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AMERICAN PETROLEUM INSTITUTE
MEDICAL ADVISORY COMMITTEE

NINETEENTH MEETING

April 25, 1955
Statler Hotel
Buffalo, N. Y.

Registration

MEMBERS PRESENT OR REPRESENTED

George M. Saunders, M. D. - Chairman
F. D. Gassaway, M. D. - Secretary

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Lamson Blaney, M. D.	E. P. Luongo, M. D.
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J. W. Crookshank, M. D.	J. W. Osborn, M. D.
L. E. Curtis, M. D.	R. J. Potts, M. D.
R. E. Eckardt, M. D.	B. B. Reeve, M. D.
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T. M. Frank, M. D.	Leo J. Wade, M. D.
C. H. Hine, M. D.	(Rep. by J. J. Thorpe, M. D.)
	E. R. Ware, M. D.

TECHNICAL ADVISORS PRESENT

E. W. Adams	A. E. Dooley
C. T. Brown	P. D. Halley
E. K. Daniels,	C. A. Neilson
	A. C. Pabst

OTHERS REGISTERED

Philip Drinker	- Harvard University
Robert R. Dugan, M. D.	- Continental Oil Company
A. E. Hoag, M. D.	
E. O. Mattocks	- American Petroleum Institute
William L. Oviatt	- Standard-Vacuum Oil Co.
F. H. Pretsch, M. D.	- Humble Oil & Refining Co.
Lucian E. Reas	- Phillips Petroleum Co.
H. O. Sappington, M. D.	- Humble Oil & Refining Co.
W. E. Scovill	- The Standard Oil Co. (Ohio)
Jack Spence	- Standard Oil Co. of California
D. V. Stroop	- American Petroleum Institute

MEMBERS NOT REGISTERED OR REPRESENTED

V. C. Baird, M. D.	W. F. Kahle, M. D.
Kieffer Davis, M. D.	E. K. Linder, M. D.
	R. C. Page, M. D.

API 07198

JAM 017238

THE STANDARD OIL COMPANY

April 15, 1955

Dr. R. E. Eckardt, Director
Medical Research Division
Esso Research & Engineering Co.
P.O. Box 51
Linden, New Jersey

Re: OCCUPATIONAL CANCER HAZARDS
by W. C. Husper, M.D.

Dear Dr. Eckardt:

In reference to our recent correspondence regarding the above subject and our telephone conversation of today, I am enclosing two (2) copies of this article by Dr. Husper distributed March 9, 1955 to members of the NPA Fire and Accident Prevention Department by E. H. Fallis of the National Petroleum Association in Washington.

Very truly yours,

J. E. Osborn, M.D.

JWO:amd
Enc. (2)

CC: Dr. George M. Saunders
Mr. D. V. Streop ✓

JAM 016220

API 06062

NATIONAL PETROLEUM ASSOCIATION

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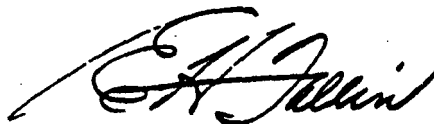
PAYETTE B. BOW
GENERAL COUNSEL
DONALD C. O'HARA
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E. H. FALLIN
TECHNICAL AND SAFETY DIRECTOR
HORACE L. LOWMEYER
ATTORNEY
WILLIAM B. PIERCE
COMMISSIONER COUNSEL
H. A. MILLER
EXECUTIVE ASSISTANT

March 9, 1955

TO: MEMBERS NPA FIRE AND ACCIDENT PREVENTION DEPARTMENT

In comparatively recent years, cancer hazards in industry have been recognized as of increasing importance and magnitude. Several organizations are devoting considerable study to the problem and health authorities in many large cities are watching the situation very closely in the areas of their jurisdiction so that necessary rules and regulations may be enacted if, in their opinion, they become necessary for the safety of workers.

Because certain petroleum products or materials produced in the refining of crude oil are among those listed as occupational carcinogens, a recent article appearing in the March-April, 1955 issue of "Safety Standards" a booklet published by the Bureau of Labor Standards of the United States Department of Labor, should be of particular interest to all those concerned with the protection and safety of workers. The article referred to in "Safety Standards" titled, "Occupational Cancer Hazards" by Dr. W. C. Hueper, M.D. of the National Cancer Institute, is, in our opinion, of sufficient importance for us to reproduce it for your information and file. A copy of Dr. Hueper's article as it appeared in "Safety Standards" is attached hereto.


E. H. FALLIN

JAM 016222

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The note shown below was written by
Barry Castleman and attached to the page
immediately following this one along the
right margin

Asis

OCCUPATIONAL CANCER HAZARDS

by

W. C. Hueper, M.D., National Cancer Institute

(The article reprinted herewith was prepared for the March-April, 1955 issue of "Safety Standards" a publication of the U. S. Department of Labor.)

The rapid development of modern industrialism has been associated with the appearance of many new occupational health hazards of which those causing cancers occupy an important position.

The term "occupational cancer" is applied to malignant tumors originating in individuals during the course, and/or as the result of the regular and usually prolonged exercise of certain occupational activities entailing contact with some exogenous, physical, chemical or parasitic agent acting in proper intensity. Occupational cancers thus are caused by specific agents or etiologically related to well-defined occupational conditions which form an integral part of the ordinary working environment. They differ through these aspects from the accidental occupational cancers which result from or follow upon some extraordinary, unforeseen, accidental injury sustained at work and being of a nonspecific nature.

Types and Nature of Occupational Carcinogens

Occupational agents which are known or strongly suspected as having caused cancers of various organs in workers who became exposed to them are largely chemicals. Some of these chemicals are well defined (arsenicals, chromium compounds, nickel, asbestos, benzidine, beta-naphthylamine, 4-aminodiphenyl, benzol), others consist of variable mixtures of a large number of chemical compounds, a few of which possess carcinogenic properties and some of which have been identified (scot, coal tar, pitch, bitumen, tar oils, creosote oil, anthracene oil, lamp black, lignite tar and crude paraffin oil; shale oil and various petroleum fractions (industrial fuel oils, diesel oils, lubricating oils, cutting oils, crude paraffin oils, petroleum tars, pitches, asphalt and coke), and crude isopropyl liquor produced in the manufacture of isopropyl alcohol).

A second group of occupational carcinogens is composed of agents characterized by their ionizing and nonionizing radiation (x-radiation, radioactive substances, ultra-violet radiation). The third group is represented by environmental agents and conditions which sometimes have an occupational association, and which may be related to certain infections (schistosoma hematobium) or several specific climatic, geologic, dietary, and nutritional conditions, and which in part have a more or less indirect relation to carcinogenesis (malnutrition with protein and vitamin B-complex deficiency).

In addition to these established occupational carcinogens there are a number of potential human carcinogens which have been shown to elicit cancers in experimental animals and to which workers become exposed during their regular occupational activities (synthetic estrogens, chlorinated aliphatic hydrocarbons, methylated naphthalenes, diethylene glycol, p-thiourea, thio-acetamide, light green SF, brilliant blue FCF, fast green FCF, butter yellow, beryllium, selenium, cobalt, and various polymerized plastics). These potential agents also must be considered in the adjudication of compensation claims.

Evaluation of Evidence

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For the establishment of casual relations between an exposure to these agents and

a. Definite evidence must be available indicating that the claimant had occupational contact with any one of the various agents listed; that this contact was either of prolonged nature extending as a rule over periods of at least 6 months; and was of adequate intensity for eliciting a cancerous response, according to any previous experience which might be available on this point. Single exposures may be considered to be effective if the causal agent consists of external ionizing radiation or the exposure mechanism favors the production of a carcinogenic depot in the tissues from which a prolonged exposure of the host organism may ensue.

b. The route of exposure to or introduction of the carcinogenic agent in addition to its specific chemical properties and metabolic peculiarities determine the site of the organ or tissues in which a cancer is elicited. Therefore, not any cancer, but only cancers of specific sites are related to any particular carcinogenic agent.

c. The type of exposure does not need to be continuous or extend up to the time of appearance of the cancer, but may be intermittent. In fact, any contact with the occupational carcinogenic agent may have ceased many months to years, or occasionally, even decades before the cancer becomes manifest. Effective carcinogenic exposures may be sustained not only by the ordinary operators employed in operations with occupational carcinogenic hazards, but also by workers entering such operations on a transitory basis, such as supervisors, maintenance personnel, repairmen, truckers, loaders, yardmen, and workers employed in rooms and buildings near the hazardous operations, if housekeeping and exhaust disposal methods are inadequate and environmental contaminations result.

d. Occupational Medical Stigmata--For the establishment of causal relations between occupational exposures to carcinogens and subsequently appearing cancers, it is of distinct value to analyze the medical history of affected persons for functional or anatomic disease manifestations characteristic of a pathogenic action of the particular carcinogen allegedly involved. Such noncancerous and often preparatory or precancerous symptoms of etiologic specificity act as stigmata or biologic fingerprints supporting not only the actuality of a previously sustained specific exposure, but also its causal relationship to the cancer present. Symptomatic manifestations possessing such a significance are, for instance, chronic radiodermatitis, chronic tar dermatitis, arsenic dermatosis, chronic solar dermatitis, chronic radiation periostitis, asbestosis of the lung and leukemoid reactions after exposure to benzol and ionizing radiation. Chemical analyses of tissues for the incriminated chemical also may sometimes help in establishing previous contact with any specific occupational carcinogens, such as arsenic, chromium, nickel, radioactive substances, and benzol.

It is important, however, to note that these procedures are not applicable for all occupational cancers. Some carcinogens do not produce any etiologically characteristic symptoms; in fact, they may not elicit any preliminary toxic or other disease phenomena despite a persistent and prolonged carcinogenic exposure. Thus, cancers of the bladder in dye and rubber workers may develop in the absence of any preliminary local or general warning symptoms after more than one or two decades of continuous, intermittent, or discontinued exposure to certain carcinogenic aromatic amines.

There also does not exist any parallelism between the toxic and/or irritative properties of any chemical and its potential carcinogenic qualities, nor, is there a relationship between the degree of toxicity of any particular carcinogen and its relative carcinogenic potency.

e. Extensive experience with occupational cancers indicates that there usually elapses a latent period of years, if not decades, between the onset of exposures to a carcinogenic agent and the appearance of the resulting cancer. It is for this reason most unlikely that occupational cancers become manifest within the first year following the inception of contact with a carcinogenic agent. In fact, all cancers which make their appearance during the first three years of occupation in a carcinogenic environment should be subjected to severe scrutiny for a more probable nonoccupational origin before they may be considered from an occupational viewpoint.

Compensation Laws

Workmen's compensation laws enacted in various countries and states reveal a remarkable lack of uniformity as to the types of occupational carcinogenic agents, industrial operations with carcinogenic hazards, and occupational cancers covered. As of October 1, 1954, full coverage laws applying to all kinds of occupational diseases including cancers had been passed in 26 States in the United States and the District of Columbia; schedule coverage laws not always covering occupational cancers, or all types, were in force in 20 States and no occupational disease laws had been enacted at that time in 2 States (Mississippi and Wyoming).

While workmen's compensation laws based on the principle of schedule coverage may provide some degree of compensation against disability and injuries resulting from occupational cancer hazards, such legal provisions designed for the protection of workers are totally inadequate, if not obsolete, in an era of rapidly changing and increasing occupational disease panorama.

However, even the blanket or general coverage compensation law which is sufficiently flexible to include not only the present but also any future occupational cancer hazards, usually has a statute of limitations which is inadequate for providing fair protection under certain and not too unusual circumstances met with in occupational cancers. Since occupational cancers may become manifest many years after cessation of exposure to occupational carcinogenic agents, a statutory time clause of from six months to six years may be too short for occupational cancers which may appear after a longer period.

In the workmen's compensation laws existing in most States, certain groups of workers or employees, such as especially farm labor and domestic servants, are excluded from coverage by the law. Since farming as well as housework have become and are increasingly becoming occupations having extensive contact with industrial products (pesticides, herbicides, synthetic fertilizers, antisprouting agents, hormonal fattening agents of livestock lubricants and fuel of farm machinery, residual oils for smudge pots, soil improvers, antibiotics, detergents, waxes, polishes, dry cleaning agents), there is no sound scientific reason for excluding members of such occupations from coverage by the workmen's compensation laws and from adequate protection against cancers arising from exposure to potential and actual occupational carcinogens.

Labor Codes and Standards

Any attempt toward achieving an adequate compensation by financial means for a cancerous condition acquired through contact with occupational agents not only presents considerable economic difficulties but is also of questionable humane merit. While such a procedure is evidently the best that can be done after an occupational cancer has become an accomplished fact, the wiser, more rational, and in the long run, more economical approach to a reasonable control of occupational cancer hazards lies obviously in their prevention wherever this is possible.

The goal can be achieved to a large degree by the enforcement of proper work conditions in operations in which cancer hazards exist, so that either any contact of workers with such agents is eliminated or reduced to an ineffective level. As to the fundamental step for accomplishing such a control of occupational cancer hazards, it would be advisable to have all factories, workshops, laboratories and other establishments producing, handling, or using known or suspected carcinogenic materials to register with the appropriate State public agency. This information would provide the basis for establishing the supervision of plants by health or labor agencies and would create the proper machinery for familiarizing managers of such operations with the potential carcinogenic properties of the substances and devices used in their establishments and with the methods and procedures by which they might be controlled or avoided.

The relative effectiveness of any medical, sanitary and technologic control measures to be adopted can best be determined by ascertaining the changes in the occupational cancer incidence among the total population at risk occurring during some 10 to 30 years after their introduction. It is therefore desirable that provisions be made for routinely recording all cancer cases occurring among worker groups exposed to occupational carcinogens. All precancerous and cancerous lesions observed among members of such groups should for this reason be made notifiable with the State health agency. All persons having knowledge of these cancers should be held responsible for such reporting. The adoption of such measures represents an important step from a public-health viewpoint, because there is a growing urgency to determine the environmental causes responsible for significant changes in the incidence rates of several cancers.

What, Then, Are the Conclusions?

1. The increasing rate at which occupational carcinogens have been discovered during recent decades suggests that only a fraction of the actually existing industrial carcinogens are known and that heretofore unknown and new occupational carcinogens may be added to the present industrial environment through the development and use of new chemicals and production methods.
2. There is a great deal of evidence indicating that only a relatively small fraction of the cancers produced through contact with occupational carcinogens has been recognized and/or placed on record. Because of the established widespread industrial contact of large worker groups with known occupational carcinogens, the potential scope of the occupational cancer problem evidently is much larger than apparent from the reported number of occupational cancer cases and hazardous industrial operations.
3. Medicolegal decisions in compensation procedures of occupational cancer claims should be based on a competent and critical evaluation of the entire evidence related to the exposure conditions of the claimant, the presence or absence and the type of any symptomatic manifestations observed during the latent and developmental periods of the cancer and characteristic for a particular agent, the length of the latent period, the site of the cancer, any specific histologic and histochemical characteristics, the production of corresponding cancers in experimental animals by the incriminated agent and pertinent epidemiologic data.
4. Schedule coverage laws are inadequate for providing proper protection against occupational cancer hazards because of the dynamic state of modern industry resulting in the constant addition of new chemicals and production methods which may entail heretofore unknown occupational cancer hazards. The statute of limitations contained in the general coverage laws represents its main defect in the fair and equitable application of this type of workmen's compensation law to occupational cancer hazards.
5. Since the prevention of occupational cancer hazards and not financial compensation for established occupational cancers appears to be the more sensible and humane method of control, labor codes should be properly adjusted and enforced so as to eliminate or reasonably contain occupational cancer hazards in modern industries.
6. For ascertaining the actual scope of the occupational cancer problem and for the institution of adequate control measures, it is essential that occupational cancers and precancerous conditions are made notifiable with local and State health and labor authorities.
7. A comprehensive study of occupational cancer hazards will provide a sound basis for an equally urgent investigation of the apparent extension of industry-related cancer hazards to large parts of the general population.

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