On Person Respirable Dust and Silica Sampling

1 PURPOSE

- This procedure will ensure that all respirable dust and silica sampling performed at the Iron Ore Company of Canada (IOC) is done in a consistent manner in accordance with accepted methods.

2 SCOPE

- This procedure applies to all on-person dust and silica sampling. Including special request and non-routine.
3 DEFINITIONS

3.1 Cyclone – part of sampling train used to separate the dust. Larger particles are removed and settle in collection pot and only respirable particles are deposited on filter.

3.2 Dry Cal – Primary flow calibrator

4 PROCESS

4.1 Sample Preparation

- Ensure adequate number of field sheets and filters are available for sampling requirements.
- Check NIOSH analytical method 600 and validate:
  - Flow rate for pump: 1.7 L/min
  - Min and max sample volume: Min – 400 L, Max – 1000 L
  - Cyclone & Filter requirements: Cyclone – 10 mm nylone cyclone, Filter – PVC membrane
- Contact supervisors or superintendents to arrange for workers to be available for sampling on day and time required.

4.2 Pre sample calibration of Pumps

- Turn on pump allow 5 – 10 minutes warm up.
- Turn on the Dry Cal by pressing the On/Off button in the lower right corner of the control panel for one second.
- Connect sample pump to the DryCal Suction Port with tygon tubing with calibration filter in line.
- Select Measure on the DryCal screen and press enter.
- Select Continuous Measurements (Cont.) and press enter. When you select the Cont. option the DryCal will give you 10 continuous hands free measurements with an on screen running average.
- Set the pump flow rate to 1.7L/min. Take the average flow rate from the DryCal readings for your pre sampling flow rate and record on field sheet. This value must be +/- 5% of volume 1.7 L/min in order to proceed.

4.3 Assemble Sampling Train

- Attach filter to cyclone using short (0.5”) piece of tygon tubing. Place cyclone and filter in holder and attach to pump with length (2’) of tygon tubing.

4.4 Place Sample on Worker

- Ensure the filter is as close to the breathing zone of the worker as possible.
- Collect data for field sheet (name, badge#, occupation, and area of work…)
- At least one check during the sampling period is required. Sampler must make contact with worker and record any information about work conditions.
4.5 Collect Sample at End of Shift
- Collect data about workday for field sheet (normal to busy day, normal to high dust exposures, and whether activities were routine or special).
  Note: minimum of 75% of Shift must be sampled for sample to be valid. 360 minutes for 8-hr sample and 540 minutes for 12-hr sample.
- Disconnect filter assembly from pump. Remove and cap filter from cyclone, and store dust laden side up.

4.6 Post Sample Calibration of Pumps
- Turn on pump and DryCal. Attach pump to DryCal’s Suction Port and your calibration filter to the Pressure Port. (Same set up as your Pre Sample Calibration).
- Select Measure on the DryCal screen and press enter. Select Continuous Measurements (Cont.) and press enter. Take the average flow rate from the DryCal readings for your post sampling final flow rate and record on field sheet. This value must be +/- 5% of volume indicated in the NIOSH 0600 method.
- Record the “Flow Rate Average” on field sheet as (average of pre calibration + average of post calibration)/2.

5 ACCOUNTABILITIES

5.1 Accountability
- The occupational hygiene specialist is accountable for the respirable dust and silica sampling program.

5.2 Responsibility

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<tr>
<th>Role</th>
<th>Responsibility</th>
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<tbody>
<tr>
<td>HS Technician</td>
<td>• Ensure sampling method is followed</td>
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<td></td>
<td>• Ensure samples are collected</td>
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<td>• Ensure field sheets are completed accurately</td>
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<tr>
<td>HS Advisor</td>
<td>• Ensure technician has the tools to complete the sampling program</td>
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<tr>
<td>Occupational Hygiene Specialist</td>
<td>• Ensure proper training is provided to technician to conduct sampling</td>
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<td>• Ensure records are maintained</td>
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<tr>
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<td>• Ensure sampling is conducted in accordance with accepted methods</td>
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6 REFERENCES

- RT HSE Definitions

7 SUPPORTING DOCUMENTATION

- B1 Health Standard
- NL Silica Code of Practise