

ARCO Marine, Inc.

Internal Correspondence



DATE: January 16, 1995
TO: Hershah Kohut
Vice President of Operations
FROM: Thomas Thomson, CIH
SUBJECT: PERSONAL AND AREA MONITORING FOR BENZENE AND
TOTAL HYDROCARBONS ON THE S. S. ARCO JUNEAU



Between November 8-13, 1994, I conducted personal and area monitoring for the above agents on the S. S. ARCO Juneau during voyage # 0484 between the SHELL Refinery in Anacortes, Washington and the Alyeska Marine Terminal in Valdez, Alaska. The monitoring was performed using the following criteria:

- (1) All personal noise monitoring results were collected in accordance with the USCG NAVIC 12-82 for evaluation against the 24-hour Leff noise exposure limit of 82 dBA for various job classifications working throughout the ship.
- (2) Area monitoring results for benzene and total hydrocarbons were collected in the house, engine room, pumproom, and on deck during purging operations. Area samples do not necessarily reflect personnel exposure. Area samples are collected by industrial hygienists to help them track contaminant sources, evaluate the need for establishing regulated areas, and to estimate the maximum possible exposure.
- (3) It should be emphasized that all area asbestos monitoring results are given as 8-hour time-weighted average results in order to compare those results to the applicable permissible exposure limit (PEL). Area monitoring results are reported as the average concentration in that area for the period monitored

Monitoring results indicate that all asbestos, benzene, and total hydrocarbons samples collected were below current USCG and OSHA permissible exposure limits. Noise exposure monitoring results revealed 3 Engine Department employees, the 2nd Mate, and a Utility I working in the engine room that had noise exposures above the USCG PEL of 82 dBA.

Additionally, the Chief Engineer and an engineman had noise exposures above the action level of 77 dBA. All employees exposed to 24 Leff of 77 dBA or greater are required to be enrolled in an effective Hearing Conservation Program.

All fleet employees are enrolled in the AMI Hearing Conservation Program and receive annual audiometric testing and hearing conservation training as a monthly STEP topic each year. Hearing protection is required to be worn in posted high noise areas.

Hershal Kohut
Doc 1503/2

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Employees that participated in the monitoring have been notified of their results by individual letters as required by the regulations. The attached tables should be posted on all ships in the class to communicate the results to others who may not have been involved in the testing.

A benzene sample collected on the deck during purging operations was above the USCG action level of 0.5 ppm. No personnel were working on deck during purging activities.

If you have any questions please feel free to contact me at ARCONet 590-4613.

Doc 1503
TTT/tt

cc: Master Anchorage
Master Fairbanks
Master Juneau
Vice President Engineering
ATC Medical Consultant
SHEP Manager

ARCO TRANSPORTATION COMPANY
ARCO Marine, Inc.
S. S. ARCO Juneau

To: All employees on the S. S. ARCO Anchorage, S. S. ARCO Fairbanks, and the S. S. ARCO Juneau

Subject: Area industrial hygiene monitoring results for benzene and total hydrocarbons. Monitoring performed during purging of cargo tanks. Monitoring results indicate that employee exposure levels were below the respective USCG and OSHA permissible exposure limits (PEL's). One benzene sample from the main deck was above the action level of 0.5 ppm.

TABLE # 1
AREA MONITORING RESULTS

TIME-WEIGHTED AVERAGE RESULTS

<u>Monitoring Date</u>	<u>Area Description</u>	<u>Benzene</u> (PEL = 1.0 ppm)	<u>Total Hydrocarbons</u> (PEL = 300 ppm)
11/09/94	Engine Room - Control Panel Level / Control Panel Area in the breathing zone during purging of cargo tanks.	0.16 ppm	19.0 ppm
11/09/94	House - Cargo Control Room / In the breathing zone during purging of cargo tanks.	0.20 ppm	26.0 ppm
11/09/94	Pump Room - Top Level / In the breathing zone during purging of cargo tanks.	0.21 ppm	33.0 ppm
11/09/94	Deck - In front of the house / In the breathing zone during purging of cargo tanks.	0.62 ppm	46.0 ppm
11/09/94	House - Poop Deck / In the passageway, in the breathing zone during purging of cargo tanks.	0.24 ppm	33.0 ppm
11/09/94	House - Bridge / In the breathing zone during purging of cargo tanks.	0.12 ppm	15.0 ppm

Total Hydrocarbons is a measure of C6 and lighter hydrocarbons present in the sample
less than denotes that the results are below level of detection of analytical method
ppm denotes parts per million on a volume/volume basis

ARCO TRANSPORTATION COMPANY
ARCO Marine, Inc.
S. S. ARCO Juneau

To: All employees on the S. S. ARCO Anchorage, S. S. ARCO Fairbanks, and the S. S. ARCO Juneau

Subject: Personal industrial hygiene monitoring results for noise exposure. Monitoring performed during routine ship operations between Puget Sound and Prince William Sound. Monitoring results indicate that some employee exposure levels were above the USCG permissible exposure limit (PEL) of 82 dBA.

TABLE # 2
PERSONAL MONITORING RESULTS

TIME-WEIGHTED AVERAGE RESULTS

Monitoring Date	Job Description / Work Activity	Noise (PEL = 82.00 dBA)
11/08/94	2rd Mate / Stand two 4-hour watches on the bridge and 4-hours of overtime performing various tasks	89.55 dBA
11/08/94	A. B. / Stand two 4-hour watches on the bridge wing and working on deck - 4 hours of overtime worked	65.17 dBA
11/08/94	A. B. / Stand two 4-hour watches on the bridge wing and working on deck - 4 hours of overtime worked	67.44 dBA
11/08/94	A. B. / Stand two 4-hour watches on the bridge wing and working on deck - 4 hours of overtime worked	67.46 dBA
11/08/94	A. B. / Stand two 4-hour watches on the bridge wing and working on deck - 4 hours of overtime worked	69.80 dBA
11/09/94	Chief Engineer / Manage engine room operations and work on various maintenance tasks - transferred bunkers	81.66 dBA
11/09/94	Utility I / Day worker performing various tasks in the engine room, worked 4 hours of overtime in the engine room	89.23 dBA
11/09/94	3rd Mate / Stand two 4-hour watches on the bridge and 4-hours of overtime performing various tasks	67.96 dBA

Total Hydrocarbons is a measure of C6 and lighter hydrocarbons present in the sample
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ppm denotes parts per million on a volume/volume basis

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S. S. ARCO Juneau

To: All employees on the S. S. ARCO Anchorage, S. S. ARCO Fairbanks, and the S. S. ARCO Juneau

Subject: Personal industrial hygiene monitoring results for noise exposure. Monitoring performed during routine ship operations between Puget Sound and Prince William Sound. Monitoring results indicate that some employee exposure levels were above the USCG permissible exposure limit (PEL) of 82 dBA.

TABLE # 2 (Continued)
PERSONAL MONITORING RESULTS

TIME-WEIGHTED AVERAGE RESULTS

<u>Monitoring Date</u>	<u>Job Description / Work Activity</u>	<u>Noise</u> (PEL = 82.00 dBA)
11/09/94	Engineman / Stand two 4-hour watches in the engine room and worked 4 hours of overtime in the engine room	85.39 dBA
11/09/94	1st Assistant Engineer / Stand two 4-hour watches in the engine room and worked 4 hours of overtime in the engine room	87.01 dBA
11/10/94	Chief Mate / Stand two 4-hour watches on the bridge and worked 4 hours of overtime on various tasks throughout the ship	64.62 dBA
11/10/94	Engineman / Stand two 4-hour watches in the engine room and worked 4 hours of overtime in the engine room	80.37 dBA
11/10/94	3st Assistant Engineer / Stand two 4-hour watches in the engine room and worked 4 hours of overtime in the engine room	84.08 dBA
11/10/94	Bosun / Stand two 4-hour watches on the bridge wing and working on deck - 4 hours of overtime worked	69.14 dBA
11/10/94	Master / Manage ship operations and work on computer in office	66.50 dBA
11/11/94	Pumpman / Perform maintenance tasks on the cargo pumps - discharging ballast at the valdez terminal	70.42 dBA

Total Hydrocarbons is a measure of C6 and lighter hydrocarbons present in the sample less than denotes that the results are below level of detection of analytical method ppm denotes parts per million on a volume/volume basis

ARCO TRANSPORTATION COMPANY
ARCO Marine, Inc.
S. S. ARCO Juneau

To: All employees on the S. S. ARCO Anchorage, S. S. ARCO Fairbanks, and the S. S. ARCO Juneau

Subject: Area asbestos monitoring results. Monitoring performed during routine ship operations underway. Monitoring results indicate that employee exposure levels were below the OSHA permissible exposure limit (PEL) of 0.1 fiber per cubic centimeter.

TABLE # 3
AREA MONITORING RESULTS

TIME-WEIGHTED AVERAGE RESULTS

<u>Monitoring Date</u>	<u>Work Area Description</u>	<u>Asbestos</u> (PEL = 0.1 f/cc)
11/09/94	Engine Room / Boat Deck Level - Between the port boiler and the bulkhead, in the breathing zone	less than 0.01 f/cc
11/09/94	Engine Room / Boat Deck Level - Aft of boilers, in the breathing zone	less than 0.01 f/cc
11/09/94	Engine Room / Boat Deck Level - Between the starboard boiler and the bulkhead, in the breathing zone	less than 0.01 f/cc
11/10/94	Engine Room / Control Panel Area - In the breathing zone	less than 0.01 f/cc
11/10/94	Engine Room / Control Panel Area - Between starboard boiler and the paint locker, in the breathing zone	less than 0.01 f/cc
11/10/94	Engine Room / Boat Deck Level - Between the port boiler and the chemical storage area, in the breathing zone	less than 0.01 f/cc
11/11/94	House / Bridge - Chart Room, in the breathing zone	less than 0.01 f/cc
11/11/94	House / Gym - In the Cal-Gym equipment, in the breathing zone	less than 0.01 f/cc
11/11/94	House / Nonsmoking Lounge - In the breathing zone	less than 0.01 f/cc

Total Hydrocarbons is a measure of C6 and lighter hydrocarbons present in the sample
less than denotes that the results are below level of detection of analytical method
ppm denotes parts per million on a volume/volume basis

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NOTES:

- 1) The Permissible Exposure Limit is the legal airborne level of a chemical or physical agent that employees may be exposed to. It is set to protect workers and is the time-weighted average concentration for a normal 8-hour workday and a 40-hour work week, to which nearly all workers may be repeatedly exposed, day after day, without adverse effect.
- 2) The term "less than" indicates that the results were below the analytical method's detection level. When converting the quantity (milligrams) of the agent measured to an airborne concentration (ppm or mg/m3) the resulting detection limit will have slight variations for the same agent, depending on the length of the sampling period.
- 3) Meteorological conditions were overcast and drizzly, with relative humidity of approximately 80 % and winds from 10 to 15 knots and a temperature range of 35 to 45 degrees Fahrenheit for the duration of the testing.
- 4) Laboratory analysis was performed at the National Loss Control Service Corporation - Environmental Sciences Laboratory K-2 in Long Grove, Illinois. This facility is fully accredited by the American Industrial Hygiene Association.
- 5) Samples were collected and analyzed in accordance with:

Asbestos --	NIOSH Method 7400
Benzene --	OSHA Method 7
Noise --	Direct Reading Instrumentation
Total Hydrocarbons --	OSHA Method 12
- 6) In order to help control analytical laboratory costs asbestos samples were first submitted for total fiber counts utilizing phase contrast microscopy (NIOSH 7400). All results were below the level of detection of 0.01 fibers/cubic centimeter of air. Due to this fact a representative sample was not submitted for asbestos analysis utilizing transmission electron microscopy (NIOSH 7402).