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Commission des accidents du travail du Québec

Montréal, May, 1978

gmea #0097

REPORT OF THE SPECIAL

COMMITTEE ON ASBESTOSIS

INSTITUTE OF OCCUPATIONAL AND ENVIRONMENTAL HEALTH MONTREAL, CANADA

Review of the files of 6,785 workers in the Primary Asbestos Industry of Québec

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GOUVERNEMENT DU QUÉBEC
MINISTÈRE DU TRAVAIL
ET DE LA MAIN D'OEUVRE
CABINET DU MINISTRE

Québec, June 8, 1978

Sir:

It is my pleasure to table today before the Assemblée nationale the report of the Special Committee on Asbestosis, created on May 21, 1975, by the Commission des accidents du travail de Québec, following a recommendation to this effect made by the Minister of Natural Resources on April 8 of the same year.

It is advisable, however, to call the attention of the members of the Assemblée nationale as well as the many prospective readers of this report to the real significance and the limits of the scope of this study.

First of all, the report answers, as objectively as possible, the precise question which was asked of the C.A.T. by the government, determining the prevalence of pulmonary asbestosis in workers of the mines and mills of the Primary Asbestos Industry. The study therefore deals with the workers of asbestos mines and mills engaged in this occupation between October 1, 1975, and December 31, 1976, and we are satisfied with the manner in which this study, the first of its kind, has been carried out.

However, it is advisable to be aware of the terms of reference of this study and, particularly, to avoid seeing it as an answer to the many crucial questions asked by the Assemblée nationale and by the general public, but which were not included in the mandate given to the Special Committee on Asbestosis. For one thing, the study does not treat the question of the effect on workers of prolonged exposure to asbestos fibre. The study merely observes, as was requested, a given situation at a given moment.

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Nor does the study elucidate a very important question, namely: what is the admissible rate of exposure to asbestos fibre. The study does not consider a number of other important questions such as the relationship between smoking and asbestosis, asbestos and cancer, etc...

All these problems and many more will only be resolved as the result of a series of well-structured analytical epidemiological studies, greatly exceeding the methodological framework proposed to the C.A.T. in 1975 and which will be the object of precise planning, extending over the next few years.

Nonetheless, as a result of this study we are now in possession of the essential information necessary for the formulation of a consistent policy respecting health protection for asbestos workers and anticipate that, using this data as a starting point, numerous other studies may be undertaken in order to dissipate the doubts which still remain, and justly so, in the minds of specialists and ordinary citizens alike as concerns this distressing problem of worldwide importance. I invite the international scientific community to come and consult the material gathered by this committee so that the advancement of our knowledge in this field may be accelerated.

The Minister of Labour
and Manpower

P. Marc Johnson.

PIERRE MARC JOHNSON

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Québec, May 25, 1978

Mr. Pierre-Marc Johnson
Minister of Labour and Manpower
Gouvernement du Québec

Sir,

I have the honour of transmitting to you the report of the Special Committee on Asbestosis, which was created by the Commission des accidents du travail on May 21, 1975, upon the recommendation of the Minister of Natural Resources.

Respectfully,

Robert Sauvé
President

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Friday, May 19, 1978

Mr. Robert Sauvé, President
Commission des accidents du travail
524, rue Bourdages
C.P. 1200, Terminus postal
Québec, Québec)
G1K 7E2

Dear Sir,

I have the honour of submitting to you the report of the Special Committee on Asbestosis, established by Resolution A-413-75 of the Commission des accidents du travail on May 21, 1975, upon the recommendation of the Minister of Natural Resources, dated April 8 of the same year.

Respectfully,

Dr Jacques Gougoux.

Doctor Jacques Gougoux
M.A., M.D., C.S.P.Q., F.C.C.P.

Director of the Pneumology Service
and Chairman of the Committee

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I. BACKGROUND CONCERNING THE COMMITTEE AND ITS MANDATE:

A Special Committee on Asbestosis was created on May 21, 1975, by the Commission des accidents du travail at the request of the Minister of Natural Resources, expressed in a ministerial statement on April 8, 1975. The Committee's mandate is contained in Resolution A-413-75 of the Commission; the text reads as follows:

"The establishment of a Committee of Specialists for the purpose of proceeding to the medical examination of workers employed in the asbestos mines and mills of Québec.

CONCERNING the adoption of Order in Council 1787 dated April 30, 1975, respecting the recommendation of the Minister of Natural Resources for the approval of the Regulation prohibiting workers suffering from respiratory disease to continue working in the mines;

WHEREAS the said Regulation provides for a complete medical examination including Chest X-Ray and the issuance of a medical certificate to the worker who is deemed fit, from a medical point of view, for employment in a mining or quarrying operation;

WHEREAS the Minister of Natural Resources, in his ministerial statement of April 8, 1975, promised to establish a Committee of Medical Specialists consisting of five members, including the Director of the Pneumology Service of the Commission des accidents du travail and four other specialists, chosen outside the government, for the purpose of reviewing all annual medical examinations already done and would perform Chest X-Rays upon those workers employed in the asbestos mines and mills of Québec.

For this purpose, upon the recommendation of the Minister of Labour and Manpower, the Commission decides:

a) to establish such a committee and to designate, in addition to Doctor Philippe-E. Duval, m.d.,

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Director of its Pneumology Service who will act as Chairman, Doctors Gaston Leduc, m.d., Chest Physician, Montréal, Jacques Gougoux, m.d., Chest Physician, Montréal, Armand Trépanier, m.d., Radiologist, Montréal, and Roger Belleau, m.d., Chest Physician, Ste Foy, to act as members of the Committee of Specialists thus established; and..."

b) that this Committee should proceed immediately to fulfill its mandate.

The Special Committee was originally comprised of the members mentioned in the Resolution. Several, however, were unable to complete their terms and were replaced by the following specialists:

Docteur Jean-Jacques Gauthier, Chest Physician
Doctor Maurice Myre, Chest Physician
Doctor Charles Bernard, Radiologist
Doctor Jean Mantha, Chest Physician

Doctor Duval chaired the Committee from October to December, 1975, and I succeeded him from January to December, 1976.

Interpretation by the Committee of its Mandate:

The Special Committee on Asbestosis proposed to evaluate the prevalence of pulmonary asbestosis as well as non-asbestos-related respiratory diseases afflicting those workers active in the mines and mills of the Primary Asbestos Industry. The Committee completed this work in order to issue to workers employed in the asbestos mines and quarries of Québec the medical certificate required according to Order in Council 1787-75 and at the same time to refer suspected cases of asbestosis to the Pneumoconiosis Committee. This study was carried out between October 1, 1975, and December 31, 1976.

II. POPULATION STUDIED:

a) were the workers of the mines and mills of Asbestos Corporation, Bell Asbestos, Carey Canadian, Lake Asbestos (a Division fo Black Lake) and Lake Asbestos (National Division), Asbestos-Hill and Canadian Johns Manville.

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The Committee proceeded to the review of 6,785 files of workers employed in these various enterprises between October, 1975 and December, 1976, excluding students hired during summer vacation and those employees not working on the mine site. The 176 employees of Canadian Johns Manville in the Factory in Asbestos were also excluded from this study.

Employees not working on the mine site include office workers, hotel personnel and employees of Asbestos Hospital and the Thetford Industrial Clinic.

b) Previous to our study, the issuance of annual medical certificates was based on the same medical, clinical and X-Ray data that we have used. However, at that time, the certificate distinguished between two categories of workers:

1) those deemed fit for employment in all areas;

2) those deemed fit for employment solely in those areas where they would not be exposed to dust concentrations exceeding certain limits.

Since the adoption of Order in Council 1787-75, the certificate no longer makes this distinction. It is issued only to those workers who may hold employment in all areas without restriction.

c) The population studied was divided according to age, sex, employer and employment.

III. REVIEW OF ANNUAL EXAMINATIONS:

a) Before the adoption of Order in Council 1787-75, annual examinations of mine workers were performed by the Director of Pneumology at the C.A.T.

However, mill workers were not subject to this order, but rather to Order in Council 887-56 of the Mining Act and their examinations were performed by a company physician according to the same medical schedules,

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nonetheless, as those of the Committee. The files and X-Rays were forwarded to the Service de Pneumologie, which decided on the issuance of certificates.

Since Order in Council 1787-75, the mill workers in the Asbestos industry are subjected to an annual examination and X-Ray which are forwarded to the Service de Pneumologie of the Commission for verification and the issuance of certificates.

b) The annual examination included a complete medical check-up with particular attention paid to pulmonary function.

c) Within the framework of our evaluation, chest or lung signs such as fine dry rales, dyspnoea and clubbing of the fingers (Hippocratism) were considered pertinent and fairly typical of pneumoconiosis.

Other lung signs such as cough and sputum or chest pains are less important in the diagnosis of pneumoconiosis.

In many files, results of pulmonary function tests were available: the forced expiratory volume and the forced vital capacity.

As often as possible, both subjective and objective clinical signs were considered.

d) Review Findings:

The following are the results of the findings of the Special Committee in respect to dry rales, clubbing of the fingers, shortness of breath, emphysema, cancer of the lung, tuberculosis and other chest illnesses.

Dry Rales:

265 workers or 3.9% of those examined suffered from dry rales. X-Ray images of 105 of these cases with dry rales showed abnormalities compatible with asbestos fibrosis.

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Hippocratism:

Digital Hippocratism, or clubbing of the fingers, is a common phenomenon in cases of asbestosis and can be observed as well in other pathological states.

In 113 cases or 1.67% of those workers examined, this physical abnormality was noted.

Dyspnoea:

Dyspnoea is the sensation of having difficulty in breathing, commonly known as shortness of breath.

5,347 workers or 78.8% of those examined did not complain of dyspnoea;

1,438 or 21.2% of workers examined suffered from dyspnoea. We have designated these according to a scale varying from 1 to 4; the majority fall into Category 1, that is to say, minimal.

The more objective clinical signs such as dry rales and Hippocratism are less numerous than the more subjective clinical signs such as dyspnoea. Other more secondary symptoms such as cough and sputum or chest pain, have been documented but not quantified as a statistic in our study because of the diversity of their possible origin. They served only a complementary role in our study.

Pulmonary abnormalities other than asbestosis were looked for. (Chronic obstructive pulmonary ailments such as chronic bronchitis were not particularly studied because they are not considered to be asbestos-related illnesses and are more specifically due to other factors such as cigarette smoking, etc.)

Emphysema:

26 cases of pulmonary emphysema were discovered, but only by Chest X-Ray, which is not the most specific method of diagnosing emphysema. This ailment is diagnosed rather by respiratory function studies.

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Lung Cancer:

Two cases of lung cancer were detected. These patients were immediately referred to their attending physicians. No case of mesothelioma was suspected.

Tuberculosis:

Fourteen cases of possible tuberculosis, probably inactive, were revealed by X-Ray and clinical findings.

Other Illnesses:

Non-asbestos-related cardio-pulmonary illnesses were noted in the file and the patients afflicted were referred to their attending physicians.

IV. REVIEW OF X-RAYS:

a) The Service de Pneumologie is the custodian responsible for X-Rays sent in by the Industrial Clinics of Thetford Mines and Asbestos.

b) Chest X-Rays used for the study were 14" x 17" in postero-antérior and lateral exposure and were made by the best suitable technique.

c) Radiological interpretation was carried out according to the ILO-U/C 1971 International Classification for the Pneumoconioses (Cincinnati) and in comparison with the standard films supplied by the International Labour Office in Geneva. The five members consulted all the clinical and occupational information in each worker's file before arriving at a final interpretation. Uniformity of opinion was required for every X-Ray interpretation.

d) Definition of terms:

Asbestosis: Asbestosis is an interstitial pulmonary fibrosis secondary to asbestos fibre exposure.

Pleural reactions, as observed by X-Ray, may be considered as suggestive of exposure to asbestos fibres without, nevertheless, constituting a sign of asbestosis (asbestos lung disease).

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Asbestosis is manifested in the pulmonary parenchyma by fibrous opacities (scars) of variable size and density, which the International Classification ILO-U/C 1971 represents by the following symbols:

s - for fine linear or irregular small opacities
t - for medium irregular opacities
u - for coarse blotchy irregular opacities

Pleural reactions are classified as follows:

pl - for diffused pleural tickening
pq - for localized non-calcified pleural thickening or pleural plaques

plc- for localized calcified pleural thickening or calcified plaques

These X-Ray images, parenchymatous as well as pleural, have been well interpreted and graded according to the international scale mentioned above. Other pulmonary X-Ray signs were coded according to their radiological symbols and constituted other X-Ray abnormalities not related to asbestosis.

The X-Ray examination carried out by the five-member committee was the most objective examination used. Age of workers and years of exposure were taken into consideration in this study, which was prepared from the point of view of X-Ray images compatible with asbestosis (s, t, u) and from that of pleural images (pl., plc., pq.).

Years of exposure: The years of exposure were those years during which the worker was exposed to asbestos, and did not include those years spent in other occupations outside the mines and mills or lost because of sickness.

Résumé of X-Ray findings:

1) 5,373 out of 6,785 workers or 79% were interpreted as having normal X-Rays.

2) 1,412 workers or 21% showed abnormalities. Of these abnormal X-Rays, 435 or 6.41% presented images compatible with asbestosis. These X-Ray images, s, t, u, were classified:

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s - minimal asbestosis, in 411 cases out of 435 or 94%

t - moderate asbestosis, in 53 cases out of 435 or 12%

u - severe advanced asbestosis, in 10 cases out of 435 or 0.02%.

It must be noted that the X-Ray images s, t, u can be found in the same X-Ray.

These 435 cases of presumed asbestosis (6.41%) were found almost exclusively in workers with more than 20 years of exposure. However, the rate of possible contamination may be near 38% in workers with more than 40 years of exposure.

The average exposure for all workers examined was 17.8 years. The average age was 42 years.

Of the 435 cases of possible asbestosis, 373 were given an exhaustive examination by the Pneumoconiosis Committee of the Commission.

Out of these 373 workers, 144 or 38% were recognized as suffering from asbestosis. The Special Committee reexamined 62 other cases and found 17 with evidence of Asbestosis and 45 others free of the disease at that time.

In all, 161 cases of asbestosis were established by the careful examination of the 6,785 files, or 2.37%.

V. ISSUANCE OF ANNUAL MEDICAL CERTIFICATES:

6,624 certificates were therefore issued, out of a possible 6,785. Certificates were refused in the cases of 161 workers.

A more thorough study of these files has been undertaken.

REMARKS:

This study has proved immensely useful in the verification of the state of pulmonary health of workers employed in the asbestos mines and mills of Québec. It currently serves as the basis for the annual issuance of certificates and permits

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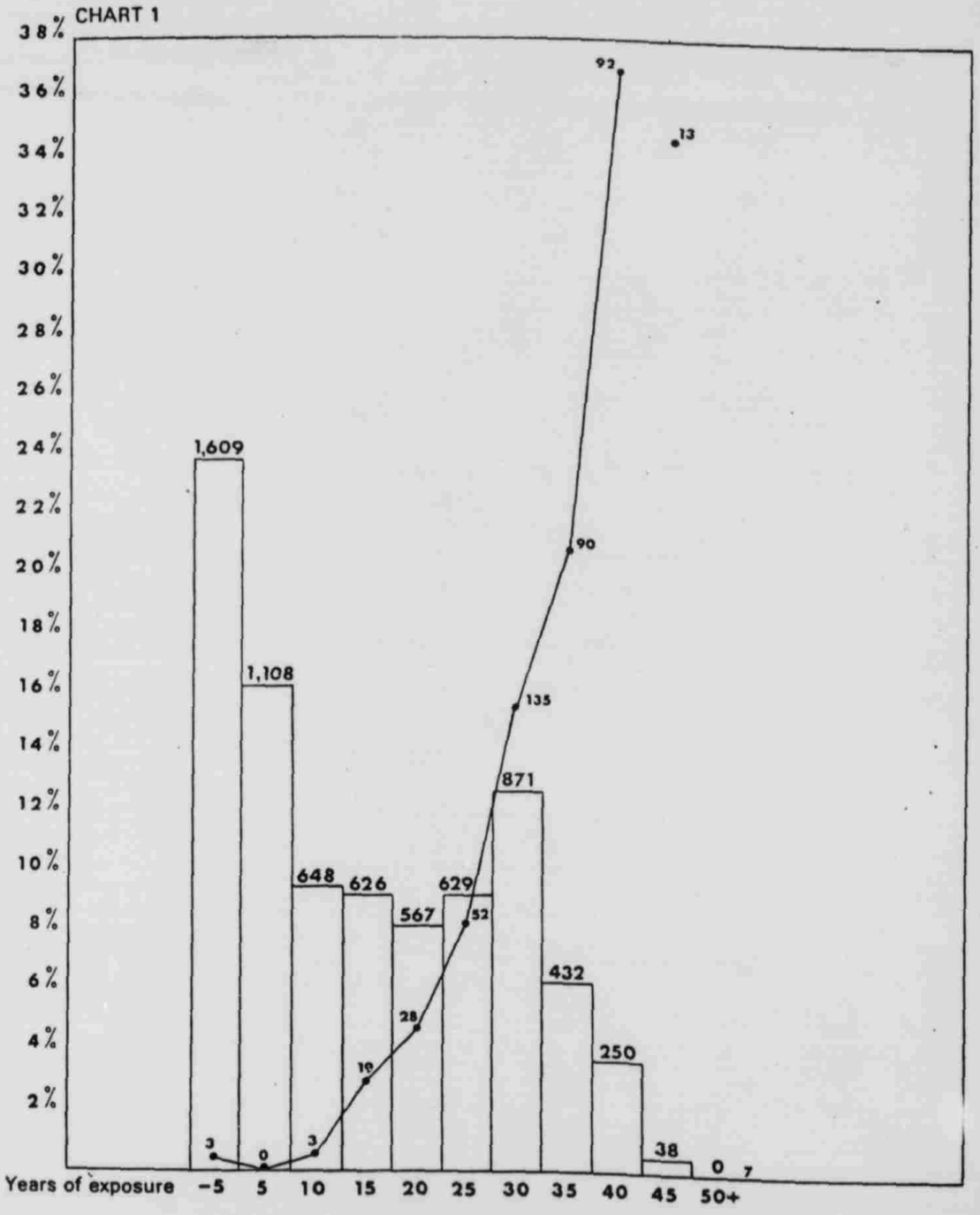
a more adequate interpretation of the medical, clinical and X-Ray reports. It has provided specialists in the field of occupational pulmonary disease with an opportunity to have a much more accurate picture of asbestosis and various other chest illnesses. This study can also lead to the creation of a master file covering all workers employed in mines and quarries.

The pertinent data concerning these 6,785 files were recorded by computer; supplementary information could be added to the program, such as years worked, years of exposure, degree of exposure, clinical and radiological signs for each of these subjects.

Montréal, May 19, 1978.

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CHART 1



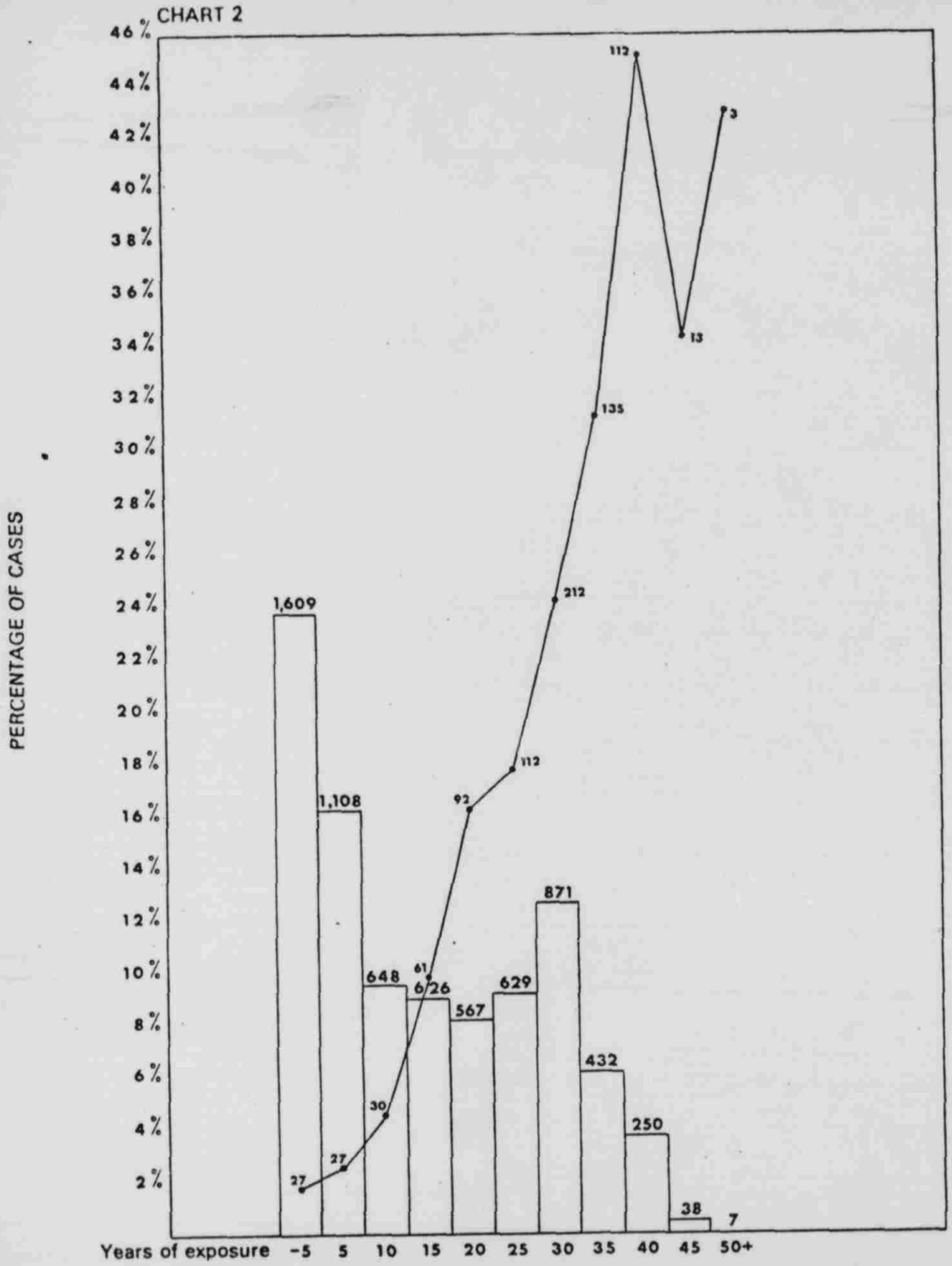
Percentage of workers showing X-Ray abnormalities compatible with interstitial fibrosis (s, t, u) in relation to years of exposure

The curve indicates *percentage of contamination.*

The columns represent the number of workers according to the number of years of exposure.

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CHART 2



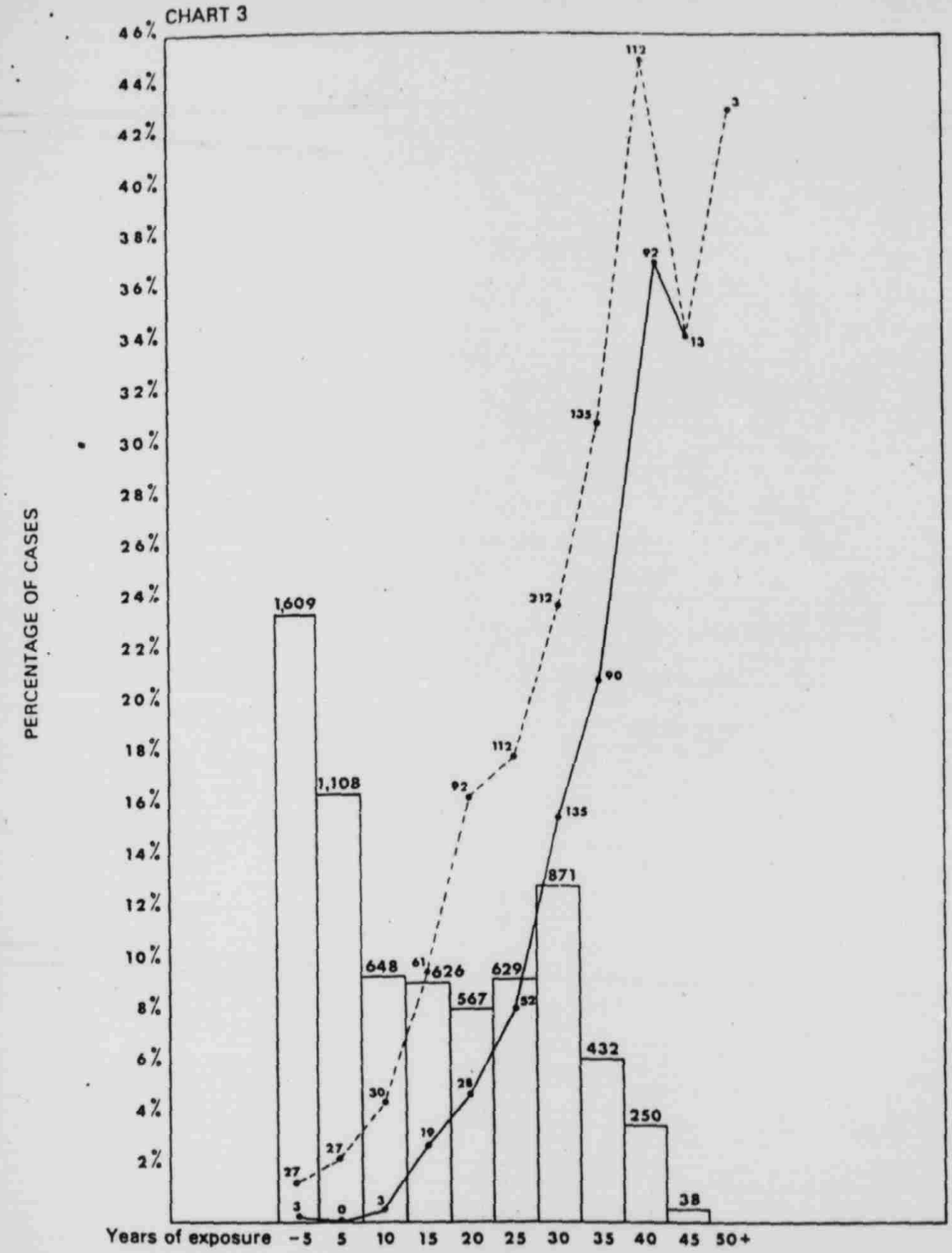
Percentage of workers showing radiological signs of pleural reactions (pl, pq, plc) in relation to years of exposure

The curve indicates the percentage of contamination.

The columns represent the number of workers according to the number of years of exposure.

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CHART 3

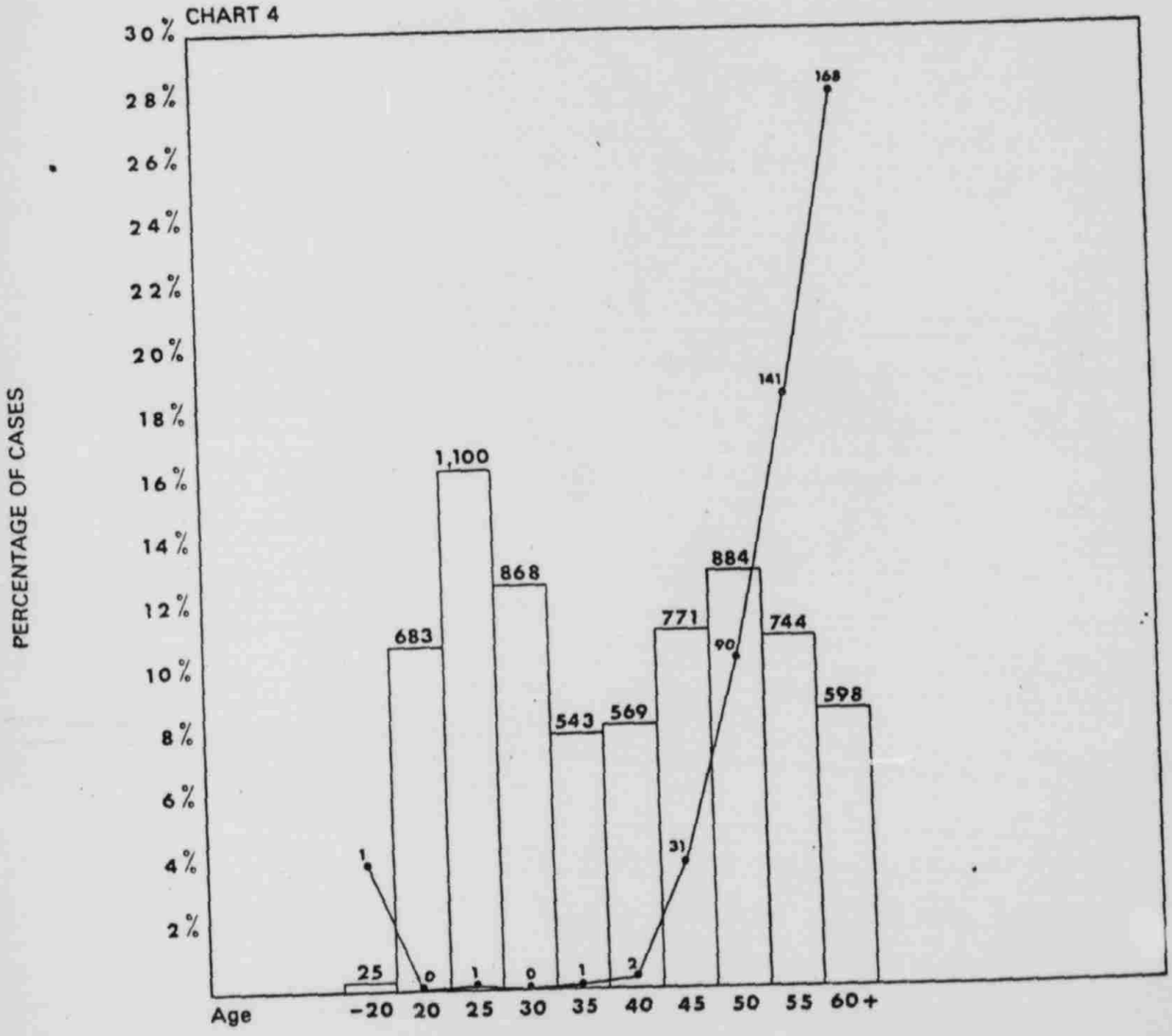


Percentage of workers showing radiological signs of interstitial fibrosis s, t, u (solid line) and of pleural reactions pl, plq, plc (broken line) in relation to years of exposure.

The columns represent the number of workers according to the number of years of exposure.

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CHART 4



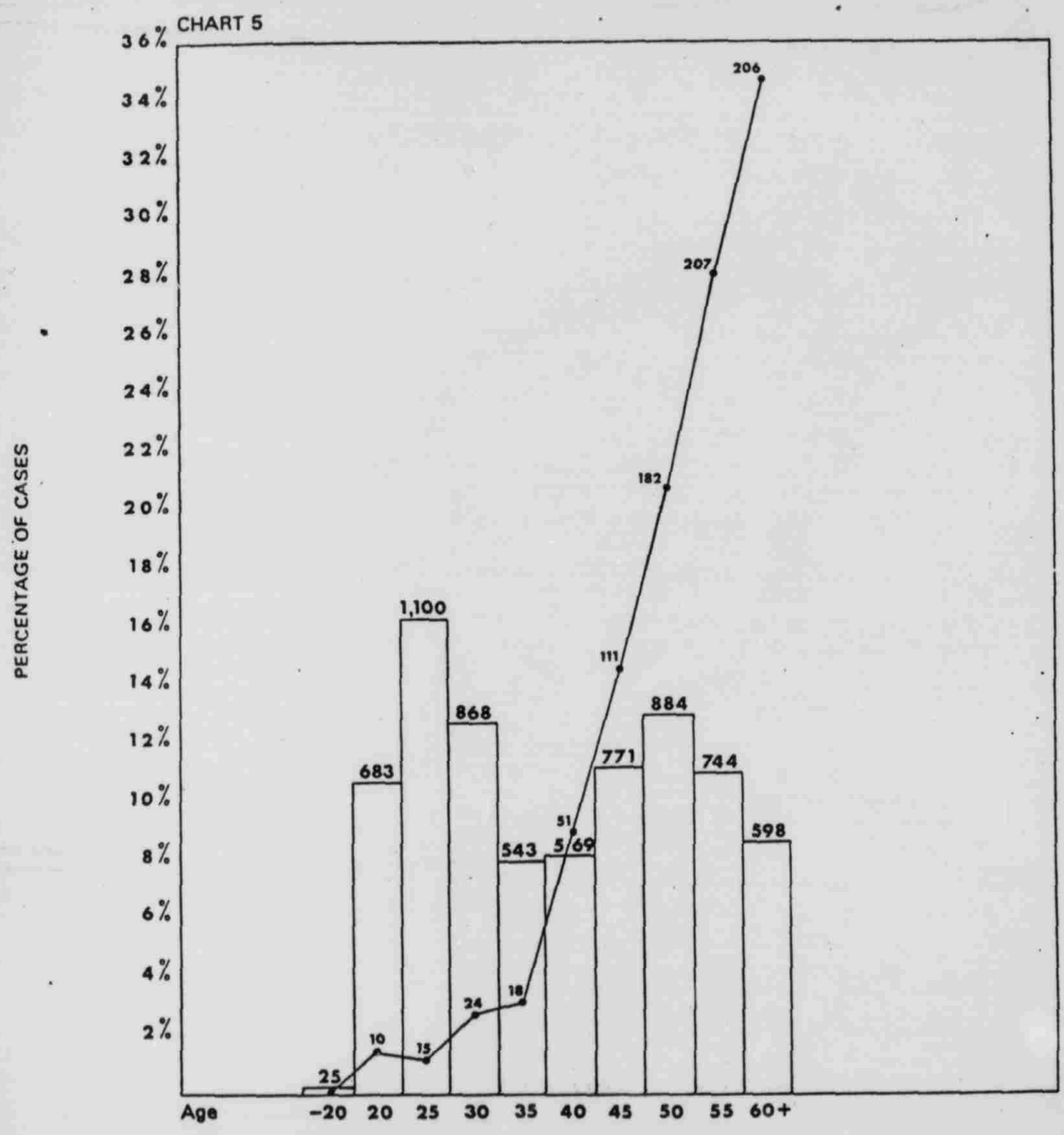
Percentage of workers showing radiological signs of interstitial fibrosis (s, t, u) in relation to age

The curve indicates the percentage of contamination.

The columns represent the number of workers according to age.

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CHART 5



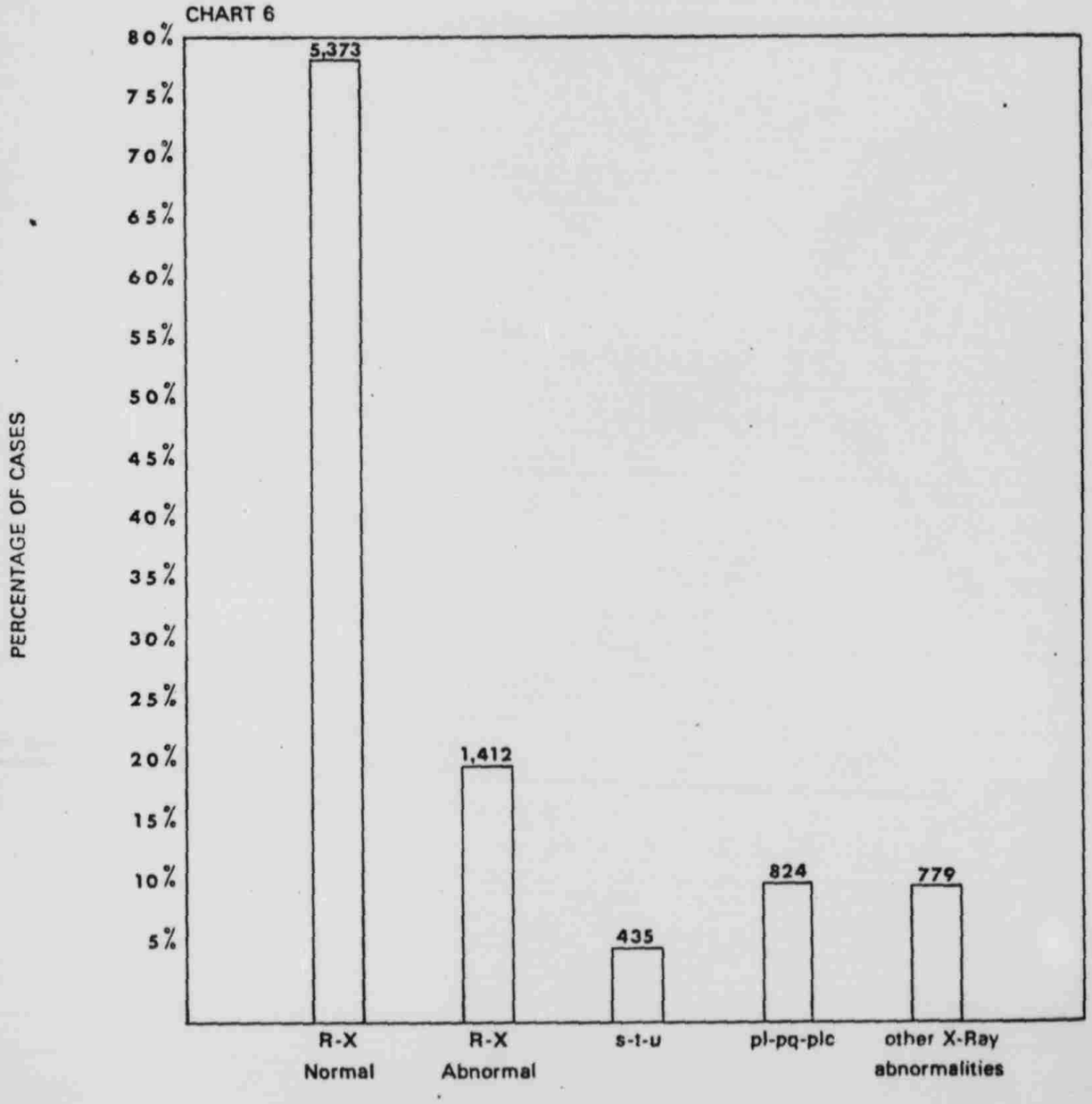
Percentage of workers showing radiological signs of pleural reactions (pl, pq, plc) in relation to age

The curve indicates the percentage of contamination.

The columns represent the number of workers according to age.

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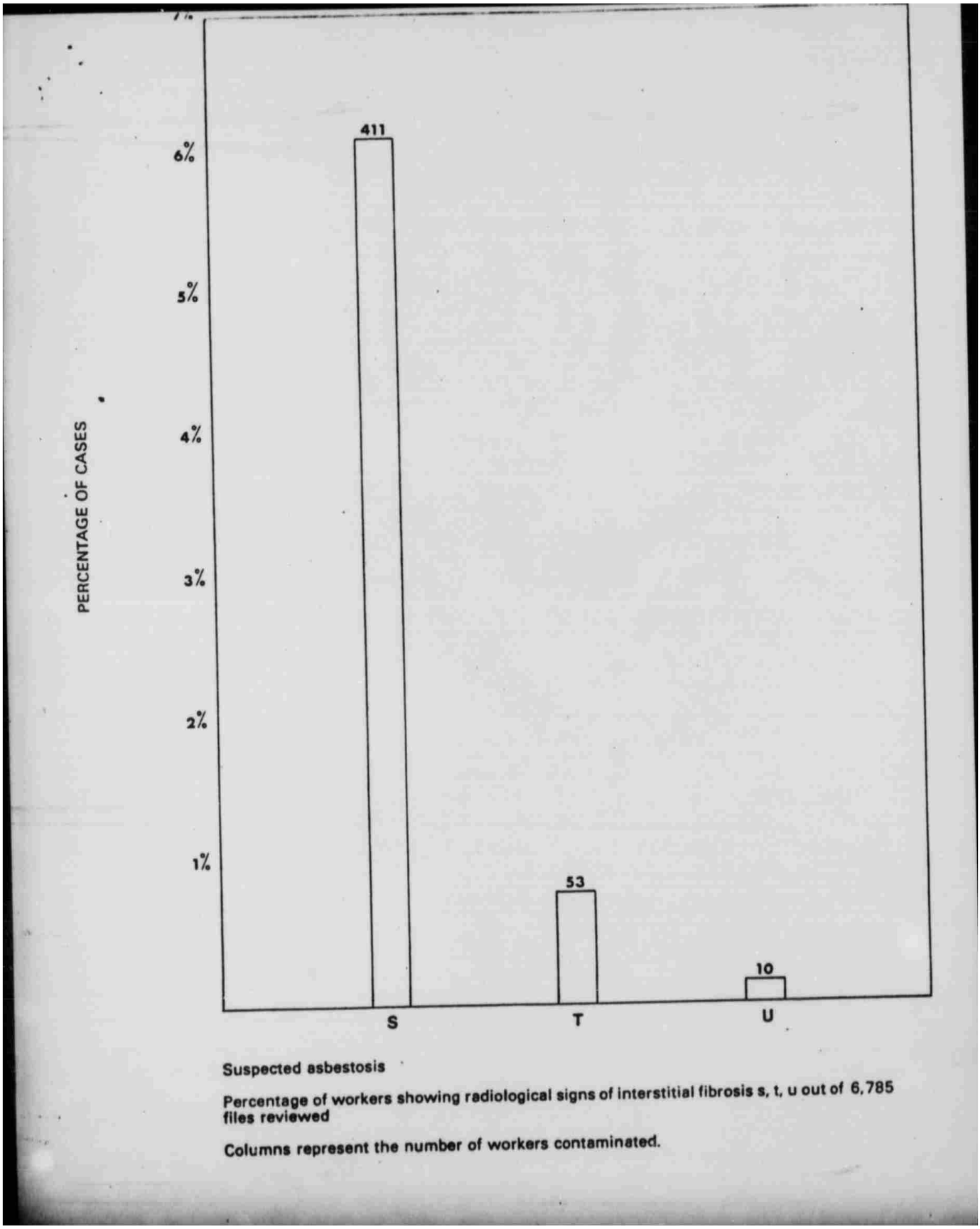
CHART 6



Resumé of radiological findings

N.B. Radiological signs s, t, u, pl, pq, plc and others may appear on the same X-Ray, considered to be abnormal.

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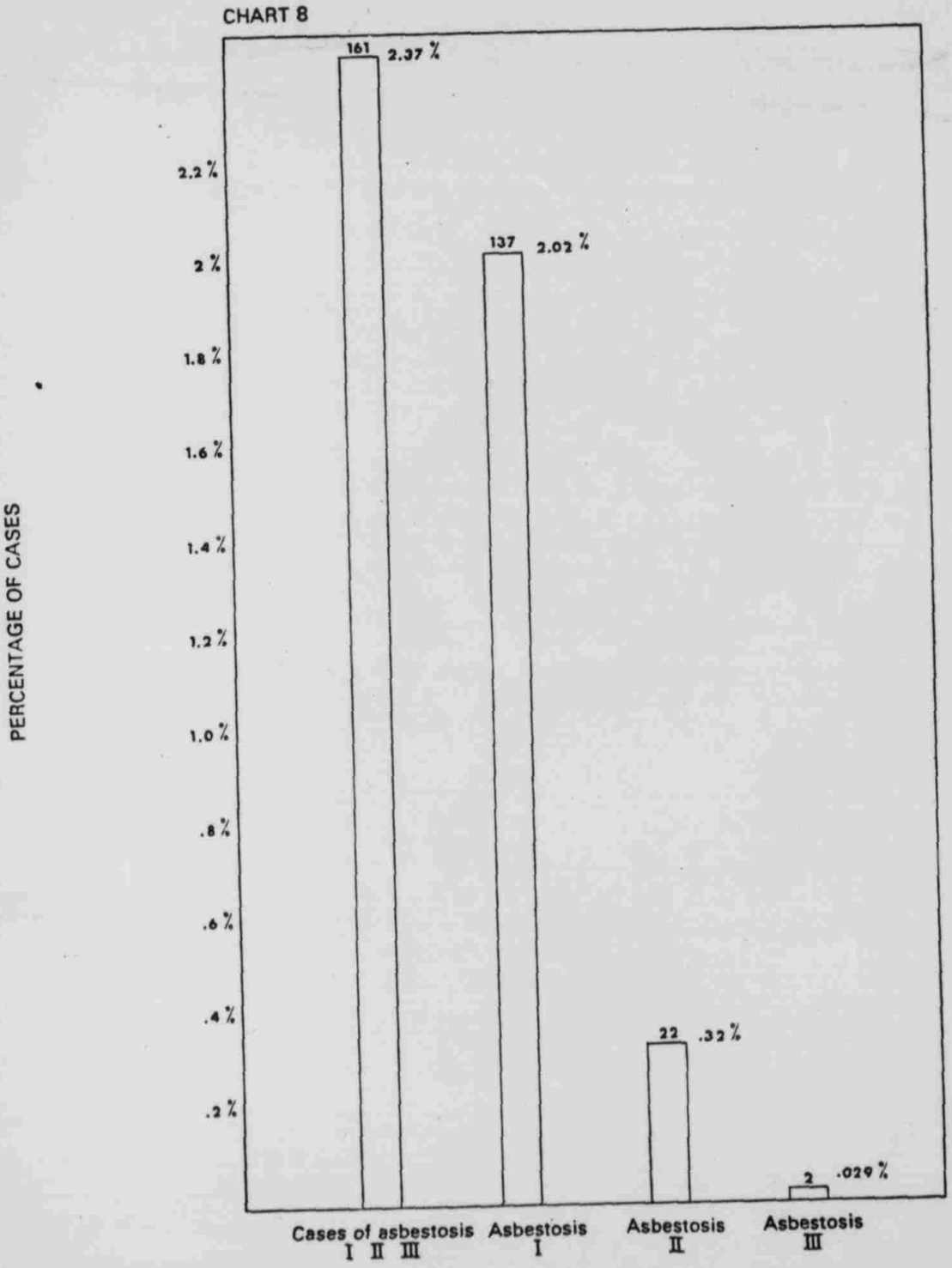
Suspected asbestosis

Percentage of workers showing radiological signs of interstitial fibrosis s, t, u out of 6,785 files reviewed

Columns represent the number of workers contaminated.

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CHART 8



Percentage of confirmed cases of asbestosis after re-examination by the Special Committee on Asbestosis

The columns represent the number of workers contaminated.

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