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OCCUPATIONAL CANCER* A Challenge to the Physician

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In the prevention of occupational diseases we have a fertile field to which the practicing physician can make a vital contribution in the course of his regular work. It is unique in that the data required cannot 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 information. The tables provide 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.

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.

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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 consultations 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.

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

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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 etiology. 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 he 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,

TOWN/VILLAGE/CITY (Legal Residence of Patient)		COUNTY	DIST. NO.
PATIENT'S NAME (Please Print)		PRESENT AGE	YEAR OF BIRTH:
PATIENT'S LEGAL ADDRESS: (If Institution Inmate, Give Previous Legal Address)		SEX:	COLOR:
USUAL OCCUPATION	TRADE:	INDUSTRY:	
Date First Symptom of This Tumor	Date of First Visit for This Tumor to Physician Reporting	MARITAL STATUS: 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
Now.		Regional Nodes Involved	Distant Metastasis
			Recurrent
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

Name of Clinic or Hospital: _____ Date: _____
 Address: _____
 Name of Patient: _____ M _____ F _____
 Address: _____
 Diagnosis: _____ Age at Commencing Work: _____ Present Age: _____

OCCUPATIONS (List in chronological order)

NAME OF PLANT	ADDRESS	PRODUCT MANUFACTURED	PRECISE JOB THERE	TIME EMPLOYED MONTH — YEAR FROM TO
Present Occupation				
Each preceding occupation				

CHECK-LIST OF EXPOSURES

SUBSTANCES	INDUSTRIES	OCCUPATIONS	YEARS IN EACH

TABLE I
Description of Selected Lesions Which May Be
Associated With Occupational Cancer Producing Agents

SKIN	LESION	DESCRIPTION	ETIOLOGIC AGENT
	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.
	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, radioactive 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.	
	Leuko-melanoderma	Patchy increased and absent pigmentation of skin. Most common in areas of highest pigmentation, and may involve oral mucosa.	Anthracene, arsenic, asphalt, creosote, crude mineral oil, crude paraffin, pitch, tar, radio-active substances, radiation (including ultraviolet rays).
	Melanoderma	Increased pigmentation alone	
	Scleroderma	Dry, scaly, parchment-like skin, with enlarged pores, associated with leukomelanoderma	Crude mineral oil, crude paraffin, radio-active substances, radiation.
NASAL PASSAGES			
	Papillomas	Develop in antrum, ethmoid cells, and turbinates	Nickel carbonyl.
	Polyps		
	Perforation		
	Ulceration		
		Nasal septum.	Chrome salts.
		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.	
EYES			
	Papillomas	Pedunculated, develop mainly on lids, occasionally on eyeball.	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.

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.

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.

(Continued in the November, 1951 issue)

SUBSTANCES OR CONDITIONS	ORGAN OR SYSTEM	CLASS D*	CLASS E†	SUBSTANCES OR CONDITIONS	ORGAN OR SYSTEM	CLASS D*	CLASS E†
Aniline and derivatives . . .	Bladder, ureter, kidney . .	D		Nickel carbonyl	Respiratory tract	D	
Anthracene, crude	Skin		E	Paraffin, crude	Skin		E
Aromatic organic chemicals	Liver	D		Pitch	Skin		E
Arsenic	Skin		E		Lip	D	
	Liver	D			Bladder	D	
	Respiratory system	D			Eye		E
	Eyelids		E	Radiant heat	Skin	D	
Asbestos	Respiratory system	D		Radio active substances	Skin		E
Asphalt, artificial	Skin		E		Lungs		E
	Eye		E		Blood forming organs		E
Benzidine and derivatives	Bladder, ureter, kidney . .	D			Bone		E
Benzol	Blood forming organs		E	Roentgen rays	Skin		E
Benzol derivatives	Blood forming organs	D			Blood forming organs		E
Burns, thermic	Skin		E		Subepithelial connective tissues		E
Chlorinated hydrocarbons	Liver	D			Eye		E
Chromates	Respiratory system		E	Shale oil	Skin	D	
Coal	Skin	D		Sodium nitrate, crude	Skin		E
Creosote	Skin		E	Soot	Skin		E
	Lip		E		Bladder	D	
	Eye		E	Spindle oils, aromatic	Skin		E
Estrogens	Breast (male)	D		Tar	Lip		E
Frostbite	Skin	D			Skin		E
Iron dust	Lung	D			Respiratory system	D	
Irritation, chronic	Skin	D			Bladder	D	
Mineral oil, crude	Skin and Lip		E		Blood forming organs	D	
	Lip	D		Trauma, chemical	Eye		E
	Respiratory system	D			Skin	D	
	Eye		E	Trauma, physical	Skin	D	
Naphthylamine—alpha	Bladder, ureter, kidney . .	D			Blood forming organs	D	
Naphthylamine—beta	Bladder, ureter, kidney . .		E		Mesenchymatous tissues	D	
					Eye		E
				Ultraviolet rays	Skin		E
					Eye		E

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