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Kettering Laboratory
University of Cincinnati

THE PROJECT ON CARCINOGENICITY
PROPOSED EPIDEMIOLOGICAL STUDIES

Progress Report

for

The Subcommittee on Carcinogenicity
of the

API Medical Advisory Committee

April 23, 1950 .

Revision - May 15, 1950

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PRESENT STATUS

At the Subcommittee meeting held March 25, 1950, the following objectives were presented:

- I. The determination of incidence and prevalence rates of retrograde, hypertrophic or neoplastic reactions in employees of the Petroleum Industry.
- II. The comparison of these rates with those of the general population and other industries.
- III. The evaluation of control procedures that have been accepted, employed or recommended.
- IV. The recommendation, if the studies justify the action, of standardized safety and control measures.

The possible approaches to these objectives are:

- I. A Retrospective or Historical Study of all available records of such cases among the employees of the Petroleum Industry.
- II. A Current Registry receiving reports of such cases as they are discovered by and/or reported to the various Medical Departments.
- III. A study of the Employee Health Benefit Plan records with the hope that like data can be secured from other industries.
- IV. Field Surveys of retrograde or hyperkeratotic lesions on exposed skin surfaces.
- V. A repetition of the studies which have pointed out an unusual hazard in the Slack Wax Process.
- VI. The establishment of a Consultation Service to assist in the planning of comparable company studies. This last approach was not discussed at the Cincinnati meeting.

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FUTURE PLANS

A. It ~~is~~ proposed to implement immediately, insofar as possible and/or feasible, with due consideration and understanding of the wide variation in company policies, medical care programs, management interest and labor relations, the first two approaches, namely, (I) the Retrospective Study and (II) the Current Registry.

I. Retrospective or Historical Study

1. Description

This approach requires the assembling of the clinical records and employment histories of proved cases of Neoplastic disease known to have occurred among employees of the cooperating Petroleum Companies, regardless of site, type of tumor, degree of exposure to various carcinogenic hazards and employment status.

The Medical Departments, under this plan, within the limits of their legal responsibilities (See Appendix, Page 1), would be expected to forward to the Survey Group of the University of Cincinnati the records of all known cases of proved or suspected Neoplastic disease which have occurred among their employees during the period covered by their immediately available files.

It would be expected that the details of the clinical records would be augmented, supplemented and/or verified, insofar as possible, by the various Medical Departments

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through their relationships with their subordinate offices, private physicians, hospitals, clinics and laboratories.

To determine the degree of possible exposure to various potential carcinogens, the various Medical Departments would be expected to request that their Personnel Departments furnish, insofar as their records permit, a detailed employment history, including not only information regarding the employment of the patient in the company or industry, but also any other employment in other industries as covered by their records.

(See Appendix, Pages 2, 3, 4, 5 and 6 for the details of the information to be requested on (1) the initial report, (2) the clinical record and (3) the employment history.)

The Survey Group of the University of Cincinnati would be expected to set up the necessary clerical mechanism to receive the initial reports, to process the clinical records and employment histories and to provide interim and final summations to the Medical Advisory Committee. The tabulations and analyses would be arranged to protect the identity of the companies and/or the individual patients involved in the study through the use of a code system.

2. Objectives

The serious defect in this plan arises from the great variation in the amount and type of information available in files of the various Medical and Personnel Departments. For some companies, the need to collect this data is an entirely new concept. In others, even the provision of medical care programs for the employees is a relatively recent activity.

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This approach, even with optimum conditions, information and cooperation, can only furnish a crude estimate of the prevalence of Neoplastic disease among employees of the cooperating companies who have had exposures to the older conditions and processes. The tabulations cannot be used to ascertain the potential hazards of the newer processes.

However, if a consistent pattern in the occupational histories of this group of cases was found, the presence of overlooked hazards in the older methods might be indicated. Furthermore, if an unusual distribution is reported with regard to type and site of tumor, further epidemiological studies of Neoplastic disease in employees of the Petroleum Industry might be limited to only certain types and sites!

3. Approximate Period of Study

It is readily apparent that, due to the many diverse situations found in the industry, the variation in the degree of cooperation offered by the different companies, the time needed to secure general acceptance of a standardized report and the necessary lag that will be encountered in setting up the clerical mechanism at the University of Cincinnati, this approach will require approximately two years to complete. It would be expected that the final report including cases as they have occurred up to and including January 1, 1951 could not be submitted before 1952.

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II. Current Registry

1. Description

This approach envisions the establishment of a continuing Central Registry for Neoplastic diseases to be employed by the various cooperating companies to report routinely through their Medical Departments proved or suspected cases of Neoplastic diseases which occur among their employees, regardless of site, type of tumor, degree of exposure to various carcinogenic hazards and employment status.

The Medical Departments, under this plan, within the limits of their legal responsibilities, would be expected to report currently to the Survey Group at the University of Cincinnati all cases of proved or suspected Neoplastic disease which occur among their employees.

It would be expected that, in addition to this notification, insofar as possible, a detailed clinical record would be completed by the various Medical Departments, augmented, supplemented and/or verified through their regular contacts with their subordinate offices, private physicians, hospitals, clinics and laboratories.

Furthermore, in order to ascertain the degree of possible exposure of the reported cases to various carcinogenic hazards, processes or environment in or out of the Petroleum Industry, the various Medical Departments would be expected to request that their Personnel Departments furnish, insofar as their records permit, a detailed history, including not only a

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description of the job of the individual in the company and/or industry, but also all other employment covered by their records. It is hoped that this record can be augmented or supplemented, if necessary, by the Medical Departments, since, in many instances, the patient will be in direct contact with the Medical Director or his immediate subordinates.

(See Appendix, Pages 2, 3, 4, 5 and 6 for the details of the information to be requested on (1) the initial report, (2) the clinical record and (3) the employment history.)

It would be expected that the various Medical Departments, either directly or by securing the assistance of their Personnel Department, would furnish, periodically, similar employment histories for certain groups of employees in their company. The groups or samples required for this phase of the study would be selected with a direct request from the Survey Group, but only after personal consultation with the various Medical Directors and subject to the general approval of the Medical Advisory Committee.

(See Appendix, Pages 5 and 6 for the employment history as used for cases which would be sought not for all, but only a sample of the total number of employees in the company or industry.)

The Survey Group of the University of Cincinnati would be expected to set up the necessary clerical mechanism to receive the initial reports, to process the clinical records and employment histories and to provide periodic interim summations to the Medical Advisory Committee. The tabulations

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and analyses would be so arranged that the identity of the companies and/or the individual patients involved would again be protected through the use of a code system.

In the attempt to calculate incidence rates for at least a fraction of the industry, it would be expected that the Survey Group would prepare the plan, subject to the approval of the Medical Advisory Committee, for selecting the needed employee groups for the population studies as previously described.

As an adjunct to the Central Registry, it would seem desirable to create a Central Pathology Service at the University of Cincinnati to whom the various cooperating Medical Departments could forward slides and/or tissues for diagnosis and a uniform classification. This particular activity would stimulate the cooperation of the physicians in the search and reporting of cases to the Central Registry. It would also establish a uniform level for acceptance of a case as one of proved Neoplastic disease. How this service can be established and financed still remains an open question.

2. Objectives

This approach would furnish, in contrast to the prevalence rates of the Retrospective Study, an approximate estimate of the incidence of Neoplastic disease among employees of the cooperating companies, since it is hoped that, for at least a portion of the industry, adequate estimates of the number of employees involved and possible exposures to various potentially carcinogenic hazards will be obtained.

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It would be expected that this plan would augment, supplement and finally supplant the Historical Approach in defining far more accurately the hazard of the older processes. If successful, and since this will be a current registry providing for reports in the years to come, the analyses could be used to ascertain the hazards of the newer processes, provided that the study is maintained and supported for a sufficient period of time to take into account the long latent period commonly found with Neoplastic disease.

It is also possible that this plan, in the future, will provide comparisons of incidence rates not only between various processes, but also geographic areas, racial groups, companies, other industries and the general population.

3. Approximate Period of Study

It would be well to call attention at this point to the fact that the greatest obstacle to this approach is the dynamic almost fluid state of the technology of the Petroleum Industry. This situation will seriously interfere with any logical attempt to define accurately the degree and period of exposure, except in the very broadest of terms. It will be, likewise, the most dangerous factor in the estimation of exposed populations, since process changes bring about the frequent shifting of the employees in the refinery operations.

Also, since it is generally accepted that Neoplastic reactions require usually a relatively long and heavy exposure to even proved carcinogenic agents, and that there is, likewise, usually a very long period between exposure and

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reaction, it is readily apparent that the registry must be continued and adequately maintained for a considerable period of time before it will even begin to measure the hazard of the newer processes. It is to be hoped, however, that satisfactory rates measuring the hazards of the older processes would be available much earlier.

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- B. It is proposed to continue the exploration and the possible implementation, as soon and insofar as possible and/or feasible, with due consideration and understanding of the wide variation in company policies, medical care programs, management interest and labor relations, of the third and fourth approaches, namely, (III) Employee Health Benefit Plan Study and (IV) the Field Survey for Retrograde or Hyperkeratotic Lesions.

The description, objectives and approximate period of study for both of these attractive and possibly feasible approaches must await further consultation, discussion and pilot trials before they can be brought to the Subcommittee and/or Medical Advisory Committee for their consideration. It is hoped that these two avenues can be explored sufficiently during the summer of 1950 to permit firm planning at the November meeting.

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C. It is proposed to implement, as soon and insofar as possible and/or feasible, with due consideration and understanding of the wide variation in company policies, medical care programs, management interest and labor relations, the last two approaches, namely, (V) Repetition of the Slack Wax Studies and (VI) the Consultation Service.

It is not proposed that the Survey Group take an active part in the Slack Wax Studies, but that the observations will be repeated by individual companies. It is hoped that the Survey Group of the University of Cincinnati, through personal contact, can make certain that adequate observations are secured so this question can be thoroughly explored and evaluated. In serving as an agency to insure that the individual company protocols are valid, acceptable and comparable, it is expected that they can act as a medium of dissemination so that the various other cooperating Medical Departments will have access to this information.

It is planned, likewise, that the Survey Group of the University of Cincinnati will stand ready to assist, upon the specific request of any Medical Department, in the planning of other studies to determine particular and/or unusual hazards. It is not expected that the information so gathered would be disseminated generally unless the interested company permitted this action. The sole objective for this approach would be to insure comparability of studies and observations in case general dissemination or comparisons became desirable.

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A P P E N D I X

C O P Y

December 20, 1949

Appendix
Page 1

Dr. McIver Woody
ESSO Standard Oil Co.
BUILDING

Dear Doctor Woody:

You have told me the plan is being developed to accumulate in the hands of investigators of the University of Cincinnati, who have been designated for the purpose, data with respect to operatives engaged in petroleum refining and petroleum handling who may have been determined to be suffering from or who may be suspected of suffering from cancer which may be attributed to their occupation or to contact with petroleum products. You have asked me if I see any objection from a legal standpoint to transmitting to the designated authorities at the University of Cincinnati the records of such patients.

There has grown up a feeling, and perhaps a right, on the part of patients to have their consultations with their physicians and the physicians' records with respect to the patients treated as confidential between the physician and the patient. Even if the patient's right to have such communications and records treated as confidential is not fully established, I think our anxiety to develop cordial relations between our employees and company doctors ought to compel us to regard those communications and records as confidential. Starting from this premise, I think it is entirely proper from a legal standpoint, and feasible from the standpoint of the relations we want to preserve with our employees, for you to report cases of the kind herein mentioned, provided you keep the identity of the patient strictly confidential. I suggest that these reports may be made under a series of code numbers or under fictitious names, you preserving in your confidential files the identity of the code number or fictitious name of the patient involved. I think if this anonymous scheme is observed in making the reports you have described to me, it cannot offend the patient's legal rights. I feel equally strong it is not likely to cause any disturbance in the relationship between our employees and our company doctors.

I would think that if the designated authorities at the University of Cincinnati desire to compile and use generally in the industry or with the public any statistics with respect to data of the kind herein described, which they receive from our company and from other companies, they ought to again use code numbers so that the identity of the company whose employees are embraced in the statistics will be carefully concealed.

If the foregoing restrictions are observed, I think the confidential nature of the physician-patient relationship will be preserved, and, similarly, the confidential nature of the company records will be preserved and I do not anticipate any trouble would be involved.

Very truly yours,

Original
Signed 911230 BinEulM 01841
E. S. Hall

ESH A

Appendix
Page 2

Preliminary Notification

I. Identification Data

- A. Code Number - All identifying data (Name-Address)
to be retained by the Medical Director,
correlated with the code number.
- B. Age (Year born)
- C. Sex
- D. Race

II. Clinical Data

- A. Type of Tumor
 - B. Site of Tumor
 - C. Date of Diagnosis
-

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Appendix
Page 3

Detailed Clinical Record

(To be completed in duplicate)

(One copy to be retained by the Medical Director)

I. Identification Data

- A. Code Number - All identifying data (Name-Address)
to be retained in the office of the
Medical Director.
- B. Age (Year born)
- C. Sex
- D. Race
- E. Marital Status
- F. Employment Status

II. Clinical Data

A. Dates

- 1. First Symptom
- 2. First Visit to Physician
- 3. First Diagnosis
- 4. First Treatment or Hospitalization
- 5. Death

- B. Clinical and Pathologic Diagnosis - List of tumors
to be reported which will be placed on the reverse
of record. This list is not exhaustive but comprises
the great majority of terms usually used. When there
is doubt concerning the malignant nature of a tumor,
it should be reported.

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Carcinoma
Sarcoma
Epithelioma
Endothelioma

} and any term of which one
of these words is a part.

Acanthoma	Meningioma
Astrocytoma	Myeloma
Brain Tumors	Medulloblastoma
Chorioma	Mesothelioma
Chloroma	Mixed Tumor
Cholesteatoma	Neurocytoma
Embryoma	Oligodendroglioma
Ependymoma	Pinealoma
Ganglioneuroma	Syncytioma
Glioma	Seminoma
Granulosa Cell Tumor (Ovary)	Sympathoblastoma
Hypernephroma	Spongioblastoma
Hodgkin's Disease	Teratoma
Leukemia	Thymoma
Lymphoma	Paget's Disease (Breast)
Lymphosarcoma	Wilms' Tumor (Kidney)
Linitis Plastica (Stomach)	Ewing's Tumor (Bone)
Melanoma	Grawitz' Tumor (Kidney)

C. Primary Site and StageD. Treatment Advised and ReceivedE. Complications - Metastatic Sites

III. Unusual Exposure to Possible Carcinogens - Including estimates
of Degree, Type and Length of Time (As elicited by the Physician)
List which will be placed on the reverse of the record.

A. Physical Agents

1. Trauma
2. Radiant Heat
3. Solar Rays
4. Ultraviolet Rays
5. Radioactive Substances or Roentgen Rays

B. Inorganic Substances

1. Arsenic
2. Chromates

C. Organic Substances

1. Aromatic Amines
2. Tar or Pitch
3. Soot
4. Creosote and Anthracene Oils

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Appendix
Page 5Detailed Occupational Record

(To be completed in triplicate)

(One copy to be retained by the Medical
Director and Personnel Department)

I. Identification Data

- A. Code Number
- B. Age at Commencing Work
- C. Employment Status

II. Occupations and Detailed Employment Record - Listed in
Chronological Order

- A. Name of Companies and/or Plants
- B. Products Handled by Worker
- C. Job Descriptions - The Broad Classifications which
will be placed on reverse of card.

1. Production

- a. Riggers and Drillers
- b. Others

2. Refining

- a. Cracking
 - (1) Catalytic
 - (2) Thermal
 - (3) Others
- b. Lubricant and Paraffin
 - (1) Crude Wax
 - (2) Others
- c. Straight Run Distillation and
Light Ends
- d. Special Products

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Appendix
Page 6

- e. Maintenance
 - (1) Pipe fitters and Boilermakers
 - (2) Others
- f. Control Laboratory
- g. Others
- 3. Transportation
 - a. Pipe Line
 - b. Fuel Oil Carriers
 - c. Others
- 4. Marketing and Executive
 - a. Service Station
 - b. Others
- 5. Others - Specify in detail

D. Periods Employed

- III. Unusual Exposure to Possible Irritants - Including estimates of Degree, Type and Length of Time (As elicited by the Employment Record)

(See list - Detailed Clinical Record)

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CONFIDENTIAL

AMERICAN PETROLEUM INSTITUTE
SUBCOMMITTEE ON CARCINOGENICITY
MINUTES OF INTERIM MEETING

June 3, 1949

copy letter to
Dr. Woody of 6/8/
attached herewith

An interim meeting of the Subcommittee on Carcinogenicity was held on Friday, June 3rd, 1949, at 15 West 51st Street, New York City.

MEMBERS PRESENT

Marshall Clinton
T.M. Frank
A.E. Hoag
J.P. Holt
T.J. Kelly
M.H. Newquist
McIver Woody

ASSOCIATES PRESENT

L.C. Beard, Jr.
H.P. Lankelma
K.G. Mackenzie
R.M. Shephardson (representing H.G.M. Fischer)
H.H. Zuidema

GUESTS

R.W. Faulk - Shell Oil Company
A. Wesley Horton - University of Cincinnati

ADVISOR

D.V. Stroop - API

TOTAL IN ATTENDANCE - 15

MEMBERS ABSENT

L.E. Curtis
W.R. Lewis
C.A. Swan

ASSOCIATES ABSENT

R.S. Bonsib
A.E. Dooley
H.G.M. Fischer

Minutes of the meeting of March 11th were approved as issued.

Mr. Stroop stated that the API prefers not to be included in the American Cancer Society's list of grants-in-aid for cancer research.

Dr. Horton submitted a progress report. (Copy of the report is attached as Appendix A).

Dr. Woody said the Federal Security Administration has awarded over \$450,000. in federal grants for cancer control and teaching activities. The

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largest amount, \$35,000. went to the Pennsylvania Department of Health, where Dr. Shilen, Director of the Division of Industrial Hygiene, has set up an occupational cancer control program with a physician and a nurse. At a later date, two engineers and a statistician will be assigned to the project. The attached forms (Appendix B) are being prepared in quantity for use in their surveys and are essentially identical with the form submitted to them by Dr. Kueper to insure uniform data from the various states participating in the industrial cancer program. The oil industries located in the Philadelphia area are high on their agenda.

Dr. Hoag and Dr. Newquist spoke briefly concerning articles on cancer they have written for the Secony-Vacuum News and Texaco Topics respectively. It was agreed that other companies could well afford to follow their example.

T.M. FRANK
Secretary

McIVER WOODY
Chairman

APPENDIX A**API. PROJECT ON CARCINOGENICITY AT THE
UNIVERSITY OF CINCINNATI**

The program at the Kettering Laboratory is roughly divided into three major phases. Of perhaps most immediate importance is the effort to pin point throughout the industry materials and operations which represent potential hazards from the cancer standpoint. The second phase, which will be prosecuted simultaneously with the first phase, will involve the concentration and isolation of the compounds responsible for the carcinogenic action of certain catalytically cracked oils which have already been tested biologically. From the physical and chemical properties of such concentrates, an effort will be made to develop an analytical tool which may then be applied to any refinery stream to determine its carcinogenicity without resorting to animal testing. The third major phase will be an epidemiological study of cancer in the petroleum industry.

In carrying out the first phase in the program, as described above, a series of typical refinery samples will be tested on suitable laboratory animals to determine their relative carcinogenic potencies. It is expected that, in the course of the coming year ending June 1, 1950, testing of approximately 150 to 200 such samples will be started at the Kettering Laboratory. Thus an average of about 12 samples from each of the following processes will be studied:

1. Non-catalytic gas oil cracking
2. Viscosity breaking of residues and extracts
3. Naphtha reforming
4. Polyforming
5. Coking operations
6. Houdry catalytic cracking
7. Fluid catalytic cracking
8. Thermoform catalytic cracking
9. Cycloversion
10. Houdryflow cracking
11. Hydroforming
12. Slack waxes and aromatic extracts therefrom
13. Solvent extracts from lube oils and heavy gas oils.

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The potencies of the samples will be compared with those of coal tar and shale oil fractions on which clinical data is available from England.

In considering the selection of samples from each of the processes listed, attention is at present being restricted to those intermediates or products with a distillation end point above 650°F. On the basis of confidential information supplied to the Kettering Laboratory by each of the API member companies on such materials and the unit operations producing them, a sampling program is being organized which will cover the current range of variations in each process. Careful consideration is being given not only to the characteristics of the particular products which will be tested for carcinogenicity but to the feed stocks and the unit operating conditions as well. In this manner it will be possible to correlate the effect of the trends in available charge stocks and refining practices with the relative carcinogenic potencies of products formed. Thus, the results of the testing program now planned should permit prediction of potential hazards as unit operations change in the years to come.

As yet, a list of the specific samples to be tested during the coming year has not been prepared since the necessary data from the individual companies is not complete. However, sufficient information is available to permit the selection of a small number of samples from thermal cracking of high boiling materials, both virgin gas oils and those previously subjected to catalytic cracking. In addition it is planned to request samples of high boiling oils from TCC units since to date no physiological testing of the heaviest products from these operations has been carried out.

In reporting results of tests on future oil samples, a direct comparison with a solution of a known concentration of a standard carcinogenic hydrocarbon in a standard solvent will be made. Preliminary tests are being run with solutions of methylcholanthrene in benzene, at concentrations from 0.01% to 0.6%. Previous results have indicated that the tumor incidence curves for typical heavy catalytically

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cracked oils may be compared nicely with the curves for such standard solutions.

In further work the effect of the benzene solvent on the tumor incidence and the induction period in mice will be determined. Various non-volatile solvents, such as methylnaphthalene, are being considered for this purpose. However, it must be kept in mind that benzene solutions of methylcholanthrene have been employed as standards for many years in studies by English scientists. Their use may therefore facilitate the interpretation of our laboratory results in terms of practical hazards to exposed workers.

A. Wesley Horton
A. Wesley Horton

June 3, 1949.

BIH-C-1a

OCCUPATIONAL CANCER RECORD

1. Name Residence	2. Place of Death: City:	Hospital:
3. State:	City:	Street:
4. Social Security No.	5. Sex Age	6. Color or Race:
7. Date of Birth:	8. Years: Mos. Days:	9. Date of Death:
10. Occupation:	11. Industry or Business: Method of Diagnosis	
12. Cause of Death:	13. Clinical: Biopsy: Autopsy: Other:	
14. Name of Physician:	15. Street:	16. City:
17. Clinical Diagnosis:	18. Pathologic Diagnosis:	19. Primary Site:
20. Date of First Symptoms:	21. Date of First Visit to Physician:	
22. Date of First Diagnosis:	23. Stage of Disease at First Diagnosis:	
24. History of Other Illnesses of Site Affected:	25. History of Injury to Site Affected:	

APPENDIX B

26. Exposure: Have you ever handled or worked near any of the following? If yes, give details.				
NAME OF SUBSTANCE	NAME OF EMPLOYER	DATE	LENGTH OF EXPOSURE	DESCRIBE TYPE OF EXPOSURE AND ESTIMATE PERCENT OF WORKING TIME EXPOSED:

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APPENDIX B

BIR-C-1b
Occupational Cancer Record - Page 2

27. Occupational History: List Occupations in Chronological Order beginning with last or present one.

Dates		NAME OF EMPLOYER	ADDRESS OF EMPLOYER	TYPE OF BUSINESS OR PRODUCT MADE	TITLE OF JOB	TYPE OF WORK PERFORMED
FROM	TO					

28. Are there any other important materials to which you have been exposed? (Hobbies; Habits; Medicines; Cosmetics; Diets; Environment)

29. Additional Information Obtainable at: (List Physician; Laboratory; Hospital; Insurance Co; Plant Medical Department
Clinic; Tumor Registry, etc.)

Name:

Address:

Name:

Address:

Name:

Address:

30. Any other information pertaining to Tumor (Multiplicity, sites, etc.):

BIH-C-2

PLANT CANCER RECORD

1. Name of Company _____		2. Location: _____	
3. In operation since: _____		4. Products Manufactured: _____	
5. Number of workers employed:		In plant:	In office:
Male:	_____	_____	_____
Female:	_____	_____	_____
White:	_____	_____	_____
Colored:	_____	_____	_____
6. Name of plant official _____		7. Name of Plant Physician _____	
8. Insurance Carrier: _____		9. Carcinogenic hazards: _____	
10. Operations involved: _____		11. Number of workers exposed:	
		a. Constant exposure	
		b. Intermittent exposure	
		c. Occasional exposure	
12. Sex of exposed workers:	Male: _____	Female: _____	13. Race: _____
			White: _____
			Colored: _____
14. Duration of exposure:	Number: _____	Years: _____	
	Number: _____	Years: _____	
	Number: _____	Years: _____	
15. Rate of turnover in exposed group (a) _____			
16. Cancers Observed in exposed group (a) _____		Total number: _____	Period: _____
17. Cancers by sites: _____			

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APPENDIX B

BIH-C-3

PLANT CANCER RECORD

Date:

1. Name of Company:

2. Location:

3. In Operation since:

4. Products Manufactured:

5. Number of Workers:

Total

Office:

Production:

Females

Males

White

Colored

6. Name of Plant Manager:

7. Plant Physician:

8. Insurance Carrier:

9. Carcinogenic Hazards:

10. Operations
Involved

Number of Workers

Total, White Colored Male Female

Exposure

Constant Intermittent Occasional

a

b

c

d

e

f

g

h

i

j

k

l

m

n

11. Type of Exposure

Inhalation Skin Ingestion Other

Duration of Exposure

Average Longest

Cancers Observed

Site Number Period

a

b

c

d

e

f

g

h

i

j

k

l

m

n

12. Rate of Labor Turnover:

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Meeting held in New York,
Friday, June 3, 9:30 A.M.
Room 673, ESSO S.O. Co.,
15 W. 51st St.

NOTES FOR THE MEETING

Samples from processes listed in February 1 meeting.

Attempt to show effect of varying feed stocks and operating conditions with minimum number of samples.

Reserve 150 of the 200 samples for refinery samples. Rest on samples for analytical tool from laboratory.

Specific Samples

1. Clarified slurries from FCCU already indicted - some variation shown. 3632 nearly most potent.
2. Effect of thermal cracking on heavy cat. cycle stock.
3. Effect of selected feeds in Houdry and TCC.
4. Highly aromatic samples from 2 and 3 - pass Houdry operation. Does recycling increase carcinogen concentration or destroy carcinogens previously formed?
5. Effect of sulfur and nitrogen Hydrogenation by Union HCOOH extraction of N bases.
6. Slack wax (or slop on outside of presses). Crude sources of those causing scrotal cancers. Rhodessa, E. Texas Ok.

Started 6 concentrations of Me-chol. in benzene from 0.01% to 0.6% 3 times a week.
Also 3631 and 3632.

Ask Lewis about meeting at Chester, Thursday, June 23.

May 31, 1949

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