of the various occu-
ertificates where the
the cause of death.
the occupations on
es may then be com-
all death certificates
pulation. If certain
with much greater
certificates for lung
tificates where death
es, one may conclude
n may be involved
nsively investigated.
ients may be credited
method. However,
ith this use of death
e from the following
one occupation may
this is supposed to
ation," it is often not
and duration in the
recorded. All these
to blur the identifi-
cupations from death

ected in the present
ermine the lifelong
obacco-usage history
ients (and a control
interview with the
history included the
gaged, name of com-
description of duties,
ducts and hazardous
the patient.

d during 1949–1952
ospitals (three county
five veteran or mili-
ity, and one private
ed the study group.
specially qualified in
sis obtained the data
t in the cooperating
ndition permitted the
ession with each pa-
two hours or more,
about smoking were

obtained and the information about every occupation was highly detailed. A total of 518 patients who finally had histopathologically proved diagnoses of lung cancer were ultimately included in the analysis.

For every patient in the case series another patient admitted to the hospital about the same time—of the same age (within five years), sex, and race—for a condition other than cancer or a chest disease was chosen in a random manner as a matched "control." Two interviewers, one working in Northern California and one in Southern California hospitals, obtained the data from the lung cancer patient and control patients using the same schedule in identical manner. That interviewer bias did not enter into the determination of tobacco-usage history seems likely, among other reasons, because the results closely parallel those obtained in other investigations where such bias apparently was excluded,[4-5] and because the results for the two interviewers were very similar. It is difficult to conceive how interviewer bias might have affected the occupational data, since both lung cancer patients and control patients mentioned hundreds of occupations and none of these was suspected by the interviewers. Preliminary findings were kept from the interviewers until the end of the data collection.

## Method of Analysis

Each record was reviewed by a physician, particularly with respect to the pathologic diagnosis. An industrial hygiene chemist completed the listing of materials usually involved in the occupations mentioned by the patients but not necessarily known to them. Thereafter, the data were coded and tabulations prepared.

Attempts to analyze the data concerning type of industry and exposure to materials already identified as toxic or carcinogenic did not prove fruitful. Hence the major analytical effort with respect to work history went into the data on occupation itself. This had been coded according to the Dictionary of Occupational Titles (2nd ed., 1949), prepared by the Division of Occupational Analysis, U. S. Employment Service, a code with 367 three-digit titles. Particular attention was devoted to the question of years of exposure because present knowledge of carcinogenesis due to environmental agents indicates that duration of exposure and a long latent period are critical factors.

Data on tobacco usage were analyzed so as to reveal the type and degree of smoking, as well as the fact of smoking itself.

Finally, an attempt was made to separate the effects of tobacco usage and occupations which appeared implicated.

**Table 1—Age Distribution of Lung Cancer Patients and Controls**

| Age | Cases | | | Controls |
|---|---|---|---|---|
| | Adeno-carcinoma | Other Types of Carcinoma | Total | Total |
| Total | 46 | 472 | 518 | 518 |
| Under 40 | 3 | 22 | 25 | 26 |
| 40–49 | 6 | 56 | 62 | 59 |
| 50–59 | 19 | 194 | 213 | 213 |
| 60–69 | 14 | 154 | 168 | 169 |
| 70 and over | 4 | 46 | 50 | 51 |