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OFFICE OF WEST VIRGINIA
SECRETARY OF STATE

WORKERS' COMPENSATION FUND

601 MORRIS STREET
CHARLESTON, WEST VIRGINIA 25301

ARCH A. MOORE, JR.
Governor

MARY MARTHA MERRITT
Commissioner

May 14, 1985

NOTICE OF PUBLIC HEARING

Pursuant to Section five, Article three, Chapter twenty-nine-A of the Code of West Virginia, 1931, as amended, the Workers' Compensation Fund shall conduct a public hearing at the times and places indicated below for the purpose of receiving public comment upon Proposed Legislative Rules regarding standards for medical examination in occupational pneumoconiosis claims.

1:30 p.m., May 31, 1985
National Mine Health &
Safety Academy
Airport Road
Beckley

1:30 p.m., June 14, 1985
Cultural Center
Capitol Complex
Charleston

2:00 p.m., June 21, 1985
City Council Chambers
389 Spruce Street
Morgantown

Any interested party may appear in person to present evidence. Written comment may be submitted to this office at any time on or before June 21, 1985. Also, it is requested that parties offering oral comment at the hearing make an effort to submit their comment in writing to facilitate review. All comment, written or oral, will be made a part of the record of the public hearing.

The issues to be heard shall be limited to the proposed rules. Copies of the proposed rules may be obtained by calling or writing this office.

Mary Martha Merritt

Mary Martha Merritt
Commissioner

Entered

Workers' Compensation Fund
Leg. Rule, 23-1
Series I, Sec. 20.8

Section 20.8. Standards for Medical Examination.

The following standards specify examination and evaluation criteria to guide the Occupational Pneumoconiosis Board in its examination and evaluation of claimants, and to guide other physicians and medical technicians who conduct examinations and evaluations of claimants on behalf of such claimants and their employers. These standards are established for the further purpose of ensuring that uniform procedures are used in administering and interpreting ventilatory function tests and arterial blood gas studies and that the best available medical evidence will be obtained in support of a claim for occupational pneumoconiosis benefits. The physician supervising any such testing and/or the technician administering any such testing will so indicate by signing the reports. Any report of test results submitted to the Occupational Pneumoconiosis Board must affirmatively state, as to each of the standards individually, the fact that the particular test or study was performed in compliance with that standard. In the event that any such report fails to affirmatively show compliance with these standards, the O.P. Board may disregard all or any part of such test or study or give such test or study such weight as the Board believes it deserves.

When two or more ventilatory function tests performed in reasonably close proximity in time produce differing but acceptable results, the Commissioner, at the request of the O.P. Board, may, because of the scientific nature of such testing and the permanent nature of the disease occupational pneumoconiosis, direct the parties to furnish additional evidence and/or order additional testing at the laboratory utilized by the O.P. Board or other laboratories, all for the purpose of determining whether any of the results is unreliable or incorrect or is clearly attributable to some identifiable disease or illness other than occupational pneumoconiosis.

Occupational pneumoconiosis is a permanent disease which does not improve; consequently, when blood gas studies are performed and abnormal values are obtained and thereafter new blood gas studies are performed and normal or significantly higher values are further obtained, the Commissioner, at the request of the O.P. Board, may direct the parties to furnish additional evidence and/or order additional studies at the laboratory utilized by the O.P. Board or other laboratories, all for the purpose of determining whether any of the values is unreliable or incorrect or is clearly attributable to some identifiable disease or illness other than occupational pneumoconiosis.

As used herein, the following terms shall have the meanings indicated:

1. FVC - Forced Vital Capacity - Volume of air that can be forcefully exhaled from the lungs after a maximal inspiration.

2. FEV - Forced Expiratory Volume - Same as FVC.

3. FEV_1 - Forced Expiratory Volume in one second Volume of air that can be exhaled forcefully from the lungs in one second after a maximal inspiration.

4. FEV_3 - Forced Expiratory Volume in three seconds - Volume of air that can be exhaled forcefully from the lungs in three seconds after a maximal inspiration.

5. FEV_1/FEV - Forced Expiratory Volume (timed) to Forced Expiratory Volume - A ratio expressed as a percentage.

6. MVV - Maximal Voluntary Ventilation - The volume of air that can be exchanged over a unit period of time, usually 12 to 15 seconds.

7. BTPS - Body Temperature, Ambient Pressure, saturated with water.

8. Kpm - Kilopond Meter - The amount of work required to lift one kilogram one meter.

9. NIOSH - National Institute of Occupational Safety and Health.

10. BOARD - West Virginia Occupational Pneumoconiosis Board.

VENTILATORY FUNCTION TESTS

(I) Instruments to be used for the administration of ventilatory function tests must be approved by NIOSH and must conform to the following criteria:

(A) The instrument must be accurate within $\pm$50 ml or within $\pm$3 percent of reading, whichever is greater.

(B) The instrument must be capable of measuring vital capacity from 0 to 7 liters BTPS.

(C) The instrument must have a low inertia and offer low resistance to airflow such that the resistance to airflow at 12 liters per second must be less than 1.5 cm H_2O/liter/second.

(D) The Zero time point for the purpose of timing the FEV_1 must be determined by extrapolating the steepest portion of the volume-time curve back to the maximal inspiration volume or by an equivalent method.

(E) Instruments incorporating measurements of airflow to determine volume must conform to the same volume accuracy stated in paragraph (I) (A) when presented with flow rates from at least 0 to 12 liters per second.

(F) The instrument or user of the instrument must have a means of properly correcting volumes to body temperature saturated with water vapor (BTPS) under conditions of varying ambient spirometer temperatures and barometric pressures.

(G) The instrument used must provide a tracing of either flow versus volume or volume versus time during the entire forced expiration and volume versus time during the MVV Maneuver. Such tracing must be furnished to the Board with the test results. No results will be considered by the Board unless they are accompanied by the corresponding tracings. A tracing is necessary to determine whether the subject has performed the test properly. The tracing must be of sufficient size that hand measurements may be made within the requirement of paragraph (I) (A).

(H) The instrument must be capable of accumulating volume for a minimum of 10 seconds after the onset of exhalation.

(I) The forced expiratory volume in 1 second (FEV_1) measurement must comply with the accuracy requirements stated in paragraph (I) (A); that is, the FEV_1 must be accurately measured to within $\pm$50 ml or within $\pm$3 percent of reading, whichever is greater.

(J) The instrument must be capable of being calibrated in the field with respect to the FEV_1. This calibration of the FEV_1 may be done either directly or indirectly through volume and time base measurements. The volume calibration source must provide a volume displacement of at least 3 liters and must be accurate to within $\pm$30 ml.

(K) For measuring maximum voluntary ventilation (MVV), the instrument must have a response which is flat within $\pm$10 percent at flow rates up to 12 liters per second over the volume range. The time for exhaled volume intergration or recording must be no less than 12 seconds and no more than 15 seconds. The indicated time must be accurate to within $\pm$3 percent. A recording of the spirometer tracing is required, and the volume sensitivity must be such than 10 mm or more deflection corresponds to 1 liter volume.

(II) The administration of ventilatory function tests must conform to the following criteria:

For ascertainment of the FEV_1 and FVC, a nose clip must be used. The procedures must be explained in simple terms to the subject who shall be instructed to loosen any tight clothing and sit or stand in front of the apparatus. Although the subject may sit or stand, care should be taken on repeat testing that the same position is used. Particular attention must be given to insure that the subject's chin is slightly elevated with the neck slightly extended. The subject must be instructed to make a full inspiration, either from the spirometer or the open atmosphere, using a normal breathing pattern and then blow into the apparatus, without interruption, as hard, fast, and completely as possible.

At least three forced expirations must be carried out. During the maneuvers, the subject must be observed for compliance with instructions. The expirations must be checked visually for reproducibility by examining the flow-volume or volume-time tracings. The effort shall be judged unacceptable and cannot be considered in evaluating pulmonary functional impairment when the subject:

(A) Has not reached full inspiration preceding the forced expiration; or

(B) Has not used maximal effort during the entire forced expiration; or

(C) Has not continued the expiration for at least 5 seconds or until an obvious plateau in the volume-time curve has occurred; or

(D) Has an obstructed mouthpiece or a leak around the mouthpiece (obstruction due to tongue being placed in front of mouthpiece, false teeth falling in front of mouthpiece, etc.); or

(E) Has coughed or closed his glottis; or

(F) Has an unsatisfactory start of expiration, one characterized by excessive hesitation (or false starts), and therefore did not allow back extrapolation of time 0 (extrapolated volume on the volume-time tracing must be less than 10 percent of the FVC); or

(G) Has an excessive variability between the three satisfactory curves. The variation between the two largest FEV_1's of the three satisfactory tracings should not exceed 7 percent of the largest FEV_1 or 100 ml, whichever is greater.

(III) For ascertainment of the MVV, the subject must be instructed before beginning the test that he or she will be asked to breathe as deeply and as rapidly as possible for approximately 15 seconds.

The test must be performed with the subject in the sitting position, unless the subject has some medical condition necessitating a different position. Care shall be taken on repeat testing that the same position is used. The subject must breathe normally into the mouthpiece of the apparatus for 10 to 15 seconds to become accustomed to the system. The subject must then be instructed to breathe as deeply and as rapidly as possible and shall be continually encouraged during the remainder of the maneuver. The subject shall continue the maneuver for 12 seconds. The subject must be allowed to rest between maneuvers. At least three MVV's must be observed to determine if there was compliance with instructions. The effort must be judged unacceptable and cannot be considered in evaluating pulmonary functional impairment when the patient:

(A) Has not maintained consistent effort for at least 12 to 15 seconds; or

(B) Has coughed or closed his glottis; or

(C) Has an obstructed mouthpiece or a leak around the mouthpiece (obstruction due to tongue being placed in front of mouthpiece, false teeth falling in front of mouthpiece, etc.); or

(D) Has an excessive variability between the three satisfactory curves. The variation between the two largest MVV's of the three satisfactory tracings must not exceed 10 percent and should approximate forty times the greatest FEV_1 volume.

(IV) A calibration check must be performed on the instrument each day before use, using a volume source of at least three liters, accurate to within ± 1 percent of full scale. The room air in the syringe must be introduced into the spirometer once with a flow rate of approximately 0.5 liters per second (six seconds emptying time with a 3-liter syringe) and once with a higher flow rate of approximately 3.0 liters per second (one second emptying time with a 3.0 liter syringe). The volume measured by the spirometer must be between 2.90 and 3.10 liters for both trials. Accuracy of the time measurement used in determining the FEV_1 must be checked using the manufacturer's stated procedure and must be within ± 3 percent of actual. The procedure described herein must be performed as well as any other procedures suggested by the manufacturer of the spirometer being used.

(V) (A) The first step in evaluating a spirogram for the FEV_1 shall be to determine whether or not the subject has performed the test properly or as described in (II) (A). From the three satisfactory tracings, the forced expiratory volume in one second (FEV_1) must be measured and recorded. The largest observed FEV_1 must be used in the analysis, corrected to BTPS.

(B) Only MVV maneuvers which demonstrate consistent effort for at least 12 seconds shall be considered acceptable. The largest accumulated volume for a 12-second period corrected to BTPS and multiplied by five shall be reported as the MVV.

ARTERIAL BLOOD GAS STUDIES

(I) In order to ensure comparability of data obtained in arterial blood studies, the following guidelines must be observed:

(A) The periarterial nerve plexus should be infiltrated with local anesthetic to minimize pain and arterial spasm.

(B) The barrel of the syringe used to draw the blood sample should be wetted with heparin and the excess heparin must be expelled just prior to obtaining the blood sample.

(C) The subject must be allowed to rest for fifteen (15) minutes prior to beginning the study.

(D) Resting blood samples must be drawn with the subject in the sitting position.

(E) On occasions when the subject is unable to be exercised due to physical impairments; i.e., heart disease, artificial leg, etc., a resting sample of arterial blood must be drawn by direct puncture with a 22-gauge needle and a heparinized syringe.

(F) Blood samples must be discarded if contaminated by an air bubble.

(G) All blood samples must be iced and analyzed immediately (in less than ten minutes). If the analysis is not performed within ten minutes, the metabolic activity of the cells in the blood will cause the $p0_2$ to fall and the $pC0_2$ to rise.

(H) If an exercise sample is to be obtained, a plastic catheter must be inserted into the radial or brachial artery for both the resting as well as the arterial sample.

(I) Exercise must be accomplished by having the subject pedal the bicycle ergometer at a rate of 50-60 revolutions per minute against a resistance of 75 Watts or 450 Kilopond Meters (Kpm) per minute for a period of five minutes. If the subject is unable for some physical reason to ride the bicycle, then a treadmill may be used and when used exercise must be done at 2 mph and 10% grade. During the last twenty seconds of the fifth minute of exercise, another blood sample must be drawn into a heparinized syringe and the pulse and respiration rates noted. If an added level of exercise is performed, this must be done at 120 Watts on the bicycle, or on the treadmill at 2.5 mph and 12% grade. Exercise testing beyond the level set forth herein shall be considered to be measurements of physical conditioning rather than of blood gas transfer abnormalities due to occupational pneumoconiosis. The EKG leads must then be removed and the subject allowed to sit on a chair while the catheter is removed. Pressure must be held at the site of arterial cannulation for five minutes, and if there is no bleeding or hematoma present, a compression bandage must be placed on the radial artery and wrist. This bandage must be left in place for four hours. After about fifteen minutes of observation, the subject will be allowed to leave. The arterial blood sample must be drawn while exercise continues, not following cessation of exercise.

(J) EKG monitoring with a single lead should take place during exercise to determine the heart rate. It should be noted that this is not an EKG Stress Test.

(K) The report should indicate the place, date and time of the study, altitude of the testing site and barometric pressure at the testing site on the day of the testing, name and claim number of the subject, name of any assisting personnel, name and signature of the supervising physician, duration and type of exercise (if performed), pulse rate at the time the blood sample was drawn, and whether analysis equipment was calibrated before each test.

(II) It is recognized that arterial blood gas studies done in laboratories throughout this state are obtained at different altitudes. Only by "standardizing" for altitude can an equitable assessment be made of impairment when values of arterial oxygen are being measured at remarkably different altitudes. Therefore, the results reported from laboratories must include the name of the laboratory and the date and time of the testing, altitude of the laboratory and barometric pressure at the laboratory on the day the samples were collected. The O.P. Board will evaluate the arterial blood gas values by converting those values to the average altitude of Charleston, West Virginia. For this purpose, it shall be sufficient to add 5 mmHg to each arterial oxygen tension for each 1,000 feet or fraction thereof that the testing laboratory is located above the average altitude of Charleston, because the relationship of barometric pressure (Altitude) and alveolar oxygen is approximately linear up to 4,000 feet as long as the subject breathes room air.

As an example, Bluefield is located approximately 2,600 feet above sea level. Charleston is approximately 600 feet above sea level. Thus, arterial oxygen values obtained in Bluefield should have 10 mmHg added to them before applying the table to them to obtain "percent impairment". The calculations are as follows:

Bluefield (2,600 ft.) - Charleston (600 ft.)
= 2,000 ft. divided by 1,000 = 2.0 X 5 mmHg
per 1,000 feet altitude = 10 mmHg.

TABLE FOR IMPAIRMENT OF PULMONARY FUNCTION

The following table will be used as an indicator of impairment of pulmonary function if any of the acceptable values appear in the percentage of impairment column:

% IMPAIRMENT	0	10	15	20	25	30	40	50	60	TOTAL
FVC % PRED.	80	80	75	70	65	60	55	50	45	40
$FEV_1.0$ % PRED.	75	73	70	70	65	60	55	50	45	40
$FEV^1.0$/FVC	75	73	70	65	60	55	50	45	40	35
MVV^1 % PRED.	80	80	75	70	65	60	55	50	45	40
pO_2 (RESTING)	75	73	70	68	65	60	55	53	50	50

Exercise pO_2 values that rise above the resting pO_2 values will indicate a lesser degree of impairment of pulmonary function, and if they are less than the resting values will indicate a greater degree of impairment of pulmonary function.

The results of any medically acceptable tests or procedures reported by a physician which are not addressed in this table but which tend to demonstrate the presence or absence of pneumoconiosis or sequela of pneumoconiosis or the presence or absence of a respiratory pulmonary impairment may be submitted and given appropriate consideration (Airway Resistance, Ear Oxymetry, DLCO and A-a gradient, etc.). It is also important that the O.P. Board use all clinical history and physical findings that would enhance or detract from any percentage of impairment in the above table.