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SAFETY INFORMATION BULLETIN: SB00-8

(Supersedes Advisory Bulletin T3-93 issued March 29, 1993)

May 5, 2000

Subject: Restricted Use of PVC Pipe

PVC (Polyvinyl Chloride) pipe is not permitted for unprotected above ground compressed gas (including compressed air) applications.

This restriction is due to the fact that PVC pipe is a very rigid material and has a failure mode that can be explosive and send "shrapnel" flying in all directions. The attached article provides the details.

This restriction will remain in effect until PVC pipe manufacturers give notification of any changes to this product design. It excludes PVC pipe with nylon reinforcement.

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ERIC DAHLIN,
Vice President
Boilers & Pressure Vessels Safety Division

Attachment: Article from "Occupational Safety & Health Reporter", 1989.

Hazard***ous Materials***

USE OF POLYVINYL CHLORIDE PIPE ABOVE GROUND FOR COMPRESSED GAS SYSTEMS CALLED DANGEROUS

RENO. Nev.-(BY **a BNA** Staff **Correspondent)-A handful of** Western states is leading efforts **to alert other** state regulators and employers about the dangers of using polyvinyl chloride pipe in above-ground compressed air or gas Systems.

State job safety officials in Arizona, Washington. and New Mexico last year issued hazard alerts to employers in those states warning of the dangers of using PVC pipe lit compressed air or gas systems.

One of the chief proponents of the effort to ban use of unshielded PVC pipe in compressed gas systems is Jack Cannova, president of Tempe Industrial Supply Co., in Arizona, who attended the 3-day meeting in Reno of the Occupational Safety and Health State Plan Association Jan. 31 - Feb. 2. Cannova. who sells plastic pipe and valves, said he has been campaigning against PVC pipe use in gas systems for over a year.

The safety hazard associated with PVC pipe in compressed air and gas systems stems from the pipe's mode of failure, Cannova told association members representing 24 OSHA state-plan states. If the unshielded pipe is struck while compressed gas is in it, even at pressures below its rated capacity, it can explode sending jagged pieces of pipe flying in all directions, he explained. "When the rigid vinyl piping system fails, it fails in the mode of shrapnel, it breaks into a lot of pieces," he said.

High Velocity

PVC pipe failures can send shards of pipe flying into the workplace at velocities of 2300 feet per second. according to Cannova, a speed he said exceeds that of bullets fired from some guns. Unlike metal pipe and other kinds of plastics, PVC pipe is brittle and shatters when pressurized, he noted.

. A hazard alert from Washington Department of Labour & Industries noted .that one PVC pipe explosion hurled a piece of pipe 60 feet across a warehouse and pierced a roll of paper. Another explosion in an underground PVC pipe system left a crater four feet deep, according to the department.

Despite printed warnings from PVC pipe manufacturers not to use the product in compressed air or gas systems, Cannova said he found it in widespread use in industrial facilities throughout Arizona.

He estimated that up to 80 percent of all compressed gas or air systems may be using either traditional black iron or the newer PVC pipe.

Washington's Department of Labor & Industries issued its hazard alert in May 1988 to employers and employees in the state warning of the explosion hazard of PVC pipe when used in compressed air or gas systems (18 OSHR 492). Similar alerts have been issued in Arizona and New Mexico. Cannova urged that other states follow the lead of those three and warn against use of PVC pipe.

In May 1988, OSHA Regional Administrators were advised of the hazard in a memorandum from Edward Baier, director of the agency's Directorate of Technical Support. Although the memorandum was to have been distributed to officials in state-plan states, several at the OSHSPA meeting said they never saw it.

Cannova said that in place of unshielded PVC pipe, metal pipe or a plastic pipe known as ABS, should be used in compressed gas or air systems. When ABS pipe fails, it tends to develop slits like metal pipe that relieve the gas pressure inside the pipe without exploding, he explained. ABS stands for acrylonitrile-butadiene-styrene.