

JUDGES' BENCHBOOK OF THE BLACK LUNG BENEFITS ACT



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Chapter 2

Introduction to the Medical Evidence

I. Generally

Benefits are awarded to miners or their survivors upon a determination that the miner is totally disabled due to coal workers' pneumoconiosis or died due to pneumoconiosis. Thus, entitlement to benefits under any of the regulatory schemes requires that, in a living miner's claim, the following four elements must be established by either operation of presumption or a preponderance of the evidence, as appropriate: (1) that the miner suffers from pneumoconiosis; (2) that such pneumoconiosis arises out of coal mine employment; (3) that the miner is totally disabled; and (4) that his or her total disability is due to pneumoconiosis.

This chapter is devoted to an overview of weighing medical evidence and an explanation of the chest roentgenogram reports, pulmonary function (ventilatory) studies, and blood gas studies which are most commonly used to establish one or more of the four above-mentioned elements of entitlement. The reader must always be mindful that an administrative law judge may draw reasonable inferences from the evidence presented, but is not empowered to substitute his or her judgement for that of the medical expert.

II. The chest roentgenogram or x-ray

A. Generally

A chest x-ray may indicate the presence or absence of pneumoconiosis as well as its etiology. It is not utilized to determine whether the miner is totally disabled, unless complicated pneumoconiosis is indicated wherein the miner may be presumed to be totally disabled due to the disease.

If a chest x-ray is positive for the existence of pneumoconiosis, then the x-ray report should indicate the size, type, and quantity of opacities in the lungs. The larger and/or more plentiful opacities indicate that the disease is at a more advanced stage. Sometimes, the x-ray report will be in narrative form. However, it will often be on a specific form designed by the Department of Labor. The following discussion refers to box numbers in the more recent versions of the Department of Labor's x-ray report form.

B. Elements of the x-ray report

1. Date of the x-ray study and date of the reading

The date on which the miner undergoes x-ray testing is located near the top of the form in box 1A and constitutes the date of the x-ray study. The date on which the study is read by the physician is located at the bottom of the form next to the physician's signature and constitutes the date of the x-ray reading or interpretation. Often, a single x-ray study will be read several times by

different physicians. These rereadings are weighed, along with the original reading of the same study, to determine whether the presence of pneumoconiosis is indicated.

2. Qualifications of the physician

The probative weight accorded a particular x-ray report is dependent, in large part, upon the qualifications of the physician who interpreted the study. On most x-ray forms, there are a series of boxes on line 5B wherein the physician may indicate his or her qualifications. The fact finder may also consider a *curriculum vitae* of the physician if it is properly admitted into the record and some administrative law judges will take notice of a publication prepared by the National Institute for Occupational Safety and Health (NIOSH) which lists the qualifications of various physicians by region.

Physicians are classified into five categories of readers: (1) a C-reader; (2) a B-reader; (3) a Board-certified radiologist; (4) an A-reader; and (5) a Board-eligible radiologist.

a. The C-reader

This is the highest qualification available to an x-ray reader and it is a closed classification. The group of C-readers designates only those highly regarded individuals who developed the widely used ILO-U/C classification system for classifying x-rays. It is rare to encounter a C-reader in our black lung cases. *Alley v. Riley Hall Coal Co.*, 6 B.L.R. 1-376 (1983).

b. The B-reader

The B-reader is also known as the “final” reader and is more qualified than the A-reader. As with the A-reader, there is no requirement that the B-reader be a radiologist. However, a B-reader must demonstrate proficiency in assessing and classifying x-ray evidence for pneumoconiosis by successful completion of an examination conducted by, or on behalf of, the Appalachian Laboratory for Occupational Safety and Health (ALOSH). In the examination, the physician must evaluate x-ray studies for quality and must use the ILO-U/C classification system.

c. The Board-certified radiologist

A Board-certified radiologist is certified in radiology or diagnostic roentgenology by the American Board of Radiology or the American Osteopathic Association. Requirements for this classification include four years of postgraduate training followed by successful completion of comprehensive written and oral examinations. A portion of the oral examination is devoted to testing the candidate's proficiency in diagnosing diseases of the lungs.

d. The A-reader

This reader is also known as the “first” reader. The requirements for an A-reader are established by the National Institute of Safety and Health (NIOSH). To become a certified A-reader, the physician (although not necessarily a radiologist) must submit six sample x-rays from his or her own files to the Appalachian Laboratory for Occupational Safety and Health (ALOSH) consisting

of two x-rays negative for pneumoconiosis, two x-rays which are positive for simple pneumoconiosis, and two x-rays showing complicated pneumoconiosis. Alternatively, a physician seeking an “A” rating may take a course approved by ALOSH in the classification systems for diagnosing pneumoconiosis.

e. The Board-eligible radiologist

A reader in this category must have successfully completed a formal accredited residency program in radiology or diagnostic roentgenology.

3. Film quality

On most x-ray reports, the film quality will be noted in box 1C which is located in the upper, right corner of the x-ray report. A film quality of “1” is good whereas a “U/R” designates that the x-ray film was unreadable. If a physician marks a “3,” “U/R,” or, in some cases, a “-,” then the x-ray study may be accorded little or no probative value as it is of very poor quality. *Gober v. Reading Anthracite Co.*, 12 B.L.R. 1-67 (1988).

4. The quantity of opacities

Box 2B(c) of the x-ray form indicates the quantity of opacities in the lung and, therefore, the presence or absence of pneumoconiosis. The more opacities noted in the lung, the more advanced the disease. The categories are:

- 0** = small opacities absent or less profuse than in category 1.
- 1** = small opacities definitely present but few in number.
- 2** = small opacities numerous but normal lung markings still visible.
- 3** = small opacities very numerous and normal lung markings are usually partly or totally obscured.

If no categories are chosen, then the x-ray report is not classified according to the standards adopted by the regulations and cannot, therefore, support a finding of pneumoconiosis. Likewise, an x-ray which is interpreted as Category 0 (--/0, 0/0, 0/1) demonstrates, at most, only a negligible presence of the disease and will not support a finding of pneumoconiosis under the Act or regulations.

If the physician determines that the study is Category 1 (1/0, 1/1, 1/2), Category 2 (2/1, 2/2, 2/3), or Category 3 (3/2, 3/3, 3/+), then there is a definite presence of opacities in the lung and the x-ray report may be used as evidence of the existence of pneumoconiosis. An interpretation of 1/0 is the minimum reading under the regulations which will support a finding of pneumoconiosis. This reading (1/0) indicates that the physician has determined that the x-ray is Category 1, but he or she seriously considered Category 0. As another example, a reading of 2/2 indicates that the physician determined that the x-ray was Category 2 and Category 2 was the only other category seriously considered by the physician.

5. The size and type of opacities

Opacities in the lung come in a variety of sizes but are of only two types -- rounded and irregular. Irregularly shaped opacities are most often (but not always) associated with exposure to dust particles other than those from a coal mine. For example, inhalation of asbestos or silicon particles will often result in irregularly shaped opacities in the lung. The inhalation of coal dust, on the other hand, will generally result in the formation of rounded opacities. Larger and more numerous opacities result in greater lung impairment.

An indication of the size and type of opacities in the lung is located at box 2B(a) on the x-ray report. A designation of p, q, or r is for *rounded opacities* whereas a designation of s, t, or u indicates the presence of *irregularly shaped opacities*. The letter designations also represent the increasing size of opacities from less than 1.5 millimeters in diameter, which is the p or s designation, up to 10 millimeters in diameter, which is the r or u designation.

Finally, box 2C of the x-ray report contains the letters O, A, B, and C. If the physician checks A, B, or C, the x-ray yields evidence that the miner suffers from complicated pneumoconiosis. A mark of "O" indicates that complicated pneumoconiosis is not present. Complicated pneumoconiosis is an extremely advanced stage of the lung disease, and a miner who suffers from complicated pneumoconiosis will be entitled to certain presumptions regarding total disability arising from the disease under some of the applicable regulatory schemes.

III. The pulmonary function (ventilatory) study

A. Generally

The pulmonary function study, also referred to as a ventilatory study or spirometry, measures obstruction in the airways of the lungs. The greater the resistance to the flow of air, the more severe any lung impairment. A pulmonary function study does not indicate the existence of pneumoconiosis; rather, it is employed to measure the level of the miner's disability.

In performing the study, the miner is required to blow hard into a mouthpiece which is connected to a flowmeter. The spirometer records the amount of air expired over a period of time onto tracings which must be included in the miner's case record. The regulations require that this study be conducted three times to assess whether the miner exerted optimal effort among trials, but the Board has held that a ventilatory study which is accompanied by only two tracings is in "substantial compliance" with the quality standards at § 718.204(c)(1). *Defore v. Alabama By-Products Corp.*, 12 B.L.R. 1-27 (1988). The values from the FEV₁ as well as the MVV or FVC must be in the record, and the highest values from the trials are used to determine the level of the miner's disability. It is important to realize that, if the miner does have a pulmonary or respiratory impairment, undergoing this test may be very painful, and the miner may be unable to complete the test due to coughing or shortness of breath.

B. Height, age, and gender of the miner

As an individual ages, his or her lung capacity lessens. Differences in lung volume have also been noted between women and men of the same age and height. As a result, tables of data based upon the miner's age, height, and gender are used to determine whether the study has produced qualifying results. A “qualifying” pulmonary function study yields values that are equal to or less than the appropriate values set out in the tables at 20 C.F.R. Part 718, Appendices B and C. A “nonqualifying” study exceeds those values. 20 C.F.R. § 718.204(c)(2).

C. The forced expiratory volume (FEV₁)

To ascertain the forced expiratory volume, the miner inspires maximally, pauses, and then expires as forcefully and rapidly as possible. The volume of air expired over a period of one second is the FEV₁. An abnormal decrease in the FEV₁ value is the result of a decrease in air flow which, in turn, is considered by some physicians to indicate the existence of an obstructive airway disease.

D. The forced vital capacity (FVC) and the maximum voluntary volume (MVV)

The forced vital capacity (FVC) is the total lung capacity minus any residual volume of air in the lung after expiration. The maximum voluntary volume (MVV) is the volume of air expired over a 15 second period where the miner breathes as rapidly and deeply a possible. A decrease in the FVC and/or MVV values is considered by some physicians to indicate the presence of a *restrictive* airway disease or a loss of lung volume.

E. The use of bronchodilators

Sometimes, a bronchodilator will be administered prior to conducting the study, to clear the miner's airways. If the use of a bronchodilator results in higher values, this will often indicate the presence of asthma or other condition as opposed to pneumoconiosis, which is considered an irreversible disease process.

IV. The blood gas studies

A blood gas study is designed to measure the ability of the lung to oxygenate blood. The initial indication of a miner's impairment will most likely manifest itself in the clogging of alveoli, as opposed to airway passages, thus rendering the blood gas study a valuable tool in the assessment of disability. Alveoli are air sacs which line the lungs in a honeycomb pattern. Oxygen passes through the alveoli into the bloodstream on inspiration and carbon dioxide is released from the bloodstream on expiration. A lower level of oxygen compared to carbon dioxide in the blood indicates a deficiency in the transfer of gases through the alveoli which will leave the miner disabled.

In performing the study, a blood sample is taken from the miner at rest and, if possible, after exercise. As with the pulmonary function study, the requirement that the miner exercise may be painful, and the miner may not complete the test due to shortness of breath and coughing. A blood sample taken after exercise, however, is very helpful in the diagnosis because exercise requires that

the body be able to oxygenate blood more quickly. Consequently, an insufficiency in gas transfers may be noted after exercise before they are evident at rest.

The blood sample is analyzed for the percentage of oxygen (PO_2) and the percentage of carbon dioxide (PCO_2) in the blood. Tables are provided in the regulations for determining whether the study yields qualifying values, thus lending support for a finding that the miner is totally disabled.