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→ INDUSTRIAL HYGIENE SURVEY
PUGET SOUND REFINERY

MEMORANDUM

Mr. D. H. Morton
Anacortes, Washington

Attached is the report of the industrial hygiene survey conducted at your plant on May 8 thru 10, 1972. We have been waiting for data from chemical suppliers which has still not been received. If recommendations covering these materials are needed they will be sent in a separate report.

If you have any questions, please let me know.

R. T. RICHARDS

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**Industrial Hygiene Survey
Anacortes Refinery, Puget Sound Plant
Anacortes, Washington
May 8-10, 1972**

**By: James P. Licata, Industrial Hygienist
Texaco Inc., Health Division
New York, New York**

SUMMARY

Asbestos containing materials are being used for pipe insulation and such use should be discontinued. Paint spray work is done in the warehouse #3 building without adequate exhaust ventilation or proper electrical fixtures approved for use in a hazardous location. The mixing shed located at the water cooling tower does not have adequate exhaust ventilation to remove the chromate dust evolved when dumping bags into the mixing hopper. The solvent drum rack outside the paint shop is not equipped with the proper electrical grounding to handle a static charge build-up. The tetraethyl lead tank car unloading building is not equipped with a flow alarm or sight-glass on the overflow tank. Mercury was found behind the test panel in the instrument room. The plot plans of the high noise areas do not show the 90 dBA contour on the plans. A calibration kit should be purchased for the MSA combustible gas indicator.

INDUSTRIAL HYGIENE SURVEY

On May 8, 9, and 10th, 1972 a survey of the Anacortes Refinery was made to assist local management in updating some plant operations to comply with the Federal Occupational Health and Safety Act of 1970. The following recommendations are a result of this survey. Some additional information concerning Magnus 94XX-K and Betz Dianodic 939 has still not been received from the manufacturer and recommendations covering these will be handled in a separate report if needed.

RECOMMENDATIONS

1. Asbestos usage is being strictly controlled under OSHA regulations. The most practical alternative is to perform insulation work in the refinery, with non-asbestos containing insulation materials. The present stock of asbestos cement in 100 lb. bags should be discarded since these are non-asbestos types readily available. All insulation which has been done with asbestos should be indicated on plant operation diagrams to enable employees to follow OSHA regulations during

repair or replacement at some time in the future. All specifications for new installations should prohibit the use of asbestos containing materials for insulation.

2. Paint spray work being performed in warehouse building #3 should be discontinued until an adequately ventilated paint spray booth of sufficient size can be installed. Additionally all electrical fixtures in the room should be updated to the approved type for hazardous locations, Class 1 as detailed in paragraph 1910.322-1910.324 OSHA regulations.

3. The mixing shed located at the water cooling tower should have an adequate exhaust system installed to remove any dust evolved during the dumping of Beta Dianodic #939 into the mixing hopper. The operator wears a U.S. Bureau of Mines approved respirator, goggles and other protective clothing but the dust still contacts many exposed areas of his skin. This water treating chemical contains 40% chromates. The lighting inside this shed should also be improved by the addition of another light fixture over the mixing hopper.

4. The solvent drum rack outside the paint shop should be provided with proper bonding wire and grounding to prevent a static charge build-up as specified in OSHA regulations paragraph 1910.106.

5. The tetraethyl lead tank car unloading pump house building is equipped with a tank to collect any overflow in the event of a malfunction. This tank should be equipped with a flow alarm system or sight-glass to alert operators when this situation has occurred.

6. The interior of the instrument room test panel should be checked periodically, with a magnifying glass and flashlight, for droplets of mercury. Any mercury noted should be vacuum removed using a special collecting flask attachment equipped with a high velocity pick-up tube. The attachment will have to be fabricated in your laboratory as they are not commercially available. A side arm vacuum flask, rubber hose and a glass rod for a pick-up tube should be used. The incoming air should bubble through water in the flask to collect the mercury.

7. The installation diagrams used for noise plot plans do not show the 90 dBA contour on the drawing. The present yellow outlines shown are the concrete pad edges in most cases and not the actual 90 dBA contour.

8. A calibration kit for your Mine Safety Appliance (MSA) combustible gas indicator should be purchased to insure the unit is working properly prior to use. Tests for combustible vapors should be made prior to any tank or confined space entry.

DISCUSSION

The storage area for insulating material has very poor house-keeping and controls for asbestos containing materials. The asbestos "fine" cement is dispensed with a scoop from a 100 lb sack which is torn open. The floors were covered with asbestos fibers and pieces of broken pre-formed pipe insulation. Brooms are used to dry sweep this area. No respiratory protection is worn by the employees involved in the asbestos cement mixing operation. The Federal Occupational Health and Safety Act regulations on asbestos were changed on December 7, 1971 through publication of an Emergency Standard amendment. The threshold limit value for asbestos is presently 5 fibers longer than 5 microns per milliliter of air. A special study committee, which was formed under the U. S. Dept. of Labor, has now recommended that the limit for asbestos be further reduced to 2 fibers longer than 5 microns per milliliter of air.

Even if all future insulation work is performed with asbestos-free materials the existing asbestos containing insulation will continue to cause problems. All lines presently covered with asbestos should be indicated on piping plans so when it comes time to remove or repair such insulation the proper employee protective measures can be taken. The safe work procedures for asbestos include the following:

1. All power driven or mechanical cutting equipment must be provided with adequate local exhaust ventilation. (ANSI Standard Z9.2-1971).
2. U.S. Bureau of Mines approved respirators, air supplied or self-contained breathing apparatus must be worn where dust levels exceed the Threshold Limit Values.
3. All dust must be removed by vacuum cleaning methods.
4. All waste material must be collected and disposed of in sealed bags or containers.
5. Warning signs must be posted as specified in the proposed standards if adopted.

Compliance with these regulations will be very difficult and add greatly to the labor cost. It is, therefore, important to document the exact present location of all asbestos insulation which will be subject to these regulations, as well as installing only non-asbestos types in the future. A copy of the

Emergency and Proposed standards is attached for your information. Also attached are data sheets for an asbestos free cement.

The other items discussed are covered in the recommendations listed above. There is one additional item under recommendation #7 concerning the noise contours. The question of spacing of warning signs at the 90 dBA contour line was raised. No specific distance between signs are mentioned in the "Guidelines to the Dept. of Labor Occupational Noise Standards" or in the OSH regulations. I would suggest that each contour be inspected to determine if a warning sign is visible to anyone approaching along normal routes. Additional signs may be needed at some points where items block presently posted signs. Each noise source should be treated individually.

Additional items which were checked during my plant survey were the open surface tanks in the machine shop, boiler house and laboratory. The hot water bath tanks in the lab and the tank in the boiler house do not present a hazard as defined by the OSHA Item 1910.94 (d) (p10515). The tank in the machine shop is used to clean metal parts and contains a solution of Magnus 94XX-K which label states is a medium strength alkali mixture. I have written to the manufacturer for detailed information and will write specific recommendations operation, if needed, when the data is received.

I would like to thank Mr. D. H. Morton and his staff for the cooperation and assistance I received during my visit to the Anacortes refinery.

J. P. LICATA

JPL-AFG
Atts.