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MEMORANDUM

Part A: Noise Problems, Texas Area Plants

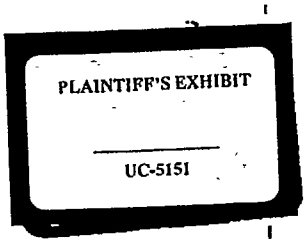
The existence of noise exposure sufficient to cause hearing impairment of employees working in the Seadrift and Texas City Plants has been a matter of concern for many years. The relatively recent acquisition of the Brownsville Plant added another location with a serious noise problem. The virtual certainty that some employees would suffer impairment of hearing has been known. Nonetheless, it has been extremely difficult to balance the medical and legal risks against the cost and effort needed for corrective action. In some of the work areas involved, the cost of eliminating the problem by engineering means has appeared to be prohibitive. The plants have been in the unfortunate position of having no realistic guidline for determining what degree of noise exposure reduction "must" be provided regardless of cost or effort, and to what extent corrective action "should" be undertaken. This has been a problem for many industries having serious noise problems.

In recognition of the need for a realistic criterion, the State of California solicited the assistance of qualified experts to define regulations which could be administered by state law. The experts selected for this assignment included good representation from industry as well as from government agencies. With this expert help, the State of California drafted and enacted into law a safety order covering the control of industrial noise exposure. This law will undoubtedly serve as a pattern which other states will follow. It can be anticipated that the State of Texas will be among those enacting this type of legislation in the near future. In general the law can be characterized as being extremely lenient, but is is written so that it can be tightened up as experience is gained in administering it.

The California law is deceptively simple. It adopts a philosophy which has been used successfully for the control of radiation exposure. The employer must be able to produce records defining the noise exposure history of every employee from his hiring date to termination (or to the date when the information is needed). This need for information and records describing the individual employee's exposure is not spelled out in the California noise regulation, but is is clear that employers cannot operate under the law without such records. Briefly, under a California-type noise control law, the company has the following responsibilities:

1. Over-all noise measurements and octave band frequency analyses must be made in locations where excessive noise exposure is possible. Such measurements would have to be repeated whenever any changes in equipment or operating procedures alter the noise condition.

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2. The time during which employees work in the noisy area must be known.

3. In work areas where the noise exposure is excessive (as defined by the regulation), the company must either correct the exposure by engineering means or be able to show that this approach is not feasible.

4. In those areas where the exposure is excessive and cannot be corrected by engineering means, employees must be required to use ear protection devices.

5. In the event of any legal action, such as the filing of compensation claims by the employees, the company must be able to produce documentation showing compliance with (1) through (4) above, which is in effect a record of the employee's noise exposure history.

For three reasons it is important that our Texas area plants initiate efforts to comply with the California law on a voluntary basis. The first reason is that voluntary compliance would give us a basis for a practical evaluation of the cost of compliance with this type law while there is still time to make individual decisions carefully, rather than have to do so hurriedly under duress. It must be emphasized that the cost of making major reductions of noise can be extremely expensive. Also, large sums of money can be spent unwisely with the result that little effective reduction of employee noise exposure is accomplished. The second reason is that experience gained through voluntary efforts to comply with a California-type law will enable us to anticipate the specific effect of similar legislation proposed for the State of Texas. Without such experience, it would be virtually impossible to judge the ultimate cost or other effects such a law would have on the Texas Plants. Third, the California law is so lenient that voluntary compliance would carry no risk of taking more action than would be reasonable.

None of our three Texas Plants is now in a position to do the work which would be required to comply with a law of the type described. In order to do this the services of an industrial hygienist (who would apportion his time between the three plants) would be required. The cost of this service would be negligible in comparison with the potential costs of eliminating the present hazards to the hearing of the employees. The industrial hygienist could not do all the implied work himself, but he would provide necessary guidance in setting up the programs and he would coordinate the resulting efforts. He would be personally responsible for making the noise measurements in the plants and for assuring that they were properly recorded. He would watch the progress of the work, review the findings, and report them in a manner to define what would be required to accomplish the needed reduction of noise exposure.



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It is recommended that the industrial hygienist work under the supervision of Dr R E Joyner, Medical Director at the Texas City Plant. This would accomplish another desirable objective in that Dr. Joyner would provide medical supervision of the work, including review and interpretation of the results of the audiometric tests being conducted at the three plants.

Part B: Other Industrial Hygiene Problems, Texas Area Plants

Texas City Plant

During a four-day period (October 2, 7, 8, and 9), a survey was made of the Texas City Plant to assess the volume of industrial hygiene work, in addition to the noise problems. The survey consisted of observation of plant locations and discussions with the supervisors. The survey was made by Mr. N. H. Ketcham following an itinerary outlined by Dr. R. E. Joyner. At the conclusion of the four-day survey, a list of 45 problems which required, or would benefit from, industrial hygiene service was compiled. The complete list is attached. Selected items included on the list were discussed with Mr. H. E. Allspach at the conclusion of the survey.

The Texas City Plant is beginning to utilize instrumentation containing radioactive sources and is now procuring them at a rapid rate. Plans are also being considered for having plant personnel do non-destructive testing using radiography, which is now being done by an outside contractor. The entry of the Texas City Plant into these fields is highly desirable but must be accompanied by suitable administrative control to comply with State regulations. Our experience at other locations shows that the services of an industrial hygienist are essential to sustain compliance with the licenses over extended periods of time.

Seadrift Plant

In 1961 the Seadrift Plant developed data showing an appreciable excretion of cobalt in the urine of Oxo process personnel. Further study of this finding would have been desirable but was not undertaken as there had been no evidence of acute illness of the men. The possibility of adverse effects from chronic (continuing) exposure has not been ruled out.

Close medical and industrial hygiene supervision of personnel who will be assigned to the new Styrene Unit is essential, at least until the extent of exposure to benzene and cracking residues has been evaluated.

The Seadrift Plant is complying with the State requirements for the use of a moderate number of radioactive sources. An industrial hygienist would relieve plant personnel of some of these continuing responsibilities.



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Numerous relatively minor potential health problems exist at the Seadrift Plant and would benefit from the attention of an industrial hygienist, if such a service were available locally.

Brownsville Plant

At the present time the Brownsville Plant has only minor industrial hygiene problems other than noise. The use of radioactive materials will probably remain very small for the foreseeable future.

There is a possibility that contemplated activities at this plant, such as propane oxidation studies, might introduce some problems not now present.

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Texas City Plant

## Continuing Industrial Hygiene Needs

1. Noise exposure evaluations -- engineering corrections -- personnel protection
2. Radiation safety -- compliance with regulations.
3. Ventilation design consultation.
4. Periodic performance testing and inspection of ventilation systems.
5. Community air pollution investigations.
6. Review of plans for new construction -- phenol-formaldehyde plastic unit -- n-alkanes unit -- ethylenimine unit.
7. Heat exposure evaluations and correction.
8. Lighting problems -- evaluation -- correction
9. Vessel and tank entry -- pre-entry safety tests.

## Specific Problems as of October 10, 1963

1. Complaints of airborne irritant at sheetmetal shop (dripolene?).
2. Illnesses due to removal of tube bundles at maintenance shop.
3. Fumes from salt pot at valve shop.
4. Cutting oil fumes at machine shop.
5. Evaluate dust inhalation at present insulation fabrication shop.
6. Design ventilation for new insulation fabrication shop.
7. Design paint spray facilities for new paint shop.
8. Evaluate need for local exhaust ventilation in carpenter shop.
9. Evaluate exposure to dust from outdoor sandblasting.
10. Evaluate exposure to welding fumes (winter conditions) north and south shops.
11. Carbide Seadrift - ventilation and pre-entry testing.
12. Air sampling for mercury vapor in instrument shop.
13. Lime dust at shipping department.

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14 Vessel entry test - use of Humble Oil Company rapid analysis for cobalt

15 Barge entry test for acrylonitrile - test detector tubes used

16 Nitrous acid fume at Oxo Unit - evaluate inhalation exposure.

17. Silver catalyst loss and personnel exposure.

18. Smith-Douglas Company fumes

19. Acid plant fumes ($SO_2$).

20. Disaster planning - radiation and other emergencies.

21. Investigate feasibility of scrubbing acetaldehyde vent, Building 111.

22. Test (and then replace) ring-type exhaust hoods at catalyst unit.

23. Evaluate benzene exposure - plantwide.

24. Compare suitability of single tube benzene test with mixed reagent kit.

25. Ventilation for heat relief, Compressor Building 139.

26. Chlorinated hydrocarbon inhalation, Building 110 - air sampling.

27 Mercury catalyst loss and personnel exposure.

28. Mercury contamination of water -- National Institutes of Health.

29. Formic acid from Brownsville - evaluate inhalation exposure.

30. Improve carbon monoxide sampling system for alarm (Oxo Unit).

31. Air sampling for cobalt - chronic inhalation - Oxo Unit.

32. Investigate cobalt exposure at filter press - Oxo Unit.

33. Mercury contamination of ground near Dowtherm furnace.

34. Vapors from drum washing at shipping building.

35. Air sampling for miscellaneous esters - Building 24.

36. Heat control at oxide units.

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