



CAPCO PIPE COMPANY, INC.—A Subsidiary of ASARCO Incorporated
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CARL D. WOODWORTH
General Sales Manager

October 14, 1980

Mr. William Gillespie
City of Gastonia
Post Office Box 1748
Gastonia, North Carolina 28052

Dear Bill:

Per your request, I have attached a copy of "A/C Pipe and Health" which should answer any questions you have. I have also attached a copy of a recent letter from the EPA Division IV which put out an opinion on pipeline materials for Lakeland, Florida when a concern was raised over asbestos and water.

If you have any further questions, please do not hesitate to call.

Yours very truly,

A handwritten signature in dark ink, appearing to read 'C. B. Woodworth'. The signature is written in a cursive, flowing style.

C. B. Woodworth

CBW:mf

Attachments

bcc: Mr. A. B. Stapp II

Quality Piping Materials

CAPCO JEN 0026271



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30308

August 20, 1980

REF: 4W-WS

Mr. T.B. Williams, Superintendent
Water Division
Department of Electric and Water Utilities
P.O. Box 368
1000 East Parker Street
Lakeland, Florida 33802

Dear Mr. Williams:

Thank you for your letter of August 6, 1980, requesting information about various pipeline materials which are under consideration for the Lakeland distribution system upgrading. We have attempted to answer your questions in detail, expressing what, in our opinion, is the direction of the Environmental Protection Agency's thinking on these various materials for use in potable water application. The answers to your questions are enclosed as an attachment to this letter.

If I can be of further assistance in this matter please contact me.

Sincerely yours,


Donald J. Guinyard, Chief
Water Supply Branch

Enclosure
Response Paper

CAPCO JEN 0026272

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.

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 angiocarcinoma 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 2.1 micro-grams per liter for a life time.

Other plastic materials have not received wide spread 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 aggressiveness of the water has no known affect on the leachability of chemical components 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, specifically its aggressiveness.
4. Since, as indicated previously, there is 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 precipitate 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.