The members of NASSCO are concerned about some misinformation which has been circulated regarding the effectiveness of sewer pipe joint grouting.

Any technical service must be done correctly with proper equipment using adequate quantities of proven materials. The responsibility for the cost-effective application of pipe joint sealing resides with the Owner / Engineer. The Contractor is responsible for performing work as specified.

Fact: Chemical grouting of sewer pipe joints is not cost effective.

When this myth was addressed by NASSCO in 1980, treatment costs were approximately $1.00/1,000 gallons. The myth was not true then, and 25 years later with thousands of pipes sealed, the myth needs to be given an indecent burial. Treatment costs have more than doubled and labor and equipment costs are continually rising as well. Grouting saves money by reducing transportation and treatment costs in all types of sewers and soils.

Over the past 40 years, the four major television inspection/pipeline sealing truck manufacturers (Cues, Aries, Telespector, and Cherne/Buchen) produced 1,100 units to the North American market. Many more were sold overseas to China, Ireland, Great Britain, Russia, Germany, Italy, France, Holland, Denmark, Sweden, Australia, and many countries in South America. This raises the question: If pipe joint sealing is not cost effective, why do municipalities and contractors invest over $500,000 to purchase a TV/seal truck, a pumper/pipe cleaner truck, and a pick-up truck, and then assign three skilled employees to perform work that is not cost effective?

A typical example of cost savings occurred in 1992 when the City of Sunrise, Florida grouted 500 feet of 12-inch clay pipe that was subject to 615,000 gallons of infiltration per day. Treatment costs were $2.16/1,000 gallons, which amounts to $1,328.40/day or approximately $325,000/year. The 500-foot section had 100 joints (100% test failure rate) that were tested and sealed. The cost of the acrylamide chemical grout used was $4,095 - and this did not include the cost of the trucks and man-hours. The payback for the acrylamide chemical was 3.8 days. The joints have been re-tested and none are leaking.

A sampling of cities and counties using chemical grouting, who have been doing this work for at least 25 years, is shown on the right. There are many others that use contractors to support their clean, TV, test, and seal requirements.

Field Management at Miami/Dade Water & Sewer Authority says it best: "There is no question that chemical grouting of sewer joints is THE BEST BANG FOR THE BUCK!"
**Myth:**
Re-instated laterals do not require sealing after lining.

**Fact:**
In January 1995, Bob Madsen, Senior VP of Madsen/Barr Corp., located in Longwood, Florida, presented a paper at the UCT Conference in Houston, Texas, that was later published in the October 1995 Public Works Magazine. In the article, Mr. Madsen writes, "unfortunately some of the advertising in the liner industry infers that there is no leakage between the host pipe and the liner." He continues, "It cannot be emphasized enough that the pipe-to-manhole connection and the lateral connections need to be sealed."

Writing in the March/April 1997 issue of No Dig Engineering, Jens Peter Larsen, Principal Engineer with the firm of Hazen & Sawyer located in Hollywood, Florida, unequivocally recommends that all re-installed connections be sealed.

More recently, B. Jay Schrock, P.E., Owner of JSC Engineering International, authored an article, “Examining Close Fit Liner Annulus,” published in the September 2001 issue of Underground Construction and presented the article at the UCT Conference in Houston, Texas in January 2002. His conclusions were that fluids can flow through the annulus at the liner/host pipe interface and that field-proven options for annulus/lateral sealing primarily involve using chemical grouting in lateral packers.

The Lateral Sealing Committee, composed of NASSCO members, published the following standard practice in 2005: ASTM Designation F 2454-05 - Standard Practice for Sealing Lateral Connections and Lines From the Mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grouting. This standard reflects the most current methods used industry-wide for annulus/lateral sealing and is accepted by engineers who refer to ASTM publications for guidance in repairing and maintaining sanitary sewer infrastructures.

In conclusion, we know of no article in any magazine stating that there is no leakage between the host pipe and liner or that re-installed laterals don’t leak!

**Myth:**
Chemical grouting lasts only 2 or 3 years. Chemical grout placed outside sanitary sewer pipe joints dehydrates, cracks, or disintegrates.

**Fact:**
When acrylamide or acrylic chemical grout is mixed and injected properly, and placed in soil that has a relative humidity of 90%, it will not dehydrate. Sanitary sewer pipes are installed deeper than three or four feet where humidity is usually present.

Since the grouted mass of soil surrounding the sanitary sewer pipe joint is always in a humid environment from the wastewater flowing in the pipe, this condition is the primary factor in maintaining moist soil. This old myth should be moved into the non-issue column.

Beginning in 1985, Tennessee’s Oak Ridge National Laboratory (ORNL) and the Department of Energy began a study to find a long lasting method of radioactive waste containment and environmental remediation/restoration. After comprehensive testing of acrylamide grout in the soil, it was determined that the half-life of acrylamide grout is 115 years.*

There may be situations, as in storm sewer grouting, where the head walls are “open ended” creating a wind tunnel effect. This may occur under an interstate highway where the back fill soil around the pipe could dry out. The specifying engineer may require that ethylene glycol be added to the grout mix tanks to retard dehydration of the grouted soil. Once the grout is in the soil, it will not change its structure. Grout additives, such as ethylene glycol, can always be added that will ensure the soil mass around the pipe will remain intact.

Conclusion: Once chemically-catalyzed acrylamide grout is properly injected into the soil, it remains there.

*Copies of this report in condensed form are available at our website www.avantigrout.com.

**Myth:**
Flows to the wastewater treatment plant have not changed so the pipe joints were not grouted properly.

**Fact:**
The 1977 Conklin Report* stressed the point that grouted joints did not leak despite the fact that in some cases flows to the treatment facility did not substantially change. This could have resulted from incorrect flow monitoring or from sealing only the visibly leaking joints. NASSCO recommends testing and sealing all structurally sound joints in areas having excessive infiltration – certainly in each manhole-to-manhole run after the pipe run has been cleaned and winches have been set up. As part of the sewer rehabilitation program, the manholes should also be sealed as well as the lateral-to-sewer main connection. If structurally damaged pipe joints are observed, an approved point repair device should be inserted at the damaged joint. Grouting the damaged joint prior to point repair is necessary to allow the device to seal properly without water washout of the epoxy or other material.

It is important that a daily log of each pipe joint sealed, including the amount of chemical grout pumped into each joint, be submitted to the specifying agency for approval.

NASSCO members are committed to providing quality work. Ultimately, results are dependent upon value engineering, comprehensive infiltration analysis, appropriate rehabilitation procedures, exacting specifications, and competent full time inspection.


**Myth:**
The EPA banned the use of acrylamide chemical grout.

**Fact:**
To be clear – THE USE OF ACRYLAMIDE CHEMICAL GROUT HAS NEVER BEEN BANNED. This myth needs to be laid to rest for good. In a notice dated December 2, 2002, the EPA announced the withdrawal of a 1991 PROPOSAL that would have banned grouts that contained acrylamide and the acrylamide derivative N-methyloacrylamide (NMA). Through the combined efforts of NASSCO and Avanti International, the EPA was correctly educated on the safety and benefits of these products and determined they were safe if increased worker safety training was available. Avanti continues to offer Safe Operating Practices and Procedures (SDOP) training to ensure our customers can operate in safe environments.

**Myth:**
You cannot use chemical grout in collection sewer joints in hilly, clay soil areas.

**Fact:**
Grouting in hilly and/or clay soil areas is more difficult than sealing pipe joints surrounded by sand back fill material, but can be extremely successful if done properly. Sealing takes more time and grout additives should be used to ensure a sealed pipe joint. Additives such as latex emulsions (AV-257 loset) combined with increased solids of the grout mix (less water in mix) will in effect, re-gasket the pipe joint. It may be necessary to plug and divert sewer flows near the lower sections of the hydraulic gradient to assure tight sealed joints. Chattanooga, Denver, and Louisville are a sampling of cities with hills that have been grouting successfully for over 20 years.
The pipe, this condition is the primary factor in maintaining moist soil. This old myth should be moved into the non-issue column. Since the grouted mass of soil surrounding the sanitary sewer pipe joint is always in a humid environment from the wastewater flowing in, dehydration. Sanitary sewer pipes are installed deeper than three or four feet where humidity is usually present.

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