PLAINTIFF'S EXHIBIT
CAP-565

CAPCO PIPE COMPANY, INC.

Birmingham, Alabama

January 29, 1981

TO: Mr. E. A. Farrell

FROM: Mr. W. T. Whitley

SUBJECT: Cement-Asbestos Pipe Correspondence

Attached are some letters from our files that speak specifically to the use of A/C water pipe. These are very much in our favor and really represent the first times, to our knowledge, government agencies and water boards have made favorable comments regarding the use of A/C pipe. I am sure these will be of interest to you.

W. T. Whitley

WTW/gj
Attachments

FROM: CITY WATER BOARD 10/10/80
(Jack Mullen, Brooks & Associates, 227-3454)

Asbestos cement pipe used by the City Water Board in its water distribution system represents the least health risk to customers, according to a letter received by the utility from the Environmental Protection Agency's regional office in Dallas.

Replying to a request from Robert P. Van Dyke, CWB general manager, seeking EPA's opinion on acceptable water pipeline materials, Mac A. Weaver, the region's acting chief of water supply said:

"Extensive evidence indicates that in systems having an Aggressive Index (AI) greater than 12.0, asbestos cement pipe does not dissolve and thereby release asbestos fibers. Such material does represent the lowest health risk pipe material for non-aggressive waters according to the best information available to us at this time."

Van Dyke explained that using this Index San Antonio's water is classified as mildly aggressive to non-aggressive and is suitable for pipelines made of asbestos cement.

He said CWB will continue its investigation of materials being used in the utility's water distribution system to insure they meet all existing regulations and present the least health risk to water users.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

October 6, 1980

Mr. Robert P. Van Dyke
General Manager
City Water Board
1001 E. Market St.
P. O. Box 2449
San Antonio, TX 78298

Dear Mr. Van Dyke:

Thank you for your letter of September 16, 1980 requesting information on the health risks associated with various pipe materials.

The Environmental Protection Agency shares your concern. Studies are underway in the following areas:

* Animal studies of health effects of ingested asbestos;
* Corrosive effects of various water qualities upon asbestos cement pipe and other pipe materials;
* Leaching effects of water on organic chemicals associated with various pipe materials.

There is also a question of the chemicals used in pipe processing. Organic chemicals can be part of the pipe composition, or a residue of a sealing or coating material. In addition to vinyl chloride, polynuclear aromatics, epichlorohydrin and polychlorinated biphenyls mentioned in the Region IV response paper, tetrachloroethylene, a carcinogen, has also been detected as a contaminant in vinyl lined asbestos pipe.

We agree with the opinions expressed in Region IV's response paper, but caution that it is difficult, if not impossible, for EPA to be aware of the consequences of all processes used by the many manufacturers of pipe materials. Additionally, these manufacturing processes change, and a pipe material which was unsuitable several years ago may be the best choice today due to changes in technology. The reverse could also be the case. It is hoped that pipe manufacturers are becoming more aware of the health effect ramifications of their materials and processes.

EPA has not established a list of approved pipe materials, but a major section of the August 27, 1980 Amendments to the National Interim Primary Drinking Water Regulations deals with corrosion control. We are enclosing a copy of these amendments for your information. Although you state that your source water is non-aggressive, I suggest you review the corrosion control section of the Amendments. There are several indices for determining the corrosive potential of waters. Extensive studies have shown that these indices are not conclusive indicators of corrosivity of all waters, due to complexity of the corrosion phenomenon and the differing corrosion mechanisms. Determination of the corrosivity is extremely important in selecting the best pipe material.

quote

"Extensive evidence indicates that in systems having an Aggressive Index (AI) greater than 12.0, asbestos cement pipe does not dissolve and thereby release asbestos fibers. Such material does represent the lowest health risk pipe material for non-aggressive waters according to the best information available to us at this time."

I hope this information is helpful to you. Should you require clarification or more information, please contact Mr. Warren Norris, P.E., (214) 767-1762.

Sincerely,

Mac A. Weaver
Acting Chief, Water Supply Branch (6AWS)

Enclosure

16 September 1980

Mrs. Adlene Harrison
Regional Administrator
Environmental Protection Agency, Region VI
First International Building
1201 Elm Street
Dallas, Texas 75210

Dear Mrs. Harrison:

The attached response paper from Region IV, United States Environmental Protection Agency regarding water pipeline materials is most informative. Water utilities are most perplexed in trying to select a pipe material that does present the lowest health risk. I would appreciate your review of this response paper and your confirmation that the opinions expressed do represent the present thinking of the Environmental Protection Agency. The City Water Board is presently reviewing our present practices to insure that the material being used for our water distribution system meets all the existing regulations and presents the least health risk to our customers. As you know, the City Water Board's source of supply is the Edwards Aquifer which is classified as a nonaggressive water and according to the response paper asbestos cement pipe should be the best selection. However, your comments regarding the opinions expressed in this response paper are requested to insure that an erroneous conclusion is not reached.

Very truly yours,

Robert P. Van Dyke
General Manager

Enclosure

OAB:ld

RESPONSE TO LAKELAND FLORIDA QUESTIONS CONCERNING

POTABLE WATER PIPE MATERIAL

August 20, 1980

1. The agency has done no research into cement lined ductile pipe. The seal coat, applied in order to promote proper cure of the cement, is usually a petroleum based material obtained from the "bottom" of the distillation process. We have on record, in Region IV, one instance in which this coating material was found to be contaminated with low levels of polychlorinated biphenyl (PCB). The agency does not have the resources necessary to determine if contamination such as this occurs frequently. It is not expected to be the normal situation, but it is an example of a problem which might occur with this type of pipe.

Iron pipe lined with various types of coating material, other than cement, is also widely used in the water supply industry. Coating materials used are, coal tar derivatives, vinyl, epoxy and other types of resin based coatings.

The agency, in an ongoing study, has monitored water coming from a large water storage tank to which a coal tar coating was applied. More than twenty organic compounds which could be directly attributed to the coating material have been detected in the water. A number of these were polynuclear aromatic compounds (PAC). The health community has expressed concern about human consumption of PAC in general because several are known or suspected human or animal carcinogens. In the current study, even after more than two years of continuous use PACs are still detected in the water at approximately one tenth (0.1) the original concentration.

In a situation with a vinyl coated pipe material the solvent that was used to clean the pipe and thin the coating for application was found to be present in the water at the parts per million level. Studies looking for vinyl chloride in water from vinyl coated pipe have not been conducted at this time. Thus, the possibility for vinyl chloride contamination of water passing through such pipe is only conjectured.

The agency has expressed concern for the fact that many epoxy coatings use epichlorohydrin in their formulation since this compound has been determined to be a carcinogen. A study to determine if this material is present in water contacting epoxy coatings will need to be conducted in order to determine the significance of the agency's concern.

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Many coating products have components for which the agency health effects personnel have concern when considering long-term human consumption even at very low concentrations because of their identification as known or suspected human or animal carcinogens. As indeed these same individuals have a similar concern for the long-term ingestion of asbestos fibers.

2. An agency study of installed polyvinyl chloride (PVC) pipe found low levels of vinyl chloride in the water after transmission through the main. Vinyl chloride has been linked with increased incidence of liver angiocarcoma among the vinyl chloride industry employees. Both long-term and high level exposure to vinyl chloride has produced the same type tumors in laboratory animals. The National Academy of Science (NAS) assessment is that, vinyl chloride is a human and animal carcinogen. The NAS assessment of carcinogenic risk to the human population indicates that there would be a risk of one additional cancer per million persons consuming water containing 2.0 micro-grams per liter for a lifetime.

   Other plastic materials have not received widespread use in the water supply industry for pipe diameters to which you refer; therefore, discussion of the appropriateness of their use in your system will not be addressed.

3. The agressiveness of the water has no known affect on the leachability of chemical compounds from PVC pipe or the various coating materials previously discussed. The leaching process will occur, on a continuous basis, from the pipe or coating into the water based completely upon the laws of physical chemistry. The driving force for the transfer from the pipe or coating (organic phase) into the water is the difference in concentration for a given component in each phase. This force is independent of the aggressiveness of the water. On the other hand asbestos-cement pipe suffers dissolution of the cement in a chemical reaction in which the cement is dissolved releasing the asbestos fibers which is very dependent upon the chemical quality of the water, specificly its aggressiveness.

4. Since, as indicated previously, there are some health risks associated with use of most of the pipe materials in question, it would appear that selection should be toward the one in which the suspected health risk can be reduced or eliminated. Since the problem with the coatings is a leaching of contamination from the film into the water and independent of water quality, and the problem with the asbestos-cement pipe is dependent upon the water quality which can be (and in the proposed application will be) controlled through treatment, then it would appear that the pipe system with the least negative health effect prospects would be the asbestos cement pipe.

The chemical reaction between water and cement has been successfully stopped by two methods. One is the application of treatment which alters the aggressiveness of the water so as to make it nonaggressive (as defined by the equation for the Aggressive Index). The other is the addition to the water of a zinc salt which allows the formation of a zinc hydroxide percipitate on the pipe wall thereby establishing a protective barrier between the water and pipe.

Where treatment to adjust the water quality so that it is no longer aggressive is available, this is the best approach in controlling asbestos cement pipe degradation.

The health risk associated with use of any of the pipe systems discussed would indeed be very small. The general order of increasing health risk for nonaggressive water would be asbestos cement less than cement lined less than polyvinyl chloride, vinyl coated, epoxy coated, other resin base coated, with coal tar coated the greatest.

The fact that Lakeland has several hundred miles of asbestos cement pipe already in use should not influence the decision to use asbestos-cement pipe in the proposed project. What must be considered is how will the use of such pipe in this project impact the public health. From the proposal it is clear that the utility intends to use this pipeline to convey only stable nonaggressive water to its customers. Thus, the pipe would not degrade and asbestos fibers would not be present in the water and the public health would not be endangered.

The facts have been established by EPA studies that asbestos-cement pipe has been used across the United States for many years conveying nonaggressive water without the slightest indication of deterioration or asbestos fibers in the water. However, aggressive waters have been found in many places to cause pipe deterioration resulting in asbestos fibers in the water.

Lakeland's drinking water is of such quality that there is indication that asbestos-cement pipe deterioration has apparently already occurred in the 300 miles presently installed. The utility's plans for construction of a complete treatment facility, which will provide stabilized water that will put an end to further pipe deterioration, should be quickly accomplished in order to eliminate whatever asbestos fiber health hazard that may presently exist.