PLAINTIFF'S EXHIBIT

UC-1706

UNION CARBIDE

INTERNAL CORRESPONDENCE

UNION CARBIDE CHEMICALS COMPANY • SOUTH CHARLESTON 3, WEST VIRGINIA

To (Name) Mr. A. P. Moss
Company 32nd Floor
Location New York Office

Date December 17, 1963

Originating Dept. Research and Development

Answering letter date

Copy to Mr. R. M. Berg
C. U. Dernehl, M. D.
Dr. F. Johnston
Dr. J. L. Marsh

Subject Texas Area Industrial Hygienist

Dear Mr. Moss:

Early this Fall I spent two consecutive weeks at the three Texas Plants with the primary objective of evaluating a suspected need for greatly increased industrial hygiene services at these locations. At each plant I discussed the needs with the plant manager and outlined a course of action which included a proposal for hiring an industrial hygienist. The managers were generally cognizant of the health problems and agreed there was considerable merit in the proposal. Dr. R. E. Joyner, Medical Director of the Texas City Plant, was also consulted and is in agreement with the plan. This letter and attached memorandum summarize my conversations with the plant managers and Dr. Joyner and is a specific request for your approval for the Texas Plants to hire an experienced professional industrial hygienist who will apportion his time between the three locations. The services of this man can be expected to result in major monetary savings, to improve our medico-legal position with respect to the impairment of hearing of our employees, and to make major contributions to the solutions to many of the health problems.

After you have had an opportunity to consider this proposal and the information in this letter and memorandum, I will appreciate a chance to discuss the subject with you, as there are some aspects which warrant further clarification.

The health problems at the three plants can be divided into two broad categories; namely, (1) noise exposure and (2) other problems including compliance with state regulations for the handling of radioisotopes, ventilation problems, heat control efforts, and air contamination.

My observations and conclusions concerning the noise problems were discussed in detail with each of the plant managers. At both the Texas City and Seadrift Plants, impairment of hearing attributable to industrial noise has been demonstrated. The situation is particularly serious as impairment of hearing in some relatively young men has progressed with disturbing rapidity. The Brownsville Plant has not reported impairment

BRG 0207

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of hearing to date, but this may be expected as the existence of a severe hazard has been defined.

Very large expenditures of money may be required to cope with the noise problems at each of the three plants. Some major expenditures have already been made and some notable reductions in noise exposures have resulted. Unfortunately, these efforts to date have had to be made without a clear-cut criterion for judging how much and what kind of correction was needed. It has been especially difficult to distinguish between noise exposure reductions which should be assigned mandatory status and those which would be desirable but not necessarily essential. Accordingly, I attempted to acquaint each of the three plant managers with the provisions and general philosophy of a noise control law passed by the State of California early in 1963. This law is extremely lenient, but it does for the first time provide a basis for distinguishing between mandatory and optional corrective action. I proposed that each plant voluntarily attempt to "live with" this California law in anticipation of the time when the State of Texas would have similar legislation. The advantages to the plants and to the Chemicals Division of following this course of action are explained in the attached memorandum, Part A.

A large number of other industrial hygiene problems in the Texas area plants were identified during this two-week survey. This was not a surprise, and very little was observed that was not already known. This was, however, the first time an effort has been made to formally record the volume and variety of the problems. As expected, the largest volume of such needs occur at the Texas City Plant. A list of 45 examples existing at the Texas City Plant is included in Part B of the attached memorandum.

The rapidly growing volume of work with radioisotopes in sealed sources is worthy of special comment. The safety aspects and the procedures for compliance with Texas State regulations have been handled capably to date by plant personnel at all three locations. Experience at other locations, however, shows conclusively that the safety and compliance aspects will require the services of an industrial hygienist to sustain the somewhat routine but mandatory procedures over extended periods of time.

Ventilation problems, efforts at heat control, and air contamination problems also occur frequently and need the services of an industrial hygienist.

There is, in my opinion, no doubt but that the serious nature and the volume of health problems at the Texas area plants require the full-time services of a professional industrial hygienist. The present level of effort being made to define and correct the problems is not adequate. Provision of full-time industrial hygiene service at the Texas Plants is most logical in view of the favorable experience at the Institute and South Charleston Plants and the Technical Center, where industrial hygienists are employed by the medical departments. The demonstrated value of the service and the overwhelming volume of work requested of the industrial hygienists

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at these locations virtually assures the success of the program at the Texas Plants. The cost of the industrial hygienist's services will be negligible in comparison with the potential savings he can be expected to produce on the noise problems alone. His contributions on other problems, from which additional major savings can be expected, make the need for his work even more apparent.

The industrial hygienist should report to Dr. R. E. Joyner, Medical Director of the Texas City Plant. This would accomplish a second highly desirable objective; namely, that of providing for over-all medical supervision of the work, including review and interpretation of the results of audiometric tests being conducted at all three locations. The time and the cost of the industrial hygienist's services should be apportioned between the three plants.

An experienced industrial hygienist of the caliber needed for this assignment will be difficult to find. The definition of an industrial hygienist, as described by the American Industrial Hygiene Association, is marked on the first page of the management brochure enclosed. I urge prompt approval of this proposal so efforts can be initiated immediately to locate a qualified man. This may take a year or more to do. In the meantime I will, of course, continue to give the three Texas Plants as much personal attention as I can

Very truly yours,

N. H. Ketcham

N. H. Ketcham
Industrial Hygiene Consultant

NHK/dww
Attachments

BRG 0209

M E M O R A N D U M

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.

NHK/dww
12-17-63

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INTERNAL CORRESPONDENCE

UNION CARBIDE CORPORATION

CHEMICALS UNION CARBIDE DIVISION

P. O. BOX 186
PORT LAVACA, TEXAS 77979

WFM
RM - File

To (Name) Mr. A. P. Moss
Company
Location New York Office

Date January 8, 1964
Originating Dept.
Answering letter date

Copy to Mr. H. E. Allspach
Mr. H. B. Coons ←

Subject Texas Area Industrial Hygienist

Dear Mr. Moss:

The Seadrift Plant has some industrial hygiene problems at the present time. These problems consist of noise in the compressor areas and the intensifier oil building, and the build-up of cobalt concentration in the personnel working at the Oxo Unit. Additional problems will be encountered in the Styrene Unit. Therefore, I believe that the Seadrift Plant could use effectively an industrial hygienist on a part-time basis.

I believe that this hygienist should work from a centralized group to cover all problems in the Texas area. I further believe that he should work closely with Dr. Joyner on the solution of all problems in the area plants. If Dr. Joyner is assigned these problems on an area basis, we may be relieved from a full-time doctor at Seadrift and Brownsville for many years.

In the corrosion work at the Seadrift and Brownsville Plants, we have used the services of the corrosion group at Texas City. I visualize that the same procedure could be used to fully utilize the services of an industrial hygienist at the Texas area plants.

As pointed out in Mr. Allspach's letter, the place to start a program of industrial hygiene is in the Engineering phase of the project. As our industrial hygienist became familiar with the technical aspects of the problems, he could be used as a consultant to the Engineering Department on the design of new units in the same manner as we assign an operating man to work on the design of new units.

Very truly yours,

R. P. Barry

R. P. Barry/mk

BRG 0199

C. & C. C. C.
RECEIVED
JAN 10 1964
H. B. COONS

UNION CARBIDE CORPORATION

CHEMICALS DIVISION

BRG 0200

UNION CARBIDE

Mr. A. P. Moss

New York Office

January 6, 1964

Mr. H. E. Allspach
Mr. R. P. Barry

Texas Area Industrial Hygienist

Dear Mr. Moss:

The number of industrial hygiene problems at Brownsville (except for noise) are, as Mr. Ketchum says, minor. We do have a noise problem in the oxygen plant and in the utilities unit. At present we require employees to wear ear plugs. We plan to improve these areas and to keep a close check on the hearing ability of the people who work in them.

It is my feeling that with the purchase of an instrument to measure noise levels, we can develop a program which can be executed here. We can keep the records necessary to comply with the California law, as suggested by Mr. Ketchum.

From the standpoint of the Brownsville Plant we see little need for an industrial hygienist in the Texas area.

Very truly yours,

H B Coons

H. B. Coons

HBC:mr

BRG 0201

.UNION CARBIDE **INTERNAL CORRESPONDENCE**

UNION CARBIDE CHEMICALS COMPANY • P. O. BOX 471, TEXAS CITY, TEXAS

To (Name) Mr. A. P. Moss
Company 32nd Floor
Location NEW YORK OFFICE

Date January 2, 1964

Copy to Mr. R. P. Barry
Mr. H. B. Coons

Subject Texas Area Industrial Hygienist

Dear Mr. Moss:

We recognize here at Texas City the presence of many industrial hygiene problems which need solution. Certainly a full-time hygienist in the area or in the plant would be helpful in solving some of these problems.

In reading Mr. Ketcham's letter of December 17, and in recalling conversations with him and Dr. Joyner at the time of his visit in October, I am impressed with the number of problems which fall in the category of noise, heat, and ventilation. These problems exist because of decisions made at the time these facilities were engineered and designed. We have struggled to find practical solutions to these problems and I am pessimistic about finding them. Meanwhile we are getting into a sizable building program in this plant, and I am hopeful that industrial hygiene factors are being given adequate consideration in the design stage. Similarly we are doing some modernizing of existing units in which industrial hygiene factors should be considered.

If the industrial hygiene effort is to be limited, I would rather see it applied in the design stages in the Engineering and Design Departments than in the plants, and we could continue to call upon existing personnel for consultation visits as we have been doing rather than locate an industrial hygienist in this area. Even with one industrial hygienist located in the Texas area, he could be resident on only one plant of the three and must necessarily serve on a consulting basis to the other two plants.

BRG 0202

C. & C. C. C.
RECEIVED
JAN 3 1964
H. B. COONS

BRG 0203

In summary, while I am not adverse to locating an industrial hygienist in the Texas Area, I believe that increased efforts should be made first in the design and engineering stages of both new units and units being modernized so as to prevent problems rather than solve them.

Sincerely yours,

H. E. Allspach

H. E. Allspach

HEA/dmh

BRG 0204

UC 149-2

UNION CARBIDE

INTERNAL CORRESPONDENCE

UNION CARBIDE CHEMICALS COMPANY • 270 PARK AVENUE, NEW YORK 17, NEW YORK

To (Name) Mr. H. E. Allspach
Company Mr. R. P. Barry
Location Mr. H. B. Coons

Date December 24, 1963

Originating Dept. Works Manager's Dept.

Answering letter date

Copy to

Subject Texas Area Industrial Hygienist

Gentlemen:

The attached letter from Mr. Ketcham on the subject matter is self-explanatory. For some time he and Dr. Dernehl have been urging us to add people in this category to our plants.

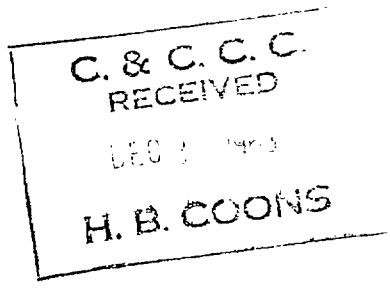
I will appreciate your counsel on this matter.

Very truly yours,

APMoss/etw

Encl.

BRG 0205



BRG 0206

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