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AMERICAN PETROLEUM INSTITUTE
MEDICAL ADVISORY COMMITTEE

Minutes of Meeting
April 5, 1946
Stevens Hotel
Chicago, Illinois

MEMBERS PRESENT

McIver Woody - Chairman
T. M. Frank - Secretary

F. F. Boys
A. E. Hoag
J. P. Holt
R. A. Jewett
E. K. Linder
M. N. Newquist
B. B. Reeve

ASSOCIATES PRESENT

E. W. Adams
L. C. Beard, Jr.
R. S. Bonsib
W. W. Brooks
R. C. Cole
N. J. Gothard
Wm. Grant, Jr.
H. P. Lankelma
H. R. Warrick
P. M. Watkins

GUESTS

A. G. Cranch, M.D.
B. C. Voshell

ADVISOR

D. V. Stroop - API

Total in Attendance - 22

MEMBERS ABSENT

W. O. Armstrong
V. C. Beard
D. M. English
W. R. Levis
W. A. Morrison
J. F. Peattie
O. S. Somerville
H. S. Thomson

ASSOCIATES ABSENT

R. H. Colley
R. S. Driver
E. W. Isom
H. R. Kemmerer
A. J. Koewing, Jr.
D. W. Larmer
C. R. McCay
G. H. Taber, Jr.
H. D. Wilde

.....

I

The minutes of the previous meeting, November 16, 1945, were approved as circularized.

II

A new member, Dr. E. K. Linder (present), and a new associate, Dr. H. D. Wilde (absent), were recognized.

III

The report of the Subcommittee on Chlorinated Compounds was presented by Dr. Boys (A copy of the report is attached as Appendix A). It is the view of the Subcommittee that no serious problem exists. This view was supported by Dr. A. G. Cranch of the Union Carbide and Carbon Company of New York City, who was invited to discuss published reports of the dangers of these compounds. (A digest of Dr. Cranch's statements is attached as Appendix B.)

IV

The report of the Subcommittee on Policies and Practices was presented by Dr. Jewett. Acting on this report it was voted:

1. To request all members of the Medical Advisory Committee to submit physical examination blanks used by their companies to the Subcommittee.

2. To refer the whole question of H.F. intoxication, and the policies to be adopted in this connection, to a Subcommittee.

3. To refer the question of tours on duty back to this Subcommittee.

4. To record our approval of voluntary prepaid non-industrial group insurance for employees, including surgical and hospital care plans.

(Dr. Reeve not voting.)

5. To ask this Subcommittee to circularize again the questionnaire on policies and practices.

(A copy of Dr. Jewett's report is attached as Appendix C.)

V

The report of the Subcommittee on Permissible Concentrations was received. It was voted:

1. To recommend to the Board of Directors of the API that this project be assigned to Harvard University and the funds be administered by Drs. Drinker and Drinker, in conjunction with the Subcommittee.

2. That Dr. Drinker be asked to initiate work on those compounds found in common on that list prepared by the Subcommittee and the list submitted by Dr. Beard.

3. To enlarge the Subcommittee by adding some of the associates.

4. To refer the list of compounds back to the Subcommittee for further study and after revision, to Dr. Drinker.

(A copy of Dr. Baird's report is attached as Appendix D.)

VI

The report of the Subcommittee on Carcinogenicity was presented by Dr. Newquist. It was voted:

1. To instruct the Subcommittee to arrange for storage of samples (of about 1 barrel each) preferably under nitrogen.

2. To request the companies which supply these samples to pay the shipping charges.

3. To request these companies to furnish free of charge any laboratory data obtained by them in routine examination of these samples, and where special tests may be required, that these be done by laboratories specially equipped for such tests and that this work be paid for out of funds derived from the API.

(A copy of Dr. Newquist's report is attached as Appendix E.)

VII

The chairman made a verbal report on the meeting of the Committee Z37 of the A.S.A.

VIII

It was agreed that the next meeting of the Committee should be held next fall in connection with the meeting of the API, at which time there should be a report on the budget, plans, and needs of the Medical Advisory Committee.

T. M. Frank
Secretary

Approved:
McIver Woody
Chairman

5-8-46

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APPENDIX A

REPORT TO THE API MEDICAL ADVISORY COMMITTEE

BY THE SUBCOMMITTEE ON CHLORINATED COMPOUNDS

There was general agreement on the report we submitted in November 1945; however, at the request of the chairman the report was viewed as preliminary and work was to continue. One reason for continued study was doubt cast on the reported dermatological effects of chlorinated aromatics as used in cutting oils. At a meeting with Dr. A. G. Cranch in Chicago last winter, further doubt was cast on Dr. Louis Schwartz report "Chloracne from Cutting Oils." Dr. Cranch has consented to appear before us with a study that may stimulate further work from our group. We considered the possibility of doing experimental work with cutting oils on human volunteers. It was thought that the dermatological picture might be cleared up somewhat by painting the forearms of volunteers over a sufficient length of time to produce a dermatitis with (1) A solution of chlorinated aromatics in cutting oil base, (2) A solution of chlorinated paraffin in a cutting oil base and (3) with a cutting oil base without additive. We have found that legal objections arise which might be obviated by having the work done by an independent laboratory. In the opinion of experts consulted, there would appear to be no danger in doing this work; however from the lack of response to our report issued last November the necessity of doing this work or a continuation of this committee is questionable.

In conclusion, I would like to quote from Dr. Hoag and Dr. Beard's letter of March 29th, 1946 in which they state, "We do not feel that we can depart at this time from the conclusions of the report as attached to Mr. D. V. Stroop's letter of December 3, 1945 and as distributed to the Directors of the American Petroleum Institute. We feel that the distributing of this report has in a large measure fulfilled our obligations as impartial M.D.'s and technologists to industry by pointing out the hazards involved in the uses of chlorinated aromatic compounds in cutting oils."

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APPENDIX B

CUTTING OIL DERMATITIS WITH SPECIAL REFERENCE TO THE USE OF CHLORINATED NAPHTHALENES AND DIPHENYLS

This problem is one concerning cutting oils as a group. These are complex materials and the composition is constantly being changed to meet special conditions of use. The concern is therefore as to the effect of the formulation used rather than any one ingredient by itself.

In cutting oils as in many other products toxic ingredients are used but in proportions not creating any very special hazard in the use of the compound. The addition of many useful ingredients might be needlessly condemned if such addition were predicated on the toxicity of an additive in its concentrated form rather than on the hazard presented as a compound as a whole containing small amounts of possibly toxic ingredients.

In discussing the use of various additives "the literature" has been cited. The value of "the literature" as an authority must be carefully judged. Not all pertinent observations are always available in published reports nor are all published articles essentially reliable because they appear in print. Specifically literature references to the hazards present in the use of chlorinated naphthalene in cutting oils stem from one source article which on analysis can be shown to have arrived at certain conclusions on the basis of what seem to be quite erroneous premises.

Chlorinated additives in cutting oils have been used incidentally since the first world war and for specific reasons for almost twenty years. Chlorinated naphthalene has been used for about ten years and that with no note of increased occurrence of dermatitis among those using such oil. One of the notable characteristics in the use of chlorinated naphthalene is that there is very little loss of chlorine during the use of such oil. In spite of this a loss of considerable amounts of chlorine through use of the oil has apparently been taken by some to indicate the presence of chlorinated naphthalene. Some published analyses showing loss of chlorine are assumed to refer to oils containing chlorinated naphthalene when in fact none was present. Another point to note is that in gear grinding operations where the operator is exposed to a mist of oil contacting face, neck, etc., dermatitis has been noted on these surfaces whether or not chlorinated naphthalenes were present if proper protective measures were not used. Published references to increase in dermatitis especially of face and neck imply that this increase was due to the presence of chlorinated naphthalene in the cutting oil. The fact seems to be that the increase was due to the nature of the exposure. Experience over a number of years in plants using large amounts of cutting oil containing chlorinated naphthalene indicates that its presence has not increased the occurrence of dermatitis. Still another point to note is that when lanolin is added to cutting oils not readily soluble a slight excess will separate as a waxy, greasy film. This substance has led some to assume that chlorinated naphthalene was present when in fact it was not.

Summary:

A cutting oil should be judged as to hazard on the effect of the compound as a whole, not the toxicity of any one component in concentrated form.

Hazard of dermatitis is determined by the extent of exposure rather than specific composition of the oil.

When chlorinated additives are used high loss of chlorine during use does not indicate the presence of chlorinated naphthalene.

Information obtained from a large number of plants using large quantities of cutting oil containing chlorinated naphthalene does not indicate that such use has increased the dermatitis hazard.

/s/ A. G. Cranch
A. G. Cranch, M.D.

API Medical Committee
April 5, 1946

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APPENDIX C

REPORT TO THE API MEDICAL ADVISORY COMMITTEE

BY THE SUBCOMMITTEE ON POLICIES AND PRACTICES

April 1st, 1946

Dr. McIver Woody, Chairman
Medical Advisory Committee
of the American Petroleum Institute
Standard Oil Co. of New Jersey
26 Broadway
New York 4, N.Y.

Dear Dr. Woody:

Your subcommittee on Policies and Practices has not held a meeting. The members apparently feel the committee has not outlined a definite problem to challenge the interest of the subcommittee members. Consequently a meeting cannot be justified on account of time and distances to travel.

There being no comment on suggestions forthcoming as a result of the last general meeting, I selected six subjects on which I believe Policies and Practices should be endorsed by the general committee. I sent the list to the subcommittee members with the request that each member take one of the subjects and report on it.

These six subjects were selected for the following reasons:

1. A standardized physical examination record which provides a space for all information desired in as concise a form as possible consistent with the size of the record.

   Reasons: As a result of the questionnaire on Policies and Practices presented to the general committee members, six physical examination forms were received. I will name each heading and sub-heading giving the number of the six forms using it. You can thus evaluate what six Doctors in the oil industry think valuable for a record.

NAME (6) LOCATION (6) OCCUPATION (4)

AGE (5) HEIGHT AND WEIGHT (6) APPEARANCE (3)

SEX (2) COLOR (1) NATIONALITY (1)

DEPENDENTS (1) MARITAL STATUS (5)

FAMILY HISTORY (1)

PERSONAL HISTORY (HEADING ONLY) (3)
(FEW, TO MANY CONDITIONS LISTED) (2)

OCCUPATIONAL HISTORY (1)

HEALTH HABITS (1) DIET (1) USE OF TOBACCO COFFEE ALCOHOL (2)

VACCINATIONS (4) TYPHOID INOC. (2) OTHER INOCCULATIONS (1)

TEMPERATURE (3) PULSE (3) RESPIRATION (0) BLOOD PRESSURE (4)

DEFORMITIES: NO DESIGNATIONS (2)

DESIGNATIONS: FLAT FEET (1) SPINE (4) EXTREMETIES (4) JOINTS (1)

SKIN: NECK (1)

EYES (3) VISION (6) CORRECTED (5) COLOR SENSE (3)

EARS (2) HEARING (6) NOSE (3) THROAT (5) TONGUE (2)

TEETH (6) GUMS (3) LUNGS (6) EXPANSION (2) BREASTS (1)

HEART (6) (2 OF THESE CALL FOR SIZE SOUNDS) ARTERIES AND VEINS

ABDOMEN (6)

HERNIAE (3) HERNIAE OR TENDENCY TO 2 HERNIAE CONDITION OF RINGS, MUSCLES, ANY IMPULSE (1)

GENITAL AND URINARY ORGANS (2) GLANDS (3) REFLEXES (4)

URINARY EXAM. (ALBUMEN AND SUGAR) (3)
(MICROSCOPIC) (2) BLOOD TEST FOR LUES (3)

MENSTRUAL HISTORY (3)

PELVIC (1)

RECTAL (1) MENTAL CONDITIONS (2)

SUMMARY (3) ADVICE GIVEN (2) A B C D RATING (3)

ACCEPT NOT ACCEPT (3)

Appendix C

2. A procedure of examination which will hold up in Court of employees claiming physical damage from exposure to Hydrofluoric acid.

Reasons: This is a fairly new hazard to those operating Alkylation Plants and there seems to be no accepted policy for an authoritative endorsement of what constitutes proper examination for prevention of Hydrofluoric acid poisoning or the disproving of such a poisoning when so claimed. Dr. Holt took this one and his report is attached.

3. Should employees be inocculated against tetanus and prophylactic inocculations given when open wounds are encountered.

Reasons: Some health authorities and pseudo authorities are already advocating that the public and especially children and industrial workers be inocculated against tetanus. Authorities are divided on the use of the tetanus vaccine for prophylaxis. Dr. Morrison took this one and his report is attached.

4. How long should a shift or tour be in order to maintain maximum health.

Reasons: Tour work is a necessary practice in oil companies and involves many workers. Basic health habits are interfered with by this practice. Much turnover and many unhappy workers as well as sickness result from this practice. There is a wide variation of time of shifting varying from a vew days to a few months in companies and often in departments of the same company. Dr. Frank took this one and his report is attached.

5. A procedure for the employment and rehabilitation of the handicapped Veteran.

Reasons: Everyone is doing it or attempting to, or telling how it should be done. No one took this one.

6. Prepaid Medical and Hospital Plans.

Reasons: This is the most important procedure requiring proper policies and practices before the medical profession today. I asked Dr. Peattie to take this one because he operates such a plan located in a district where there are many such plans in operation. The more important ones are:

California Physicians' Service
Keiser's Permanente Foundation
Southern Pacific Railroad
French Hospital Association

As yet he has not accepted the assignment.

Appendix C

Recommendations:

1. That each committee member review his physical examination record in relation to the outline given for purpose of improvement, send a sample of his revised form to the subcommittee for formulation of a standardized form to be worked out by the subcommittee.

2. That your committee make recommendations on numbers 2, 3, 4, 5, 6, for the guidance and practice of your companies.

3. That you outline definite problems for your subcommittee on Policies and Practices to study and report their findings back to you.

Very truly yours,

/s/ R. A. Jewett
R. A. Jewett, M. D.
Chairman, Subcommittee on
Policies and Practices of
the Medical Advisory
Committee of the American
Petroleum Institute

RAJ:mfw

Appendix C

PAN AMERICAN REFINING CORPORATION

Texas City, Texas

February 21, 1946

Dr. R. A. Jewett
Medical Director
General Petroleum Corp. of California
Los Angeles 12, California

Dear Dr. Jewett:

Your letter of January 23, 1946, came to hand in due course and since then I have done considerable inquiring about opinions on the subject of tours. So far, these have been inconclusive, and I have yet to uncover any authoritative information.

This letter is to tell you that I am still working on the question. I expect to explore 2 more resources and then send you my findings, if any. Please accept this as a progress report and the final report is to come to you soon.

Yours truly,

/s/ T. M. Frank
T. M. Frank, M.D.
Medical Director

TMF/dm

Appendix C

STANDARD OIL COMPANY OF CALIFORNIA

Standard Oil Building
San Francisco 20, California

March 27, 1946

Dr. R. A. Jewett, Medical Director
General Petroleum Corporation of Calif.
108 West Second Street
Los Angeles 12, California

Dear Dr. Jewett:

The question of "TOURS" of duty, and how long they should extend is a question that has arisen many times, and the importance certainly varies greatly with different people. Some few seem unable to completely adjust themselves to these changes, and there are a certain number of complaints because of this.

It is my opinion that at the outside two or three months should be the maximum.

Very truly yours,

/s/ H. S. Thomson
Herbert S. Thomson, M.D.

HST:EJ

Appendix C

PAN AMERICAN REFINING CORPORATION

Texas City, Texas

March 20, 1946

Dr. R. A. Jewett
General Petroleum Corp. of Calif.
Los Angeles 12, Calif.

Dear Dr. Jewett:

Having received your request for investigating subject of tours, I wish to present the following.

Opinion

There is wide variance of opinion. The personnel people say it is possible to arrange a schedule to fit any type of tour you might want.

Certain physicians say they think a tour should be at least a month long. Others have suggested three or six months, a few individuals prefer to work all days or all nights without any form of shifting.

My opinion is that any change in any plant would arouse opposition on the part of some people but not from all. I believe that in spite of this, with proper psychological handling, such opposition could be overcome and a proper tour instituted if we could agree among ourselves as to what a proper one is.

Authority

Seems inadequate. The amount of actual work done on the subject seems to me to be very small. The best I can find in print is in the Manual of Industrial Hygiene of the National Institute of Health, (Saunders) W. M. Gafafer, Editor, in the 1943 edition page 318 and references at the end of the chapter.

Perhaps this will start the ball rolling.

Yours truly,

/s/ T. M. Frank
T. M. Frank, M.D.
Medical Director

TMF/em

Appendix C

STANDARD OIL COMPANY (NEW JERSEY)

30 Rockefeller Plaza
New York 20, N. Y.

March 29, 1946

Dr. R. A. Jewett, Medical Director
General Petroleum Corp. of California
Los Angeles 12, California

Dear Dr. Jewett:

In reply to your letter of March 26 concerning the question of "tours", the only data with which I am familiar is that cited by Dr. Frank in the Manual of Industrial Hygiene of the National Institute of Health (Saunders) W. M. Gafafer, Editor, 1943. I have had no personal experience with this problem but the recommendation of Dr. T. Parran, Surgeon General, U.S.P.H.S., that an individual rotate his working shift no oftener than every two or three months seems reasonable to me.

As you know, Dr. N. Kleitman, Professor of Physiology, University of Chicago has done considerable investigative work on the question of shifting one's activity from one period of the day to another. He has shown that it takes several weeks for a person's eating, sleeping and leisure habits to become adjusted after making a "shift" in his activities. I know Dr. Kleitman as I received my Ph.D. in Physiology from the University of Chicago and I have a great deal of respect for his work. Since our next meeting is in Chicago it might be worthwhile for Dr. Frank to discuss this problem with Dr. Kleitman. Looking forward to seeing you in Chicago I remain

Sincerely yours,

/s/ J. P. Holt
J. P. HOLT, M. D.

Appendix C

UNION OIL COMPANY OF CALIFORNIA

Union Oil Building
Los Angeles, California

March 8, 1946

R. A. Jewett, M. D.
Medical Director
General Petroleum Corporation
108 West 2nd Street
Los Angeles 12, California

Dear Doctor Jewett:

This refers to your letter of February 21, 1946. In my letter of February 8, 1946 it was my intention to convey to you the method used by the Union Oil Company and which is my recommendation to the oil industry for the use of tetanus and anti-toxin.

Recently we have considered the question of immunizing certain employees who work around the wharves and oil fields. However, it was decided impracticable because of the "turnover" of employees. Personally, I have never seen a case of tetanus among the employees of the Union Oil Company.

My recommendation is that tetanus vaccine be used in any case where there is a question of a puncture wound or any other type of wound that might possibly be subject to a tetanus infection. I do not believe it would be practicable to immunize all employees as they do in the armed service.

Very truly yours,

/s/ W. A. Morrison
W. A. MORRISON, M.D.
Medical Director

WAM:C

Appendix C

STANDARD OIL COMPANY OF CALIFORNIA

Standard Oil Building
San Francisco 20, California

March 18, 1946

Dr. R. A. Jewett, Medical Director
General Petroleum Corp. of Calif.
108 West Second Street
Los Angeles 12, California

Dear Dr. Jewett:

In response to your note of March 15th, I would like to say that I am entirely in accord with Dr. W. A. Morrison's opinion regarding the general immunization of employees against tetanus. We have considered it on various occasions and decided not to do it.

Furthermore, in all penetrating or dirty wounds the employee is given an immunizing dose of anti-tetanic serum.

Very sincerely,

/s/ H. S. Thomson
HERBERT S. THOMSON, M.D.

HST:EJ

Appendix C

STANDARD OIL COMPANY (NEW JERSEY)

30 Rockefeller Plaza
New York 20, N. Y.

March 25, 1946

Dr. R. A. Jewett, Medical Director
General Petroleum Corp. of California
Los Angeles 12, California

Dear Dr. Jewett:

In reply to your letter of March 15 concerning the report of Dr. W. A. Morrison on the use of tetanus prophylactic injections in the treatment of wounds, the report meets with my approval. Although I am not well acquainted with this subject, the recommendations of Dr. Morrison seem quite satisfactory to me.

I am hoping that I will have a report to make on the hydrogen fluoride problem when we meet in Chicago next week.

Sincerely yours,

/s/ J. P. Holt
J. P. HOLT, M.D.

Appendix C

MEDICAL ADVISORY COMMITTEE OF THE AMERICAN PETROLEUM INSTITUTE

1. Subcommittee on Medical Policies and Practices
Dr. R. A. Jewett, Chairman

A PRELIMINARY REPORT ON THE PROCEDURE OF EXAMINATION, WHICH WILL HOLD UP IN COURT, OF EMPLOYEES EXPOSED TO HYDROGEN FLUORIDE

There are hundreds of papers in the literature dealing with the toxic effects of fluorine compounds causing mottled enamel of the teeth, injury to the bones (fluorosis), injury to the skin and mucous membranes, and injury to other tissues (1,2,3,4). There are fewer papers dealing with the toxic effects of hydrogen fluoride and I have reviewed a number of these.

Hydrogen fluoride has the following characteristics (5,6):

Formula	HF or H_xF_x
Molecular weight	20.01
Specific gravity	0.987
Boiling Point	19.4°C
Melting point	-92.3°C

It is a colorless liquid the vapor of which is lighter than air. It is violently corrosive and corrodes glass. The probable safe concentration limit of exposure to its vapors is 3 ppm.

Exposure to hydrofluoric acid fumes (7) produces intense irritation of the eyelids and conjunctiva, coryza, bronchial catarrh with spasmodic cough, painful blisters, ulcers of the cuticle, suppuration under the finger nails, loss of finger nails and ulceration of the nostrils, gums and oral mucous membranes. Accidental breathing of concentrated vapors has caused death.

Dr. W. Machle, Kettering Laboratory of Applied Physiology, University of Cincinnati, has done considerable experimental work on the exposure of animals to hydrogen fluoride vapors (8,9,10). He has shown that exposure of rabbits and guinea pigs to a concentration of 1.0 to 1.5 milligrams per liter (1180 to 1770 ppm) of hydrogen fluoride for five minutes kills a significant number of animals. Concentrations above this are denagerous for any period of exposure, while concentrations ranging down to 0.44 milligrams per liter (519 ppm) for exposure periods up to six hours cause no deaths but produce pathological changes in the tissues. The pathological changes observed were injury to the cornea, nasal mucous membranes, cardiac dilation and injury, pulmonary hemorrhage, congestion, emphysema, edema, bronchial pneumonia, hepatic congestion and parenchymal injury, splenic congestion and edema, renal congestion and edema. Exposure of rabbits to a concentration of 0.0152 milligrams per liter (18 ppm) for about six hours a day until they had been exposed for 309 hours resulted in the storage of fluorine up to approximately ten times the normal amount. This excess fluorine was retained for as long as 15 months. Most of the excess fluorine was in the bones while the teeth, muscles, lungs and central nervous system showed some storage of excess fluorine. Exposure of five rabbits, three guinea pigs and two rhesus monkeys to a concentration of 0.0152 milligrams per liter (18 ppm) for six to seven

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hours daily for 309 exposure hours resulted in the death of two of the guinea pigs. The other animals lived, but some or all of the animals showed the following pathological changes: pulmonary hemorrhage, hyperplastic pulmonary epithelium, fatty liver, leucocytic infiltration in the lungs with atelectysis and alveolar thickening, hyperplastic bronchial epithelium, kidney tubular necrosis with inflammation of the glomerulae, and a slight reduction in the erythrocyte count. The concentration of gas used here appeared to cause only slight irritation to the animals.

The excretion of fluorides has been studied in man by Machle (11). It was found that on a normal diet the daily intake of fluorides was slightly less than 0.5 milligrams. The daily excretion was the same, most of the fluorine being excreted in the urine. No clinical, roentgenological or other evidence of ill effects resulted from the ingestion of 1.5 milligrams fluorine per day. Six milligrams of excess fluoride, in the form of sodium fluoride or other fluoride, was added to the diet of one subject for many weeks and the excretion studied. Much of this excess fluoride was stored in the body. This storage appears to be permanent. With a urinary excretion of two to three milligrams of fluorine per day it appears that the subject is storing about two to three milligrams of fluorine per day. Men exposed to 100 to 200 milligrams of fluorine per 10 cubic meters of air (12 to 24 ppm) excreted fluorine in the urine in amounts ranging from normal up to 33 milligrams per liter. It appears that at the high level of fluorine excretion approximately 16 milligrams of fluorine is stored in the body per day.

A group of ten men engaged in manufacturing hydrogen fluoride and exposed to hydrogen fluoride vapors have been studied for several years (12). The medical histories, physical examinations every three months, blood studies as indicated, X-ray studies of the bones, and quantitative determinations of the fluoride excretion in the urine have been made during part of this time. Analyses of the air in the room at some points showed zero concentration of fluorides and at other points near the equipment showed fluoride concentrations of 0.011 to 0.021 milligrams per liter (13 to 25 ppm). These concentrations are of the order of 0.0152 milligrams per liter (18 ppm) which have been shown to be toxic to experimental animals. The red and white blood counts and X-ray examinations have given negative results. The urine fluorine concentration of these workers has varied from zero to 24 milligrams per liter, a large number of the subjects having a urinary fluoride concentration between two and four milligrams per liter. Analytical determinations made throughout several years on the above subjects exposed to hydrogen fluoride vapors show that they have absorbed more than three times the normal amount of fluorine. Subjects living in an area in which the drinking water contained 12 milligrams per liter fluorine were found to have similar concentrations of fluorine in the urine.

I have discussed the problem of hydrogen fluoride intoxication with Dr. A. J. Carlson, Professor of Physiology, University of Chicago and Dr. Robert A. Kehoe, Director, Kettering Laboratory of Applied Physiology, University of Cincinnati. Dr. Kehoe is of the opinion that so long as the hydrogen fluoride concentration in the air is kept to three ppm or lower that there is little or no danger of toxic effects developing. If the concentration goes above this then he feels that quantitative determination of the fluoride concentration in the urine should be done. If the urinary excretion of fluoride is two milligrams per day or less, then on the basis of the available evidence the individual would very probably not suffer from fluorine intoxication. There is some question in Dr. Kehoe's mind whether fluorosis, with changes in the bone, is a clinical entity caused only by fluorine. He is

undecided whether X-ray examination of the bones is necessary. Dr. Carlson seemed to hold similar opinions to those of Dr. Kehoe with the exception that he felt that X-ray examination of the bones at frequent intervals was desirable.

If the hydrogen fluoride concentration in air is 3 ppm, calculation of the total amount of fluorine taken into the lungs during an 8 hour period show that around 10 milligrams of fluorine is taken into the lungs in an 8 hour day. How much of the 10 milligrams of fluorine is absorbed into the body is not known. From physiological considerations of the mechanics of pulmonary ventilation it would appear very probable that a large part of it is not absorbed, although the experiments of Machle (10) indicate that there is very good absorption of fluorine from the lungs and he has suggested that under certain circumstances there may well be 100 per cent absorption of inhaled fluorine.

Since Machle has presented a small amount of evidence that the breathing or air containing 0.0152 milligrams per liter (18 ppm) of fluoride for 309 hours by monkeys and other experimental animals results in pathological changes in the kidneys, liver and lungs, it would appear to me that we need more experimental data on the effect of lower concentrations of fluorine in the air. In the past most consideration has been given to the effect of fluorine intoxication on the bony structure. The above evidence that the soft tissues are damaged suggests the possibility that exposure of man to very low concentrations of hydrogen fluoride over a period of years may cause some injury to the liver, kidneys or lungs.

On the basis of the evidence presented here it would seem advisable to me, insofar as court proceedings are concerned, to do the following in cases where workers are exposed to hydrogen fluoride:

1. Frequent examination of the air in the working environment, in order to be sure that the fluorine concentration is 3 ppm or less.

2. Make periodic determinations of the daily urinary fluoride excretion, perhaps every three or six months. If the fluoride excretion goes above two milligrams per day the conditions of exposure should be changed until the excretion is decreased to two milligrams per day or less.

3. Make periodix X-ray examination of the long bones, spine, pelvis, chest and possibly other bones. These examinations should be made about once a year.

4. Keep in mind that there is some evidence that very low concentrations of fluoride in the air breathed may result in injury to the liver, kidneys, lungs and possibly other tissues; and consider the possibility of obtaining more experimental data on the soft tissue effects of fluorine if the magnitude of the problem warrants it.

If hydrofluoric acid comes in contact with the skin or mucous membranes a severe burn results. As far as court proceedings are concerned this type of fluorine toxicity would be an accident, and I know of nothing that we can do relative to this. There are two excellent pamphlets prepared by Dr. A. J. Carlson and published by the Universal Oil Products Company on the treatment of hydrofluoric acid casualties which might be of interest to some of you (13, 14).

J. P. HOLT, M.D.

REFERENCES

1. Fluorine Intoxication, K. Roholm. The H. K. Lewis and Co., Ltd., 136 Gower St., London, 1937

2. Fluoride Intoxication, S. A. Greenwood, Physiological Review 20:582-616, 1940

3. A Review of Fluorine and Its Physiological Effects, F. J. McClure, Physiological Review 13:277, 1933

4. Fluorine and Dental Health, F. R. Moulton (ed.), Amer. Assn. for the Advancement of Science, Smithsonian Institute Bldg., Washington, D.C., 1942

5. Handbook of Chemistry and Physics, 29th ed., C. D. Hodgman (ed.), Chemical Rubber Publishing Co., Cleveland, Ohio, 1945

6. Analytical Chemistry of Industrial Poisons, Hazards and Solvents, Second Revised Reprint, M. B. Jacobs, 1944, Interscience Publishers, Inc., New York, N.Y.

7. Hydrofluoric Acid Fumes, C. M. Salls, Industrial Hygiene Bulletin 1:10, 1924

8. The Effects of the Inhalation of Hydrogen Fluoride. I. The Response Following Exposure to High Concentrations, W. Machle, F. Thamann, K. Kitzmiller and J. Cholak, J. Ind. Hyg. 16:129, 1934

9. The Effects of the Inhalation of Hydrogen Fluoride. II. The Response Following Exposure to Low Concentrations. W. Machle and K. Kitzmiller, J. Ind. Hyg. 17:223, 1935

10. The Effects of Inhalation of Hydrogen Fluoride. III. Fluorine Storage Following Exposure to Sublethal Concentrations. W. Machle and E. W. Scott, J. Ind. Hyg. 17:230, 1935

11. The Absorption and Excretion of Fluoride. W. Machle and E. J. Largent, J. Ind. Hyg. and Toxicol. 25:112, 1943

12. Exposure to Fluorine in Industry. W. Machle and E. E. Evans, J. Ind. Hyg. and Toxicol. 22:213, 1940

13. Treatment of Hydrofluoric Acid Casualties: Information for Guidance of Physicians. A. J. Carlson. Universal Oil Products Company, 1943

14. Treatment of Hydrofluoric Acid Casualties: Information for Guidance of Physicians, Safety Engineers, and First Aid Personnel. A. J. Carlson Universal Oil Products Company, Chicago. 1945

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APPENDIX D

REPORT TO THE API MEDICAL ADVISORY COMMITTEE
BY THE SUBCOMMITTEE ON PERMISSIBLE CONCENTRATIONS

April 5, 1946

Dr. McIver Woody, Chairman
Medical Advisory Committee of the A.P.I.
26 Broadway
New York, New York

Report of Subcommittee for Permissible Concentrations of
Toxic Substances in the Petroleum Industry

We recommend confirmation of the program adopted at our last meeting, as follows:

1. To prepare a list of the toxic substances used and produced in the petroleum industry.

2. To collect and publish information on those substances in the above list whose toxicology has already been established.

3. To select those of the subjects remaining on the above list which are of sufficient and general importance and on which satisfactory toxicological information has not been determined, and to develop a research program for their study.

We propose to develop the following information in connection with the second objective listed above:

I. Name of substance
II. Properties and Characteristics - Physical and Chemical
III. Uses in Petroleum Industry
IV. Toxicology
    a. Acute effects, including symptoms
    b. Chronic effects
    c. Safe limits
V. Treatment
VI. Examinations-
    a. Preplacement Examination
    b. Periodic Reexamination
        1. Frequency
        2. Extent
VII. Safety Precautions
    a. Working Rules
    b. Equipment
VIII. Bibliography

We recommend a three year program, with an appropriation of $7,000 per year to finance this work. We recommend the assignment of these funds to Harvard University, to be disbursed under the supervision of Dr. Cecil K. Drinker and Dr. Phillip Drinker.

We ask endorsement of a specific program outlined in Dr. Drinker's letter of February 23, 1946.

We urge the adoption of this report, as we feel that this study will make a great contribution toward the handling of our problems in toxicology.

Respectfully submitted.

(s) V.C. BAIRD
V.C. BAIRD, M.D., CHAIRMAN

W.O. ARMSTRONG, M.D.

D.M. ENGLISH, M.D.

T.M. FRANK, M.D.

O.S. SOMERVILLE, M.D.

CC-Mr. D.V. Stroop

Appendix D

February 23, 1946

Dr. V.C. Baird
Humble Oil & Refining Company
Post Office Box 2180
Houston 1, Texas

My dear Dr. Baird:

My brother and I have given your affairs a great deal of thought and think that in Dr. Marshall Clinton we have the possibilities of a man to take charge of the work who will make a thorough success of it.

Some time ago I sent you a letter suggesting you budget this work for a three-year period at the rate of $7,000 a year, the funds to be made available as soon as Clinton gains final release from his present duties, which can be at an early date, if we want this work to start immediately. My brother and I have felt we would pay half of Clinton's salary - $2,250 a year - from funds supplied by you, and would attempt to get a thoroughly well-qualified assistant for about $2,400 to $3,000. This assistant must have a good knowledge of organic chemistry together with a certain amount of physical chemistry. He, or she, will have ample opportunity to supplement this knowledge by whatever attention he wishes to give to pharmacology and biochemistry. This allotment of funds will leave us a margin which we will be able to use for various purposes in getting special information, and I am certain that after the first year there will be experimental work that must be carried out and which will, of course, cost money. Furthermore, we may expect that Dr. Clinton will need to do a certain amount of traveling in order to acquaint himself thoroughly with all of your needs, and for this we should have the margin in our funds which will be secured by the disposition I have mentioned.

We shall make Dr. Clinton an Associate in my brother's department of Industrial Hygiene and he will, of course, devote some of his time to familiarizing himself with new techniques, etc., in my brother's group. This, again, can be nothing but of service to you. I may reiterate that I think we are very fortunate in being able to get hold of a young man with such well-tried ability as we have in this case, and I know that his productions will prove quite satisfactory to you.

I trust this outline will be what you want. The University is not accustomed to making any sort of definite contract in such matters as these. If you appropriate the money, it will be deposited with Harvard University and administered in the usual way governing University expenditures in my brother's group and on his authorization. I will, of course, follow closely what is going on because of my great interest in it, but Clinton's identification with industrial medical matters will be accomplished much better through affiliation with Industrial Hygiene than with my department of Physiology.

You and your associates will always be welcome here, and we all hope you will be able to follow our program not only through the reports you will receive, but through actual visits to us.

Very sincerely yours,

Cecil K. Drinker, M.D.
Professor of Physiology

Appendix D

MARSHALL CLINTON, JR.

Born, December 22, 1913, Buffalo, N.Y.

1936 A.B. Cornell University
1938 A.M. (Physiology) University of Buffalo
1940 M.D. University of Buffalo

1940-1941 Internship, Buffalo General Hospital, Buffalo, N.Y.
1941-1942 John D. Archbold Fellow in Medicine, Johns Hopkins University, Baltimore, Md.
1942-1943 Research Fellow in Medicine, Harvard Medical School and Junior Associat in Medicine, Peter Ben Brigham Hospital
June 1943 MC, AUS, Lt. to Major, with assignment at Climatic Research Laboratory, to present. Lawrence, Massachusetts as a Test and Research Officer

Publications

Clinton, M. Jr. and Hubbard, Roger S.: Factors Influencing the Destruction of Glucose and Fructose by Oxygen. J. Biol. Chem., 119:467, 1937.

Clinton, M. Jr. and Thorn, G.W.: The Effect of 11-Desoxy-17-Hydroxycorticosterone on Renal Excretion of Electrolytes. Science, 96: 343, 1942.

Clinton, M. Jr., Thorn, G.W., Eisenberg, H. and Stein, K.E.: Effect of Synthetic Desoxycorticosterone Acetate Therapy on Plasma Volume and Electrolyte Balance in Normal Dogs. Endocrinology, 31: 578, 1942

Clinton, M. Jr. and Thorn, G.W.: Effect of Desoxycorticosterone Acetate Administration on Plasma Volume and Electrolyte Balance of Normal Human Subjects. Bull. JohnsHopkins Hospital, 72: 255, 1943.

Thorn, G.W. and Clinton, M. Jr.: Metabolic Changes in a Patient with Addison's Disease following the Onset of Diabetes Mellitus. J., Clin. Endocrinology, 3: 335, 1943.

Thorn, G.W., Quimby, J.T. and Clinton, M. Jr.: A Comparison of the Metabolic Effects of Isocaloric Meals of Varying Composition, with Special Reference to the Prevention of Postprandial Hypoglycemic Symptoms. Ann. Int. Med. 18: 913, 1943.

Dorrance, S.S., Thorn, G.W., Clinton, M. Jr., Edmonds, H.W. and Farber, Sidney: Effect of Cobalt on Work Performance under Conditions of Anoxia. Am. J. Physiol., 139, 399, 1943.

Clinton, M. Jr., and Thorn, G.W.: Studies on Commercial Airline Pilots. War Medicine, 4:363, 1943.

Thorn, G.W., Koepf, G.F. and Clinton, M. Jr.: Renal Failure Simulating Adrenocortical Insufficiency. New England J. Med., 231: 76, 1944.

Hulse, M.C., Weissman, N., Stotz, E., Clinton, M. Jr. and Ferrebee, J.W.: Subclinical Vitamin Deficiency, V. The Assay of Subclinical Thiamin Deficiency. Ann. Int. Med., 21: 440, 1944.

Thorn, G.W., Clinton, M. Jr., Davis, B.M. and Lewis, R.A.: Effect of Adrenal Cortical Hormone Therapy on Altitude Tolerance. Endocrinology, 36: 381, 1945.

February, 1946

Appendix D

HARVARD UNIVERSITY
SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF PHYSIOLOGY

55 SHATTUCK STREET
BOSTON 15, MASSACHUSETTS.

March 29, 1946

Dr. V.C. Baird
Humble Oil & Refining Company
Post Office Box 2180
Houston 1, Texas

My dear Dr. Baird:

I enclose the type of statement your organization should make in transmitting the three checks for $7,000 which will be required for the work we have had under discussion. This money will be allocated to my brother's department for expenditure rather than to mine, since it is much more appropriate for Dr. Clinton to be upon his staff. I shall, however, take care to know what is going on and will always be interested and at your disposal.

It is not practical at the present time to give any exact statement as to the way in which the $7,000 budget will be spent. But you, of course, understand that you, or any accredited representative of your group, may at all time have immediate access to our accounts. I am sure you fully understand the need for the utmost flexibility in the use of money for an investigative project such as you have outlined.

It is my idea that as soon as this matter is settled and the money is actually in hand, we should at once arrange for an exchange of visits between Dr. Clinton and Dr. Holt, since I think they can be of great benefit to one another. I look forward to our association in this enterprise and I am sure you will enjoy meeting and talking with Dr. Clinton and that your group will find him extremely useful as the next few years pass.

Sincerely yours,

Cecil K. Drinker, M.D,
Professor of Physiology

COPY

Appendix D

HARVARD UNIVERSITY
SCHOOL OF PUBLIC HEALTH

DEPARTMENT OF PHYSIOLOGY

55 SHATTUCK STREET
BOSTON 15, MASSACHUSETTS.

Dr. V.C. Baird
Humble Oil & Refining Company
Post Office Box 2180
Houston 1, Texas

Dear Dr. Baird:

I neglected to state in my letter to you this morning that your letter to Mr. Claflin, Treasurer of Harvard University, transmitting the checks for the work to be done here at the School should come to my attention so that we may have a record of the transaction in this office as well as in the Treasurer's Office. On receipt of your letter I will immediately pass on the necessary material to Mr. Claflin.

Sincerely yours,

Cecil K. Drinker, M.D.
Professor Physiology

Appendix D

Statement to be used by the Medical Advisory Committee
of the American Petroleum Institute
through Dr. V. C. Baird in transmitting funds to the
Treasurer of Harvard University

Mr. William H. Claflin, Jr.
Treasurer of Harvard University
24 Milk Street
Boston, Massachusetts

My dear Mr. Claflin:

After discussion with Dr. Cecil K. Drinker and Dr. Philip Drinker of the Harvard School of Public Health, the American Petroleum Institute has decided to appropriate the sum of $7,000 a year for three years beginning —— , 1946.

It is the desire of the Institute that this money be allocated to Professor Philip Drinker and that it be spent through the Department of Industrial Hygiene for the systematic collection of information relative to many products manufactured by the petroleum industry which present hazards to health - in some instances during manufacture and in other instances after sale to customers.

It is the understanding of the Institute that Professor Philip Drinker and his associates will gather suitable personnel to carry out the work we have discussed, and that the allotment of the $7,000 yearly shall be kept upon a flexible basis, as we understand is the case with other University funds, so that the most efficient use may be made of this grant.

It is further the understanding of the Institute that if in any year the entire $7,000 is not expended, any amount still available is continued in the budget for later use under the general guidance of Professor Philip Drinker.

It is finally the understanding of the Institute that appropriate members may at any time visit Professor Drinker to discuss results and if they care to do so, have access to the accounts kept by his department and showing the manner in which this grant has been and is being spent.

Very truly yours,

AMERICAN PETROLEUM INSTITUTE

3/29/46

V.C. BAIRD, M.D.

API 06829

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APPENDIX E

April 5, 1946

SUBCOMMITTEE ON CARCINOGENICITY
OF HYDROCARBONS
PROGRESS REPORT

Dr. McIver Woody, Chairman
Medical Advisory Committee
American Petroleum Institute

Dear Doctor Woody:

Pursuant to the recommendations of the Medical Advisory Committee of the A.P.I. at its meeting in Chicago, November 16, 1945, the Kettering Laboratory of Applied Physiology was selected to conduct the study on carcinogenicity of petroleum samples selected by this Committee.

On January 9, 1946, Mr. D.V. Stroop, in behalf of the American Petroleum Institute, signed the forms of agreement with the University of Cincinnati pertaining to the study to be made, and, in a letter dated February 6, 1946, to the members of the Medical Advisory Committee, he reported the consummation of the working agreement with the University. An initial check for $6,000 will be sent to the University to be applied against the costs of the study. It is impossible at this time to state the time that will be required to complete the study and the costs thereof. The Kettering Laboratory will charge to this project the costs of the salaries of persons working on the study according to the time spent on it, travelling expenses that may be incurred in this connection, the cost of materials, animals, etc., plus pro rata charges of overhead such as light, heat, telephone, pension and insurance charges, etc.

Dr. Robert A. Kehoe, in a letter dated January 23, 1946, to me, expressed concern about the volume of work which would be associated with the eight samples to be submitted to him by our Committee. He stated that it would be some time before he would be able to obtain and maintain a colony of mice which would be ample to carry on a program of the anticipated magnitude. He also questioned the necessity for using coal tar as a control study. In a letter from Dr. Kehoe, dated March 30, 1946, he acknowledged without further reservations the scope of the work to be assigned to him, commenting also that while deliveries on mice might be a little slow, he has several sources of supply and presumably will be able to obtain adequate stock eventually.

At a meeting of the Subcommittee held in New York on February 14, 1946, it was decided to select stocks from the West Coast inasmuch as samples from that area would be naphthenic and from essentially the same crude source. (See copy of minutes attached.) Six major companies on the West Coast were written in this connection and to date we have received replies as to availability and test data on distillate and residual fuels from the following:

General Petroleum Corp.
Standard Oil Co. of Calif.
The Texas Company

As soon as we hear from Shell, Union, and Tidewater Associated, it is planned to hold another meeting of the Subcommittee to select eight suitable samples.

It has been concluded by the Subcommittee to request one barrel of each sample selected to be stored under proper conditions at a point yet to be agreed upon.

Suitable amounts, one gallon of each sample, will be shipped to Dr. Kehoe as required. It is hoped to have these samples delivered to Dr. Kehoe some time in May.

Questions which might be appropriate for discussion at this meeting are:

1. Selection of a suitable storage point for the petroleum samples?
2. Determination as to who should pay shipping charges for the petroleum samples?
3. Should petroleum laboratories be utilized in preference to the Kettering Laboratory for any indicated analytical work in connection with the samples used in this study, and, if so, how should charges for this work be handled?

Respectfully submitted,

SUBCOMMITTEE ON CARCINOGENICITY
OF HYDROCARBONS

(s) M.N. Newquist

M.N. Newquist, Chairman
Dr. A.E. Hoag
Dr. J.P. Holt
Dr. W.R. Levis

Technical Advisors
Mr. H.R. Warrick
Mr. L.C. Beard
Mr. R.S. Bonsib
Mr. H.E. Kemmerer—Mr. H.H. Zuidema

cc - Medical Advisory Committee Members
Mr. D.V. Stroop

APPENDIX E

MINUTES OF THE API MEDICAL ADVISORY COMMITTEE SUBCOMMITTEE ON CARCINOGENICITY

A meeting of the API Medical Advisory Committee, Subcommittee on Carcinogenicity was held in the offices of The Texas Company on February 14, 1946. Those in attendance were as follows:

Dr. M.N. Newquist	The Texas Company
Dr. McIver Woody	Standard Oil Company of New Jersey
Dr. J.P. Holt	Standard Oil Company (New Jersey)
Dr. A.E. Hoag	Socony-Vacuum Oil Company
Mr. L.C. Beard, Jr.	Socony-Vacuum Oil Company
Mr. Gene Scafe	Socony-Vacuum Oil Company
Mr. T.W. Nelson	Socony-Vacuum Oil Company
Mr. H.H. Zuidema	Shell Oil Company
Mr. Bendel	Standard Oil Company (New Jersey)
Mr. M.F. Granville	The Texas Company
Mr. H.R. Warrick	The Texas Company

The purpose of the meeting was to select a refinery source or sources for the general types of samples proposed for the initial research work on the Carcinogenic Project. The general samples are listed below:

1. Domestic No. 2 Fuel Oils	2. Heavy Fuel Oils
a. Straight run	a. Straight Residual
b. Thermal Recycle	b. Thermal Tars
c. Houdry or TCC Recycle	c. Houdry or TCC Tars
d. Fluid Recycle	d. Fluid Tars

There was some discussion as to whether or not the above samples should be selected from special charge stocks not ordinarily processed by the various refineries or if the samples should be confined to those materials currently being processed. It was finally decided that the materials should be selected from current refinery operations and from those operations where the most naphthenic type charge stocks were being processed. It was generally recognized that it would be advantageous to have all of the samples available from a single crude source if possible, and it was suggested that perhaps refineries on the west coast would be the most suitable since most of these refineries operate on crudes from the same general source.

It was decided, therefore, that a form letter, copy of which is attached, should be directed to the following oil companies on the west coast in order to determine whether or not satisfactory samples could be obtained from this source. It was further decided to contact only those companies having representative on the API Medical Advisory Committee:

Oil Companies to which Form Letters are to be Sent	Form Letters to be Handled by
General Petroleum Corp.	L.C. Beard, Jr.
Union Oil Company	M.N. Newquist
Tidewater Associated Oil Co.	M.N. Newquist
Standard Oil Co. of Calif.	M.N. Newquist
Shell Oil Company	H.H. Zuidema
The Texas Company	H.R. Warrick

Although it was decided to concentrate on securing samples from California stocks, nevertheless, tests on various samples available on the east coast were submitted and tabulated.

There was also some discussion as to the physical tests which should be obtained on the various samples prior to their investigation by the Kettering Laboratory. It was believed that by securing certain physical and chemical tests it might be possible to ultimately develop information which would be helpful in determining which materials had Carcinogenic properties and which had not. It was decided, however, to discuss this matter in more detail after the samples had been secured. It was further decided that the necessary testing and analysis could best be done by petroleum laboratories, thus relieving the Kettering Laboratory of this additional burden.

Mr. Zuidema stated that Dr. Cowdry of the Barnard Free Skin and Cancer Hospital was conducting a number of tests for Shell on Thermal and catalytic gas oils from once-through operations. These tests have been in progress for seven months and all indications are that neither oil has Carcinogenic properties.

HPW-VBN
2/19/46

H.R. WARRICK
Secretary

APPENDIX E

The following is a draft of a form letter to be sent to the companies shown below:

General Petroleum Corp.
Addressed to Mr. Gale Adams
cc - Dr. R.A. Jewett
Mr. Beard will handle

Standard Oil Co. of Calif.
Addressed to Mr. F.H. Smith
cc - Dr. H.S. Thomson
Dr. Newquist will handle

Union Oil Company
Addressed to Mr. Don Carr
cc - Dr. W.A. Morrison
Dr. Newquist will handle

Shell Oil Co. of San Francisco
Addressed to
cc -
Mr. Zuidema will handle

Tidewater Associated Oil Company
Addressed to Mr. H.Y. Hyde
cc - Dr. J.F. Peattie
Dr. Nequist will handle

The Texas Company
Addressed to Mr. B.O'Connor
cc - Dr. Newquist
Mr. Warrick will handle

Dear Sir:

As you probably know, the American Petroleum Institute formed a Medical Advisory Committee last year. Your representative on this Committee is - - - - Dr. _____. One of the activities of the A.P.I. Medical Advisory Committee is to study the carcinogenic properties of hydrocarbons and for this purpose a sub-committee has been set up. The problem immediately confronting said sub-committee on carcinogenicity is to determine whether or not petroleum products are dangerous in this respect. Particularly pertinent is how the products produced by the newer methods of refining and techniques compare with those which have been produced in the past and which past products have caused little or no trouble.

The A.P.I. Medical Advisory Committee has been allocated a sum of money by the American Petroleum Institute to investigate this matter and a project to this end has been established under the direction of Dr. Robert A. Kehoe at the Kettering Laboratories, University of Cincinnati. The first step necessary is to get a proper set of samples for investigation as to their carcinogenicity, and the sub-committee at a meeting held on February 14, felt that the best chance of getting straight run, catalytically cracked, and thermally cracked products, all from the same crude or same type of crude, and of naphthenic character, was to be found in California. At this meeting the following set of eight samples was deemed necessary:

1. Distillate Fuel Oils
(In general range of No. 2 Fuel Oil according to CS12-40

a. Straight run
b. Thermal Recycle
c. Houdry or TCC Recycle
d. Fluid Recycle

2. Residual Fuel Oils
(In general range of No. 6 Fuel Oil according to CS 12-40)

a. Straight run Residual
b. Thermal Tars
c. Houdry or TCC Tars
d. Fluid Tars

API 06834

We would appreciate your advice as to which of the eight samples listed above you would be able to supply. One barrel of each sample would be required. We further request that you tabulate the tests on such samples as you might supply, in conformity with the attached tabulation. As previously stated our objective, if possible, would be to obtain all eight samples from the same crude or the same general type of crude, or as closely realizing this objective as possible. A

similar letter has been addressed to the following companies:

General Petroleum Corporation
Union Oil Company
Tidwater Associated Oil Company
Standard Oil Company of California
Shell Oil Company of San Francisco
The Texas Company

Such letter were, in all cases, addressed to the technical men in these companies on the Pacific Coast with carbon copies sent to their Medical Doctors who are on the A.P.I. Medical Advisory Committee.

After we have received from the companies to whom this letter is addressed and compiled the information relative to availability and preliminary tests data, we will send a formal request to those companies whose samples most adquately meet our needs, for one barrel of each sample. Specific shipping instructions will be supplied as soon as a decision is reached on the samples.

Your prompt attention in this matter, which is of wide industry interest, will be very much appreciated. Your reply should be addressed to the writer. It will not be necessary to send copies to those shown below.

Yours very truly,

cc: To Members and Technical Advisors of the A.P.I. Sub-Committee on Carcinogenicity:

Members	Associates	Company
Dr. M.N. Newquist, Chairman	Mr. H.R. Warrick	The Texas Company
Dr. J.P. Holt	Mr. R.S. Bonsib	Std. Oil Co. (N.J.)
Dr. A.E. Hoag	Mr. L.C. Beard, Jr.	Socony-Vac. Oil Co.
Dr. W.R. Levis	-	Sun Oil Company
-	Mr. H.H. Zuidema	Shell Oil Co.
Dr. McIver Woody Exofficio	-	Std. Oil Co. of N.J.
Mr. D.V. Stroop Exofficio	-	Amer. Pet. Inst.