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OCCUPATIONAL CANCER

Early recognition of the possible occupational etiology of cancer

will:

- give us information as to type of work the patient must avoid in the future.
- provide a basis for prognosis.
- make available, under State Compensation Laws, financial assistance to the patient and his family.
- establish statistical data as to incidence, distribution, and causative agents,—information now practically non-existent.

OCCUPATIONAL CANCER

A challenge to the physician

Sponsored by:
Medical Society of the State of New York
New York State Department of Health
New York State Department of Labor
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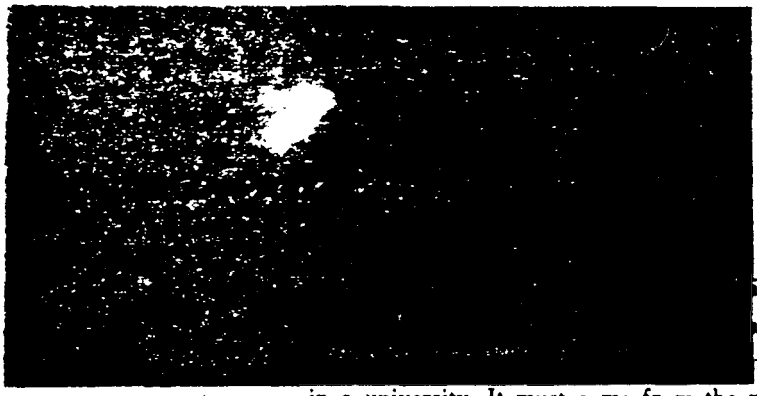
New York State Department of Health



iseases we have a fertile field to which the
tribution in the course of his regular work.
ot be developed in a research laboratory or in a university. It must come from the physicians who actually see cancer cases or cases of suspected cancer, either in their own private offices, in cancer-screening clinics, or in the hospital. It is thus a research problem of extraordinary importance practically made to order for the busy practitioner who is willing to devote the few extra minutes necessary to take a careful occupational history on his cancer patients; and report, for further investigation, cases suspected of having been exposed to carcinogenic agents in industry.

To assist the practicing physician in this matter, the New York State Occupational Cancer Committee has prepared this leaflet. The table provides a few useful clues, including a list of the chemical substances and physical agents found in industry, which are, at the present time, suspected of having carcinogenic properties, and the types of

cancer believed to be caused by them. Further study will, no doubt, add others to this list; some now on the list may very well be dropped as new data become available. The table of precancerous lesions together with the occupational carcinogens with which experience has associated them, is in the nature of a tentative check-list on the basis of present information. A copy of the form used by physicians in New York State, exclusive of New York City, for reporting cancer cases is also included.

If called upon by any physician interested in cooperating in this program, the New York State Occupational Cancer Committee is prepared to follow any suspected case of occupational cancer in New York State into the workroom where it is believed that it had originated, and to make all necessary technical investigations of the environmental factors which might have been responsible. Such investigations will include chemical analysis of materials, radiation measurements, chemical analysis of air contaminants in the form of dusts, gases, fumes, dust counts, or any other techniques as indicated. In thus tracing back the occupational exposures of cancer patients, it is hoped that occupational factors not now suspected of causing cancer will thereby be brought to light.

In New York State, the professional staff of the Division of Industrial Hygiene and Safety Standards may be called upon at all times for consultation and study of these problems in particular plants; the scientific evaluation of any health hazards

which may be present, and practical assistance with control measures. All such requests should be addressed to Dr. Leonard Greenburg, Director, Division of Industrial Hygiene and Safety Standards, New York State Department of Labor, 80 Centre Street, New York 13, N. Y.

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The New York State Occupational Cancer Committee
an unofficial agency with the following membership:

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THE medical profession is well aware of the extent to which lack of knowledge of the basic causes of cancer is responsible for the unsatisfactory state of our prophylactic and therapeutic approach to this problem. We do know that a causal relationship has been definitely established between cancer and exposure to certain chemical and physical agents in industry. Thus, exposure of the skin to certain types of oil, tar or pitch are known to cause skin cancer. On the other hand, epitheliomata of the bladder are definitely known to result from exposure to certain of the intermediates in the manufacture of aniline dyes, such as beta naphthylamine.

This small group of cancer cases for which an occupational etiology has been established thus offers a rather unique point of departure for the further study of this baffling disease. Too little attention has, however, been paid to these occupational cancers; too little is known of the environmental factors responsible for their production. An appreciable number of such cases have, no doubt, gone unrecognized as to occupational etiology.

This is true not only of occupational cancer, but of many other occupational diseases as well. It is a common fallacy to believe that occupational diseases have certain clinical earmarks which immediately suggest an occupational etiology, or even a specific occupational exposure; or that they present medical syndromes so distinctive as to clearly differentiate them from non-occupational diseases. This may occur, but it is relatively rare. Whether one is dealing with cancer or with other systemic diseases, such as hepatitis, nephrosis or aplastic

anemia, resulting from exposure to toxic agents in industry, as clinical diseases entities, they provide no specific clues as to eticlogy. In many cases, the occupational etiology is unsuspected.

In order to acquire new data as to the environmental factors—suspected as well as unsuspected—which are responsible for cancer cases, it is necessary to know precisely what the patient's occupational exposure was; what chemical substances he came in contact with; what other environmental factors were present in the workroom. Since cancer will usually develop only after a great many years of exposure, and even many years after exposure to an occupational carcinogen had ceased, the occupational history of the patient must be carefully studied all the way back to his first job. This is difficult. But it will be rewarding. At any rate, it is the only way to get the necessary data. Frequently, however, the patient will not know or remember the precise chemical substances, for example, with which be worked. Or he may forget to mention the only exposure which happens to be significant in his case. The names and addresses of the plants where the patient had worked are more readily obtained. This information alone can be a useful guide for a technical investigation of the patient's occupational exposure over the years.

The importance of the occupational history form thus cannot be overemphasized, since a complete occupational history is indispensable to developing any useful data with reference to occupational cancer. History taking, whether it is the clinical history or an occupational history, is very time-consuming. The occupational history, however, is less familiar to the medical practitioner and so it always seems to present the greater hurdle. For that reason, the suggested Occupational History Form has been made as simple as possible.

No matter how carefully and intelligently the case has been worked up, or how accurate

the diagnosis, the possibility of an occupational etiology must not be overlooked. Recognition of an occupational etiology, where it exists, will provide invaluable information as to the type of work the patient must avoid in the future; it will provide a basis for prognosis; and it will make possible assistance to the patient and his family under the Compensation Laws of the State in which he lives, providing them with much-needed financial assistance during a period of disability.

Recognition of the occupational etiology of cancer cases, where it exists, will provide statistical data as to incidence, distribution, causative agents, etc., now practically non-existent. Very few people realize how little reliable information there is, at the present time, as to the incidence of any of the occupational diseases.

Occupational cancers, as a rule, result from prolonged exposure to physical or chemical carcinogenic agents in the working environment. Such exposures may be continuous or intermittent over a period of many years. There may be a long latent period before the first evidences of cancer begin to manifest themselves. During all or part of this period, there may be no contact whatever with the carcinogenic agent originally responsible for the cancer. In the case of radium, for example, this latent period may be as long as 20-30 years.

Individual susceptibility probably plays an important role here as in all other diseases, occupational or non-occupational. No doubt, when more is known about the many metabolic and bio-chemical factors involved in cancer formation generally, it will be found that some of these same factors are operative in cases of occupational cancer.

It is a matter of great practical importance, for the present purpose, that the industrial environment is essentially a man-made artificial one peculiarly susceptible of scientific meas-

urement and medical evaluation from the standpoint of hazards to health – including the production of occupational cancer as well as other occupational diseases. Of equal importance is the fact that these environmental factors in industry responsible for injury to health, once recognized, can be successfully controlled. Fortunately, the techniques for the control of the industrial environment and the prevention of occupational diseases are highly developed at the present time.

As a guide to the physician who, for purposes of prevention, is interested in investigating the role of occupation in cancerous or pre-cancerous lesions presented by his patients, Tables I and II are appended; also a selected bibliography of literature having a direct bearing on these problems.

Table I presents a description of selected lesions which have been found, as a result of experience, to be associated with agents in the occupational environment which are known to be carcinogenic.

Table II lists, alphabetically, for reference purposes, some of the more common substances or conditions in the occupational environment which are recognized as being cancer-producing or suspect. With each such agent the organ or system usually involved, is presented together with a classification in the right-hand columns, indicating whether the etiological relationship is doubtful (Class D) or established (Class E).

The New York State Occupational Cancer Committee would greatly appreciate the cooperation of practicing physicians in reporting any information they develop as to the possible relation of occupation to the pathological lesions, malignant or benign, which they find in their patients.

TABLE I

Description of Selected Lesions which may be Associated with Occupational Cancer Producing Agents

Lesion	Description	Etiologic Agent
SKIN		
Alopecia	Spotty loss of hair.	Arsenic, radio-active substances, radiation.
Atrophy	Skin grossly thinned and glistening in patches, associated with keratotic areas.	Pitch, tar, asphalt, radio-active substances, radiation (including ultraviolet rays).
Eczema	Dry seborrheic patches on skin.	Arsenic, asphalt, pitch, soot, tar.

Lesion	Description	Etiologic Agent
Keratosis	Flat, discrete, scaly area on skin with raised pearly borders. Usually on parts of skin exposed to carcinogen, but may occur in unexposed parts, particularly about sweat glands, with arsenic.	Anthracene, arsenic, asphalt creosote, crude mineral oil, crude paraffin, pitch, sodium nitrate, soot, tar, radio-active substances, radiation (including ultraviolet rays).
Hyperkeratosis	Rough, fissured keratotic plaques with small, hard, wart-like horns, usually on hands and soles. May become nodular and ulcerate.	
Verrucae	Form of hyperkeratosis.	
Ulceration	Breakdown of keratotic lesions.	
Leukoderma	Absent pigmentation alone.	Anthracene, arsenic, asphalt creosote, crude mineral oil, crude paraffin, pitch, tar, radio-active substances, radiation (including ultraviolet rays).
Leuko-melanoderma	Patchy increased and absent pigmentation of skin. Most common in areas of highest pigmentation, and may involve oral mucosa.	
Melanoderma	Increased pigmentation alone.	

Lesion	Description	Etiologic Agent
Scleroderma	Dry, scaly, parchment-like skin, with enlarged pores, associated with leukomelanoderma.	Crude mineral oil, crude paraffin, radioactive substances, radiation.
NASAL PASSAGES		
Papillomas	Develop in antrum ethmoid cells, and turbinates.	Nickel carbonyl.
Polyps		
Perforation	Nasal septum.	Chrome salts.
Ulceration	Nasal mucosa.	Chrome salts.
BLADDER		
Hemorrhage, submucosal	Varying size with telangiectasis. Located mainly in trigone and about ureteral orifices.	Aniline, benzidine, beta naphthylamine and derivatives.
Papillomas	Polypous or villous, pedunculated or sessile, often multiple about trigone and ureteral orifices.	

Lesion		Etiologic Agent
EYES		
Papillomas	[illegible]	Arsenic, asphalt, creosote, crude mineral oil, pitch, tar, radiation (including ultraviolet rays).
BONES AND BONE MARROW		
Blood dyscrasias	Hyperplastic, hypoplastic, aplastic or hemolytic anemia. Thrombocytopenic purpura with spleen not markedly enlarged.	Benzol and derivatives, radio-active substances, radiation.
Bone	Peri-osteitis.	
LUNGS		
	No precancerous lesions observed.	Chrome salts.

Alphabetical Listing of Recognized and Suspected Occupational Cancer Producing Agents, with Sites Characteristically Affected

Substances or Conditions	Organ or System	Class D*	Class E†
Aniline and derivatives	Bladder, ureter, kidney	D	
Anthracene, crude	Skin		E
Aromatic organic chemicals	Liver	D	
Arsenic	Skin		E
	Liver	D	
	Respiratory system	D	
	Eyelids		E
Asbestos	Respiratory system	D	
Asphalt, artificial	Skin		E
	Eye		E
Benzidine and derivatives	Bladder, ureter, kidney	D	
Benzol	Blood forming organs		E
Benzol derivatives	Blood forming organs	D	
Burns, thermic	Skin		E
Chlorinated hydrocarbons	Liver	D	
Chromates	Respiratory system		E
Coal	Skin	D	
Creosote	Skin		E
	Lip		E
	Eye		E
Estrogens	Breast (male)	D	
Frostbite	Skin	D	
Iron dust	Lung	D	
Irritation, chronic	Skin	D	

Mineral oil, crude .....

Naphthylamine—alpha .....
Naphthylamine—beta .....
Nickel carbonyl .....
Paraffin, crude .....
Pitch .....

Radiant heat .....
Radio active substances.....

Roentgen rays .....

Shale oil .....
Sodium nitrate, crude.....
Soot .....

Spindle oils, aromatic.....
Tar .....

Trauma, chemical .....
Trauma, physical .....

Ultraviolet rays .....

* D—Reported cases—etiology still
† E—Established etiology.

Skin and lip		E
Lip	D	
Respiratory system	D	
Eye		E
Bladder, ureter, kidney	D	
Bladder, ureter, kidney		E
Respiratory tract	D	
Skin		E
Skin		E
Lip	D	
Bladder	D	
Eye		E
Skin	D	
Skin		E
Lungs		E
Blood forming organs		E
Bone		E
Skin		E
Blood forming organs		E
Subepithelial connective tissues		E
Eye		E
Skin	D	
Skin		E
Skin		E
Bladder	D	
Skin		E
Lip		E
Skin		E
Respiratory system	D	
Bladder	D	
Blood forming organs	D	
Eye		E
Skin	D	
Skin	D	
Blood forming organs	D	
Mesenchymatous tissues	D	
Eye	D	
Skin		E
Eye		E

bulbful.

Name of Clinic or Hospital:.....Date:.....

Address: .....

Name of Patient:.....M.....F.....

Address: .....

Diagnosis:.....Age at Commencing Work:.....Present Age:.....

[redacted] *(List in chronological order)*

Name of Plant	Address	Product Manufactured	Precise Job There	Time Employed Month — Year From	To
Present occupation					
Each preceding occupation					

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CHECK-LIST OF EXPOSURES

Substances	Industries	Occupations	Years in Each

Indicate on previous page the plant involved in each significant exposure listed here

TOWN
VILLAGE
CITY _____ COUNTY _____ DIST. NO. _____

(LEGAL RESIDENCE OF PATIENT)

PATIENT'S NAME: _____ PRESENT AGE: _____ YEAR OF BIRTH: _____

(PLEASE PRINT)

PATIENT'S LEGAL ADDRESS: _____ SEX: _____ COLOR: _____

(IF INSTITUTION INMATE, GIVE PREVIOUS LEGAL ADDRESS)

USUAL OCCUPATION | TRADE: _____ INDUSTRY: _____ MARITAL STATUS: _____

Date First Symptom of This Tumor _____ Date of First Visit fo This Tumor to Physician Reporting: _____ Was Prior Visit Made to Another Physician for This Tumor? ☐

CLINICAL DIAGNOSIS: _____

PATH. DIAGNOSIS ☐ PRIMARY SITE (Tissue of Origin): _____

NAME OF PATH. LABORATORY: _____ METASTATIC SITE: _____

STAGE OF DISEASE	When First Diagnosed By Physician Reporting:	Early Local ☐	Advanced Local ☐	Regional Nodes Involved ☐	Distant Metastasis ☐	Recurrent ☐
	Now:					

REFERRED BY: _____

REPORTED BY: Hospital ☐ Physician ☐ (NAME) _____ Address or Institution _____

DATE OF THIS REPORT: _____ If Now Hospitalized, Name of Hospital or Institution _____ Tumor Clinic Patient ☐

HERMAN E. HILLEBOE, M.D.
Commissioner

MALIGNANT NEOPLASM
CONFIDENTIAL REPORT
New York State Department of Health
BUREAU OF CANCER CONTROL

Check here if you wish more report cards ☐

Form C.C.I. 1-46-40 80M (8L-43)

Terms and Pathological Diagnoses Included* Under "Cancer and Other Malignant Tumors" and Reportable In Accordance with §25-b, Public Health Law

CARCINOMA
SARCOMA
EPITHELIOMA
ENDOTHELIOMA

AND ANY TERM OF WHICH ONE OF THESE WORDS IS A PART.

ACANTHOMA
ASTROCYTOMA
BRAIN TUMORS
CHORIOMA
CHLOROMA
CHOLESTEATOMA
EMBRYOMA
EPENDYMOMA
GANGLIONEUROMA
GLIOMA
GRANULOSA CELL TUMOR (Ovary)
†GIANT CELL TUMOR (Bone)
HYPERNEPHROMA
HODGKIN'S DISEASE
LEUKEMIA
LYMPHOMA
LYMPHOSARCOMA
LINITIS PLASTICA (Stomach)
MELANOMA
MENINGIOMA
MYELOMA
MEDULLOBLASTOMA
MESOTHELIOMA
MIXED TUMOR
NEUROCYTOMA
OLIGODENDROGLIOMA
PINEALOMA
SYNCYTIOMA
SEMINOMA
SYMPATHOBLASTOMA
SPONGIOBLASTOMA
TERATOMA
THYMOMA
PAGET'S DISEASE (Breast)
WILMS' TUMOR (Kidney)
EWING'S TUMOR (Bone)
GRAWITZ' TUMOR (Kidney)

*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.

†Giant Cell Tumors of Bone Are Usually Benign, But May Become Malignant. Included for Special Study.

API 07963

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