Asbestos Removal System (EnviroSystem)

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DOI: 10.5703/1288284315888

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

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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](http://dx.doi.org/10.5703/1288284315888)  

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

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.
**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.

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**References**

**Reviewers**
Peer reviewed as an emerging construction technology

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