

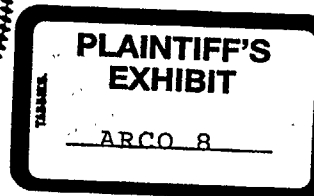
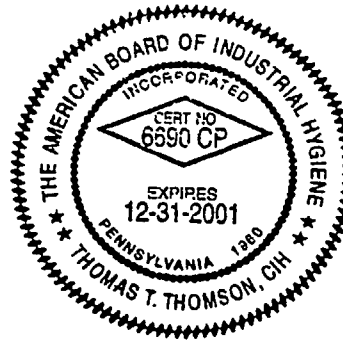
ARCO Transportation Company

DATE: September 15, 1995

TO: File

FROM: Thomas T. Thomson, CIH *Tom*

SUBJECT: AMI ASBESTOS MONITORING STATUS SUMMARY



This document is intended as a summary of asbestos monitoring and results aboard the following ARCO vessels: Alaska, Anchorage, California, Fairbanks, Independence, Juneau, Prudhoe Bay, Sag River, Spirit, and the Texas.

ASBESTOS MONITORING SURVEYS

ASBESTOS RESULTS 1993 - Present

Personal and area air sampling results have been collected on the Sag River, California, Texas, Juneau, and the Independence. Samples were collected in the house and the engine room while the ships were sailing (worst case due to vibration of ship).

Results ranged from below the lower level of detection (LOD) of 0.01 fibers / cubic centimeter of air to 0.04 fibers / cubic centimeter of air. The samples were analyzed in accordance with NIOSH Method 7400 at the National Loss Control Service Corporation Laboratories (NATLSCO) in Long Grove, Illinois. NATLSCO is accredited by the American Industrial Hygiene Association.

ASBESTOS RESULTS 1992 - 1993

Personal and area air sampling results were collected by Clayton Environmental Consultants Industrial Hygienists on the Anchorage, Fairbanks, Independence, Juneau, Prudhoe Bay, Sag River, Spirit and Texas. Samples were collected in the living and working spaces while the ships were sailing north in ballast (worst case due to vibration of ship).

All results were below 0.01 fibers per cubic centimeter of air. The samples were analyzed in accordance with NIOSH Method 7400 at the Clayton Environmental Laboratories in Novi, Michigan. Clayton is accredited by the American Industrial Hygiene Association.

ASBESTOS RESULTS 1982 - 1988

Personal and area air sampling as well as bulk sampling results collected by 3rd party environmental consultants on the Alaska, Anchorage, Juneau, Fairbanks, Prudhoe Bay, Sag River, and the Texas. Samples were collected in the living and working spaces while the ships were sailing and at dock.

Results for air samples ranged from below the level of detection (LOD) to 0.02 fibers/cubic centimeter of air. The samples were analyzed in accordance with NIOSH Method 7400 at an accredited laboratory. Bulk samples revealed that the following non-friable materials aboard ship contained asbestos; ceiling tiles, wall panels, floor insulation, and some gasket materials.

PCM vs. TEM

All the results presented above were obtained utilizing NIOSH Method 7400. This method utilizes phase contrast microscopy, which counts all fibers present in the sample (a fiber is a structure with a 3:1 aspect ratio that is a least 5 microns long). So wool, cotton, and asbestos are all counted. If any results had been near the PEL the sample would have then been submitted for transmission electron microscopy (NIOSH 7402) to single out only the asbestos fibers present. This is done in order to help control analytical laboratory costs, as TEM is on average 10X more expensive.

CONCLUSIONS:

Based on monitoring results (1982 - present) exposure of personnel at the levels found on ARCO vessels should not pose an elevated risk to contracting an asbestos related disease such as asbestosis or plural mesothelioma. The fiber levels found, even assuming that all fibers counted were asbestos, were well below the PEL's set by both the Coast Guard and Fed OSHA. Asbestos containing building materials on the vessels are cataloged in the AMI Engineering Manual and are non-friable. The airborne monitoring indicates that they are not releasing significant quantities of fibers under routine conditions.

1) UNITED STATES COAST GUARD

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 6-87

Recommends PEL = 0.2 fibers/cubic centimeter

AL = 0.1 fibers/cubic centimeter

2) FEDERAL OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

Current Permissible Exposure Limit (PEL) = 0.1 fibers/cc

Past (Pre 1994)

Permissible Exposure Limit = 0.2 fibers/cc

Action Level (AL) = 0.1 fibers/cc

Action level triggers personnel training, medical surveillance, increased monitoring activity.

If you have any further questions, or would like to meet to discuss these results, please feel free to contact me at ARCONet 590 - 4613.