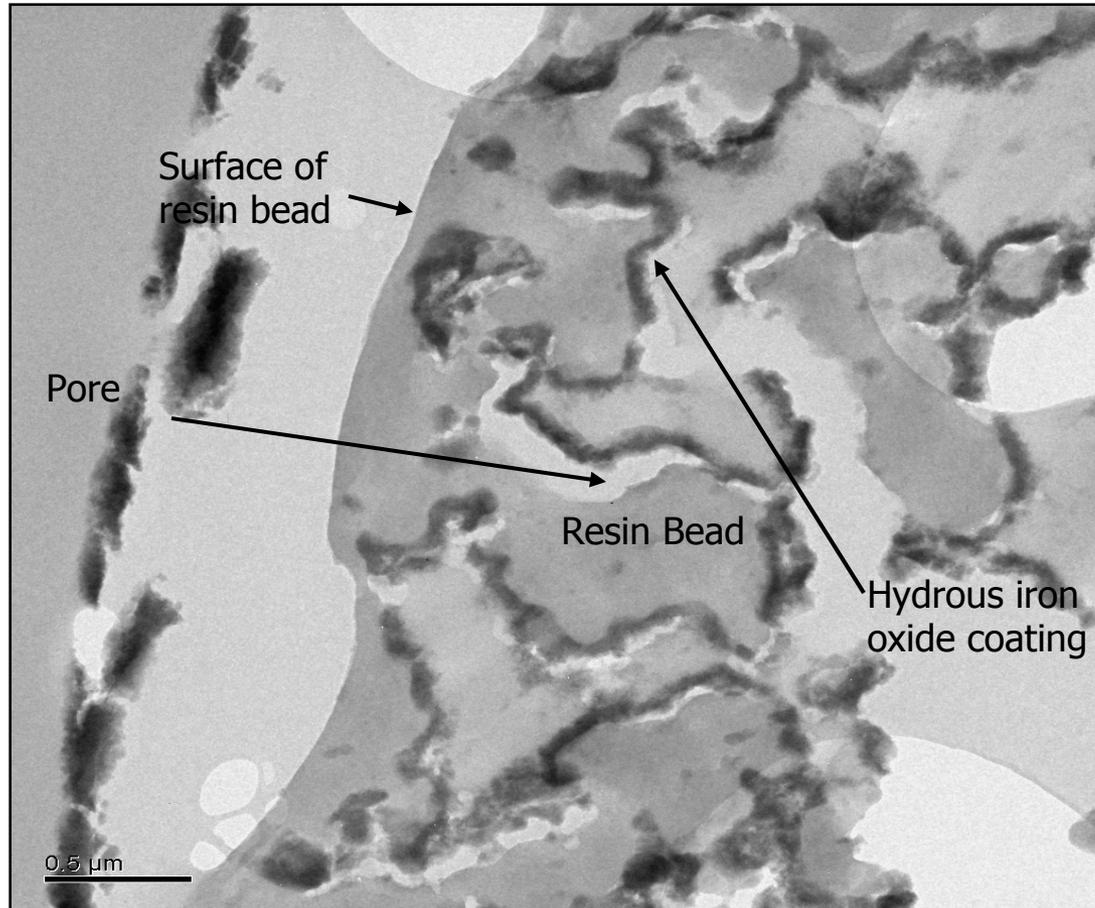
ArsenX^{np} Beads

Red dots are iron
Nanoparticle clusters

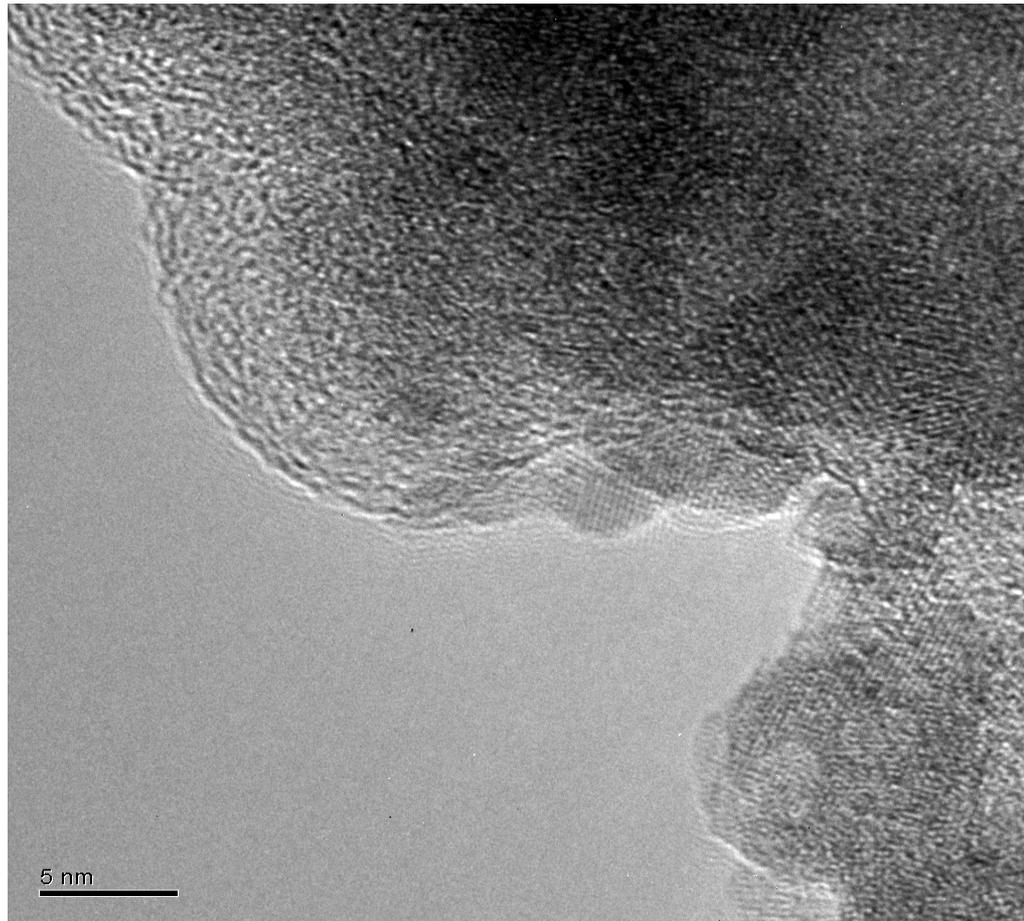


Fe is fully
Impregnated throughout
Each bead

TEM Micrograph



High Magnification TEM Image



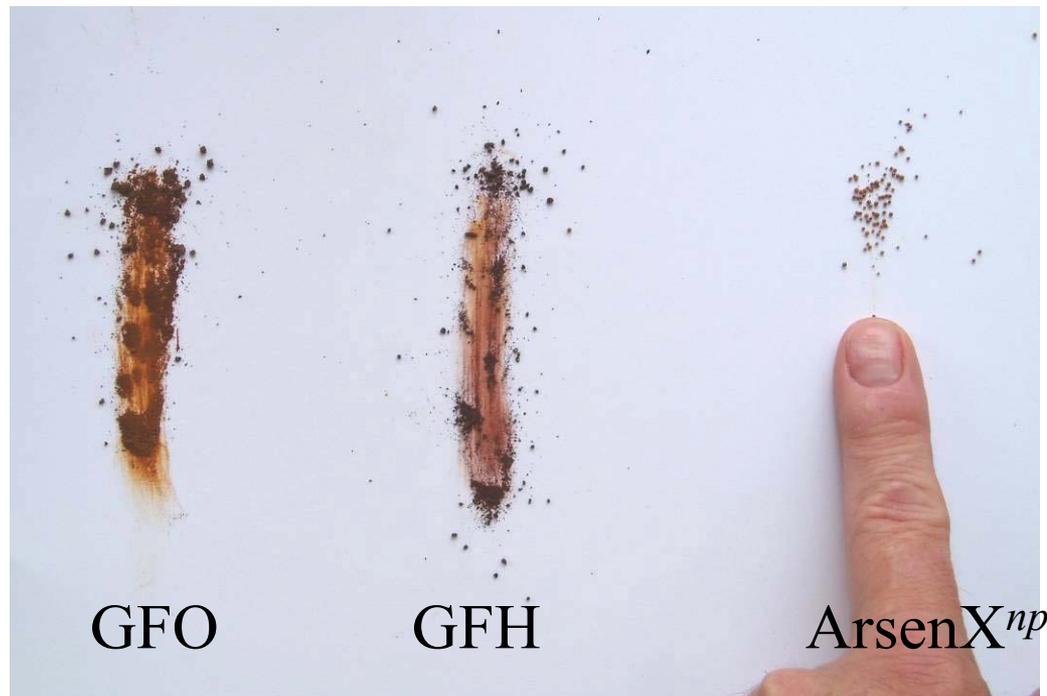
Comments on Morphology

Hydrous iron oxide present as coating
within pores in ion exchange resin bead.

Coatings vary from ~ 50 nm to 150 nm
thick.

High magnification suggests very short
range order with individual lath-shaped
crystals ~5 nm long.

Comparison of Physical Robustness



ArsenX^{np} does not crush under pressure



Standard System Parameters

The standard system is designed for:

- Maximum flow rate = 7.5 gpm
- pH up to 8.5
- Arsenic up to 50 ppb
- 18 months lifetime of lead column (*)
 - 300 gallons per day usage

(*) based on EPA model well water chemistry



Assuring Flexibility

For higher flow rates or higher arsenic concentrations

Accepts up to 12" column sizes

Column Size (H x D)	Maximum Flow Rate (gpm)
8" x 35"	7.5
10" x 35"	12
12" x 48"	25



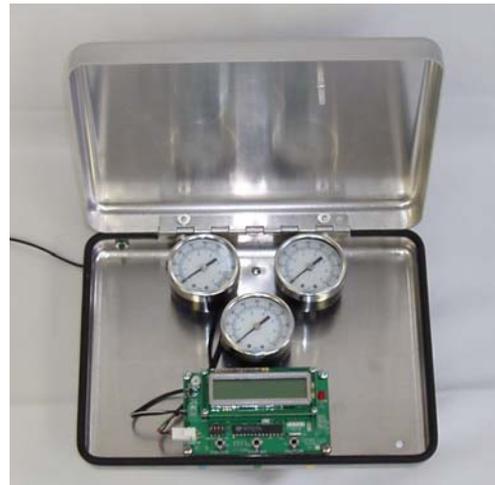


Control Head Available Separately

Purchase just the control head and add your own bottles



Program remains intact!



The Sampling/Testing Program

The Sampling Program includes:

- Initial baseline testing for arsenic & pH
- Sampling kit with
 - Three sample bottles
 - Easy to read and follow instructions
 - Pre-paid/pre-addressed return label
- Test kit sent every six months
- Reminders sent if needed
- Notification of results to the homeowner

Sampling Is Easy



1. Take Sample



2. Package



3. Return to SolmeteX



Why Testing & Testing History is Important

- Arsenic is odorless, tasteless, colorless
- Arsenic is a known carcinogen
- Well water chemistry changes
- Only replace column when it is needed
- SolmeteX maintains a database of individual system performance
- Reduces liability when performance is known
- It's the only way you are certain the system is working!

Replacement Columns/Disposal

A Replacement Column Includes:

- A new column filled with ArsenX^{np}
- Pre-paid/pre-addressed label for shipping the spent column for disposal
- Safe environmentally responsible disposal of the spent ArsenX^{np}



Spent Column Ships Directly to Disposal Facility



Assuring Safe Disposal

- Standard columns are UPS or FedEx shippable and come with return label
- Other Columns:
 - Can be bundled for bulk shipment on a pallet
 - Can be emptied into totes and shipped



50 Cubic Foot Tote

Why Safe Disposal is Important

- ArsenX^{np} Passes EPA TCLP
 - Ships as Non-hazardous
 - Legal to Landfill
- These tests are flawed for arsenic on iron media
 - Arsenic leaches under landfill conditions (*)
 - Generator could be held liable for future clean up costs
- By accepting the ArsenX^{np}, SolmeteX removes that potential liability – permanently!

(*) University of Arizona Study



Assuring Ease of Installation

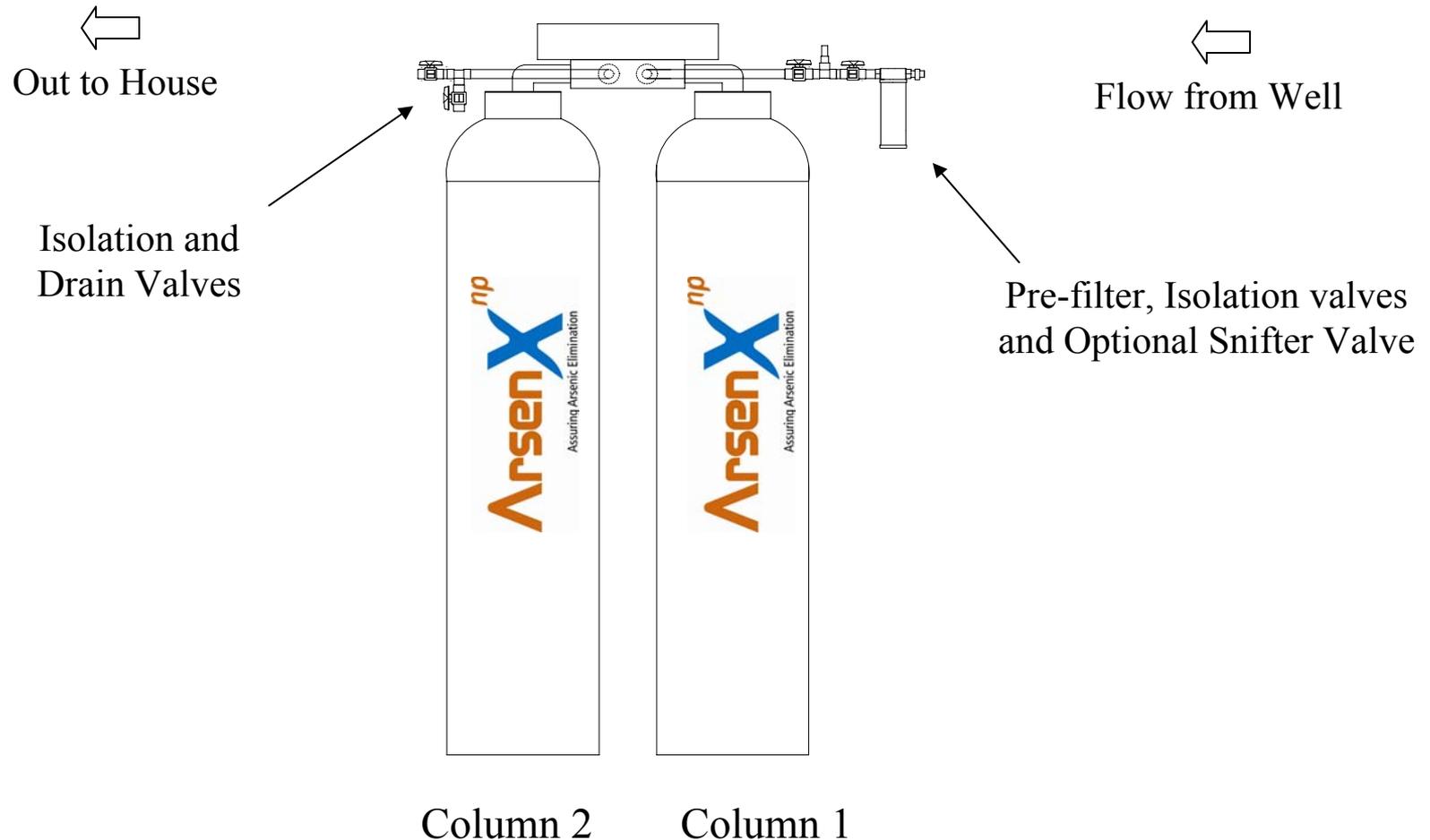


Assembles in minutes

Installation Recommendations

- Pre-filter to remove sediment
- If As (III) is over 20% of total As, then pre-treat with oxidation
- Install isolation valves
- Drain valve
- (Optional) install Air valve for air blowdown of columns

System with Recommended Equipment





ArsenX^{np} POE Homeowner Advantages

- Tested assurance that system is working
 - Sample kits sent automatically
 - No need to remember to change columns
 - Full utilization of ArsenX^{np} media
- No on-site residuals
 - No back-washed fines
 - No messy on-site media change out
- Fully instrumented for ease of use
 - Gallons treated, flow rate, pressure



ArsenX^{np} POE Installer Advantages

- Easy installation & maintenance
 - No plumbing to the drain side of the house
 - 10 minute assembly with standard parts
 - No time consuming backwashing at installation
 - No dust when replacing columns
- No trips to the landfill
- No long term liability exposure for having material in a landfill
- Assurance that the system is monitored
 - Limits liability



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