



Attachment G

**DEPARTMENT OF HEALTH & HUMAN SERVICES**

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National Institute for Occupational  
Safety and Health (NIOSH)

1095 Willowdale Road

**Public Health Service**

Centers for Disease Control  
and Prevention (CDC)

Morgantown, WV 26505-2888

{**FIRST NAME**} {**LAST NAME**}

{**ADDRESS**}

{**CITY**}, {**STATE**} {**ZIP CODE**}

{**TODAY=S DATE**}

Dear Ms. / Mr. {**LAST NAME**}:

Thank you for participating in the medical testing conducted by the National Institute for Occupational Safety and Health (NIOSH) at Umicore Indium Products in Providence, Rhode Island on {**TestDate**}. Enclosed are the results of your medical tests. The result of your spirometry test {**SpirometryInterp**}. The result of your lung diffusing capacity test was {**DLCOInterp**}. The result of your lung volume test was {**TLCInterp**}. The result of your exhaled nitric oxide tests was {**FeNOInterp**}. The result of your chest CT scan was {**HRCTInterp**}.

The actual values from your tests are enclosed with this letter. You should provide this information to your personal physician, so that it may be added to your medical records. Any above or below normal test results should not be considered a diagnosis of disease; that determination can only be made by your personal physician following a complete medical evaluation.

Again, thank you for your participation in this survey. If you have questions about these results, please feel free to contact our office at 1-800-232-2114.

**Explanation of Test Results**

**Spirometry**

The purpose of the coached breathing test (known as spirometry) is to determine how your lung function compares to expected normal lung function. The test includes measurements of the forced vital capacity (FVC) (this is the maximal or total amount of air you can forcefully breathe out after taking a deep

breath) and the 1-second forced expiratory volume (FEV<sub>1</sub>) (this is the amount of air that you can breathe out in the first second of exhaling), and the calculation of the ratio of FEV<sub>1</sub> to FVC.

In the enclosed report entitled "Report of Spirometry Findings", your test results are compared to predicted values for a healthy, non-smoking person of the same age, height, sex, and race. A graph of your breathing tests appears at the bottom of the page. [[SPIROMETRY OPTIONS](#)]

### **Diffusing Capacity**

The purpose of total lung capacity test is to determine how well your lungs transfer oxygen. In the enclosed report entitled "Report of Diffusing Capacity Findings," your test results are compared to predicted values for a healthy, non-smoking person of the same age, height, and sex. [[DIFFUSING CAPACITY OPTIONS](#)]

### **Lung Volume**

The purpose of lung volume test is to determine the amount of air in your lungs after a deep breath in. In the enclosed report entitled "Report of Total Lung Capacity Findings", your test results are compared to predicted values for a healthy, non-smoking person of the same age, height, and sex. [[LUNG VOLUME OPTIONS](#)]

### **Exhaled Nitric Oxide**

The purpose of the exhaled nitric oxide test is to determine the amount of nitric oxide in the air that you breathe out. Nitric oxide is a gas that is produced by the airways. [[EXHALED NITRIC OXIDE OPTIONS](#)]

### **High-resolution Computed Tomography (HRCT)**

The purpose of HRCT of the lung is to determine the presence of abnormalities indicating lung inflammation, destruction, or scarring. In the enclosed report entitled "Report of HRCT Findings," your test results are provided. [[HRCT OPTIONS](#)]

Sincerely,

Kristin J. Cummings, MD, MPH

Medical Officer

Field Studies Branch

Division of Respiratory Disease Studies

## PARAGRAPH #1 OPTIONS

{*TestDate*} = date test performed

{*SpirometryInterp*} =

- (1) was within normal limits.
- (2) was interpreted as having obstruction.
- (3) was interpreted as having restriction.
- (4) was interpreted as having both obstruction and restriction.
- (5) shows a possible abnormality.
- (6) was not interpretable.

{*DLCOInterp*} =

- (1) within normal limits.
- (2) interpreted as low.
- (3) not interpretable.

{*TLCInterp*} =

- (1) within normal limits.
- (2) interpreted as low.
- (3) not interpretable.

{*FeNOInterp*} =

- (1) within normal limits.
- (2) interpreted as high.
- (3) not interpretable.

{*HRCTInterp*} =

- (1) within normal limits.
- (2) interpreted as having an abnormality.
- (3) not interpretable.

## EXPLANATION OF TEST RESULTS OPTIONS

### [SPIROMETRY OPTIONS]

- (1) Your lung function was within normal limits.
- (2) Obstruction indicates that air is exhaled from the lungs more slowly than normal. This can be seen in certain lung conditions such as asthma, bronchitis, or emphysema. The greater the obstruction (the lower the FEV<sub>1</sub>), the more difficult it is to exhale the air from the lungs.
- (3) Restriction indicates that the amount of air exhaled is smaller than normal. This can be seen in certain lung conditions such as lung scarring or fibrosis, or in people who are considerably overweight. It can also be seen in people who have a severe obstructive abnormality. The greater the restriction (the lower the FVC), the greater will be the possible physical limitation.
- (4) A combination of obstruction and restriction indicates that air is exhaled from the lungs more slowly than normal and the amount of air exhaled is also smaller than normal. This can be seen in people who have severe obstruction.
- (5) Unfortunately, the tests were not performed in an adequate manner for us to be able to interpret your test results. In part, this may represent a failure on our part to properly train you to perform this test.

### **[DIFFUSING CAPACITY OPTIONS]**

(1) Your diffusing capacity was within normal limits.

(2) A lower than expected diffusing capacity indicates impaired oxygen exchange and can be seen in lung diseases such as pulmonary alveolar proteinosis and emphysema. Diffusing capacity can also be lower than expected in people with anemia (low red blood cell count).

### **[LUNG VOLUME OPTIONS]**

(1) Your lung volume was within normal limits.

(2) A lower than expected total lung capacity indicates a small lung volume and suggests lung restriction. Lung restriction can be seen in certain lung conditions such as lung scarring or fibrosis. It can also be related to chest wall abnormalities and obesity.

### **[EXHALED NITRIC OXIDE OPTIONS]**

(1) Your exhaled nitric oxide was within normal limits.

(2) A higher than expected exhaled nitric oxide level indicates airway inflammation. It can be seen in people with airways diseases such as asthma. You should share this information with your personal physician, particularly if you have respiratory symptoms.

### **[HRCT OPTIONS]**

(1) Your HRCT was interpreted as being within normal limits.

(2) Your HRCT was interpreted as having abnormalities involving one or both lungs. You should share this information with your personal physician at your next visit.

(3) Your HRCT was interpreted as having abnormalities involving one or both lungs that require follow-up. You should share this information with your personal physician as soon as possible so that follow-up can be arranged.

(4) Your HRCT was interpreted as having abnormalities involving organs or structures other than the lungs. You should share this information with your personal physician at your next visit.

(5) Your HRCT was interpreted as having abnormalities involving one or both lungs and organs or structures other than the lungs. You should share this information with your personal physician at your next visit.

(6) Your HRCT was interpreted as having abnormalities involving one or both lungs that require follow-up. Your HRCT also was interpreted as having abnormalities involving organs or structures other than the lungs. You should share this information with your personal physician as soon as possible so that follow-up can be arranged.