1-1-2007

Asbestos Removal System (EnviroSystem)

Purdue ECT Team
Purdue University, ectinfo@ecn.purdue.edu

DOI: 10.5703/1288284315888

ASBESTOS REMOVAL SYSTEM (ENVIROSYSTEM)

THE NEED

Pipes coated with asphaltic materials often use felt outerwraps that contain asbestos in high quantities. Such pipe wraps are spanned under regulated asbestos coating materials (RACMS) according to the EPA (Environmental Protection Agency). Asbestos, itself is a very toxic material that can cause various fatal lung diseases and cancers.
The EPA and OSHA have issued stringent regulations and minimum standards that cover the handling, removal, and disposal of RACMS to minimize workers exposure to asbestos. In addition, state requirements pose tougher regulations. Methods that permit the removal of asbestos coatings in an effective and productive manner on-site are needed.

THE TECHNOLOGY

A new asbestos removal system called EnviroSystem(TM) has been developed by CUPS Systems, Inc., and GRI (Gas Research Institute). It basically comprises a portable line traveling system that is composed of a high-pressure water jet coating removal device, called HydroKleaner, a vacuum pump, a side boom, a pump sled, a process sled, and a 20 cu.yd. disposal container. The system is operated by workers wearing protective gear and clothing.

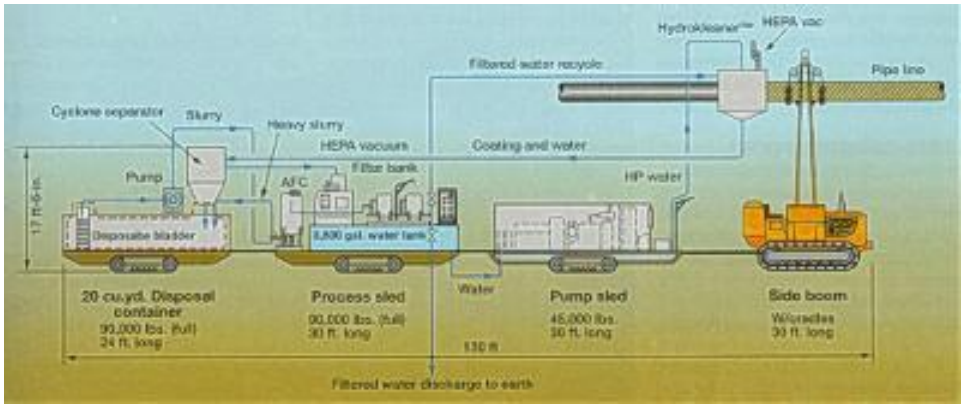

FIGURE 1 ENVIROSYSTEM

The process uses high-pressure water jets that strike the coating surface at pressures up to 20,000 psi (see Figure 2). At these pressures, the water jet has the ability to scrape

http://dx.doi.org/10.5703/1288284315888

off the layer of asbestos in addition to corrosion products and soluble salts. The materials are collected without emision coming from the shroud either as a mist or water dropping onto the ground.

FIGURE 2 HIGH PRESSURE WATER JET COATING REMOVAL EQUIPMENT AND CONTAINMENT SHROUD

The collected material is transferred to a cyclone separator and then to a 20 cu.yd. disposable container. The collected water, is pumped as slurry into filtration units that can handle sizes as small as 1 micron. The process also uses a 3,800-gallon tank that provides water for the high pressure pump.

THE BENEFITS

The technology is capable of cleaning 6- to 48-in. diameter lines. The production rate of the operation could go as high as 17 linear ft./minute. This is highly acceptable by industry standards. The portability of the EnviroSystemTM means that the entire operation can be set up in a remote yard virtually anywhere. Most importantly, the application of the asbestos removal system has produced results in compliance with the applicable regulations and safety standards.

STATUS

The system has been implemented in a series of rigorous yard and field experiments. It was utilized in a major rehabilitation project located in Kansas in 1993. The project consisted of a 27 mile 30-in. pipeline for Northern Natural Gas Co. JOMAX Construction Co. was selected as the prime contractor. The application of the system in that project was very successful with all air monitoring and water sampling results showing non-detectable levels of asbestos.

http://dx.doi.org/10.5703/1288284315888

Barriers

There is still no information on the cost associated with such a system. This cost includes R&D, ownership, and operation costs. As a matter of fact, this system has yet to prove that it is cost effective.

Point of Contact

Sid Taylor, CUPS Systems, Inc.
Phone: (713) 681-5040
CRC-Evans Rehabilitation Systems,
Phone: (713) 460-2900
JOMAX Construction Co.
Phone: (316) 792-3686
Gas Research Institute.
Phone: (773) 399-8100

References

1. Taylor, Sid: 'Asbestos Removal System Proves successful on 27-mile Gas Line', Pipe Line Industry, Gulf Publishing Co., Vol 77, Number 7, July 1994.

Reviewers

Peer reviewed as an emerging construction technology

Disclaimer

Purdue University does not endorse this technology or represents that the information presented can be relied upon without further investigation.

Publisher

Emerging Construction Technologies, Division of Construction Engineering and Management, Purdue University, West Lafayette, Indiana

http://dx.doi.org/10.5703/1288284315888