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INSTRUCTIONS: BGI-4 FAMILY OF RESPIRABLE DUST CYCLONES

Introduction:

This cyclone is intended to be used with any personal sampling pump capable of drawing 2.2 liters per minute through the cyclone and your filter of choice. This includes (in so far as we are aware) all commercially available personal samplers, except those specifically designed for low flow.

At the stipulated flow rate of 2.2 liters per minute, the instrument conforms to the new U.S., U.K. and European respirable dust curve with a 50% cut point of $4\mu\text{m}$.

The BGI-4 cyclone is a Higgins and Dewell type as designated in NIOSH method 0600, 4th edition August 1994. The body of the BGI-4 was fabricated from stainless steel and the grit pot (dust cup) is anodized aluminum. The BGI-4CP is fabricated from conducting plastic and the grit pot is neoprene rubber. The BGI-4L body is fabricated from nickel plated aluminum and the grit pot of anodized aluminum. All instruments comply with NIOSH 0600, for both conducting and non-conducting dusts.

Operation:

Remove the cyclone from the lapel spring clip by pulling the unit forward while holding back the edge of the clip with the opposite hand.

Remove the front portion of a 3 piece cassette (blue plug) by inserting a coin in the annular slot closest to the blue plug and twisting. Save the portion removed to reinstall for filter protection after sampling. Press the portion of the cassette containing the filter onto the tapered top of the cyclone - fitted with an orange "O"ring.

Next slide the cyclone cassette assembly into the spring clip, remove the red plug from the back of the cassette and push in the taper luer plug which is attached to the hose.

The cyclone is clipped to the worker's lapel and the long hose is run under the worker's arm to the personal sampler appropriately situated on the worker's belt.

Proceed with the sampling according to your experience, regulations or the instructions for the sampler being used. The procedures are the same as for a routine cassette dust sample, except that only the respirable fraction actually reaches the filter surface. Selection of filter materials varies with different countries and regulations.

Calibration:

Attach your calibration device (rotometer or preferably The Challenger) to the inlet tube of the cyclone with a suitable section of 1/4 inch I.D. tubing. The cyclone should be set up for normal use with a fresh filter. Turn the personal sampler on and adjust the flow rate to 2.2 liters per minute. Because of the inlet tube used on this cyclone design, the old fashioned calibration jar is no longer necessary.

Cleaning:

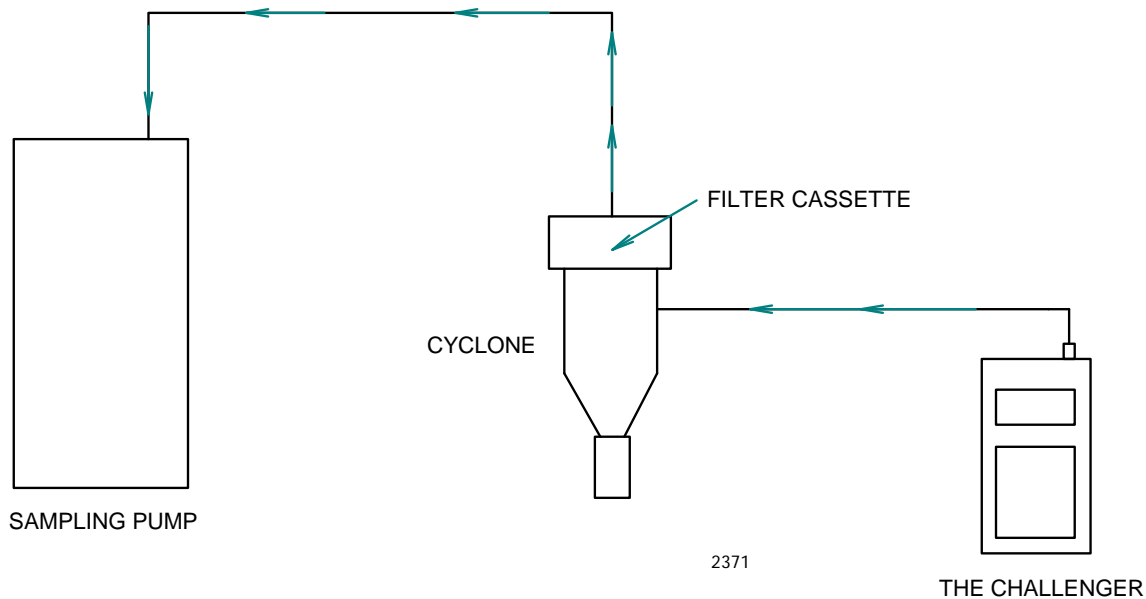
After disconnecting the suction tubing, carefully remove the cassette and replace the cover and red plug.

Remove the grit pot by pulling off the rubber one or unscrewing the aluminum one. Dispose of any material that may be inside the grit pot. The cyclone body may be cleaned by soaking in water with a drop of detergent or wetting agent. A better technique is to use an ultrasonic cleaner, if available. Only in extreme cases of complete plugging should the body be disassembled by removing four small screws. If this procedure is used it is recommended that the opportunity be used to replace the gasket. The parts can now be dried with compressed air or by simply waiting for the liquid to evaporate. **PROTRACTED SOAKING IN SOAP/CAUSTIC SOLUTIONS WILL DAMAGE THE ALUMINUM COMPONENTS!**

WARNING: Because of the almost infinite variety of dusts which may be sampled with this device, it is not possible to give specific, recommendations for cleaning substances. Also, it must be noted to be careful not to re-aerosolize hazardous materials when using compressed air for cleaning. Utilize good hygiene practices at all times.

References:

D.L. Bartley et al. "Respirable Aerosol Sampler Performance Testing." (1994) AIHA Journal, No. 11, Vol. 55.



Schematic Diagram of Connections for Calibrating a Personal Sampling Cyclone

REVISIONS

June, 2007	Added "The Challenger" to Schematic
Feb, 2011	Modified cleaning paragraph.