

# **GAP EnviroMicrobial Services Ltd.**

**APPROVAL FORM FOR RELEASE OF  
ANALYTICAL STANDARD OPERATING PROCEDURE (SOP) FOR ROUTINE USE**

## **SOP #79: Operation and Calibration of the Zefon Bio-Pump**

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- ❖ **The approval of this document is valid for one year at which time it will be subject to review to determine if any updates or modifications are warranted.**

## OPERATION AND CALIBRATION OF THE ZEFON BIO-PUMP

### 1. PURPOSE:

- 1.1. The purpose of this standard operating procedure is to describe the operation and calibration of the Zefon Bio-Pump for the collection of airborne fungal samples.

### 2. GENERAL INFORMATION:

- 2.1. The operation of the Zefon Bio-Pump air sampler is based on an impaction principle. As air is drawn through a cassette at 15 Liters per minute, airborne particulate is impacted onto an adhesive surface on a cover slip inside the cassette. The particulate includes fungal spores, hyphal fragments, pollen, and debris. The cover slip is examined and spores are placed into categories that best describe the spore characteristics. Some genera can be reasonably deduced which include many of the fungi that cause problems indoors. No further analysis, such as culturing and speciation can be done on these samples. Additional samples, of a different matrix, may need to be taken if further analysis is required. Non-culturable air sampling is an excellent tool in a Total Air Quality Analysis plan.

### 3. PROCEDURE:

#### 3.1. Operation

- 3.1.1. Place the pump in the location to be sampled. The pump has an internal recharging system.
- 3.1.2. Remove the tabs covering the inlet and outlet ports on the sampling cassette. Place the cassette firmly over the sampling area of the pump.
- 3.1.3. Press the power button on the pump.
- 3.1.4. Using the arrow keys, select the 'single sampling mode' option and press the set button.
- 3.1.5. Adjust the sampling time as needed. **Ten** minute samples are recommended for clean sample areas. If high counts are suspected, or for outdoor air during summer, **five** minute samples are recommended.
- 3.1.6. Press the 'Start' button to begin sampling. When the sampling time expires, a beep will sound and the red 'sample complete' light will turn on.
- 3.1.7. Remove the cassette from the sampler and replace tabs over the inlet and outlet ports.
- 3.1.8. Label the cassette with your identification number and the amount of sampling time used. GAP EnviroMicrobial Services Ltd Chain of Custody forms are provided or can be downloaded from [www.GAPlab.com](http://www.GAPlab.com). Please fill out the appropriate information on the form and return with your sampling cassettes.

#### 3.2. Calibration ( In- House)

- 3.2.1. Before sampling, calibrate the pump to ensure that is calibrated for 15 L/min.
- 3.2.2. Record calibration on the Calibration Record (GAP-F-102) located in the Quality Manager's office.

- 3.2.3. Press the power button to turn the pump on.
  - 3.2.4. Use the arrow keys and select 'Verify Calibration'.
  - 3.2.5. Connect the flow indicator provided to the sampling port of the pump.
  - 3.2.6. Press the 'Start' or 'Set' button to begin.
  - 3.2.7. As the pump starts up, the float ball in the Flow Indicator will rise. It should settle between the marks indicating 15 L/min.
  - 3.2.8. If the pump is not sampling at 15 L/min, use the following steps to correct it:
    - 3.2.8.1. With the Power on, select the 'Calibrate Bio-Pump' mode using the arrow keys.
    - 3.2.8.2. Connect the Flow Indicator
    - 3.2.8.3. Press the 'Set' button to start the sampler. Using the arrow keys, adjust the air flow until the float ball stays between the 15 L/min mark.
    - 3.2.8.4. Press the 'Set' key to save the calibration. The pump will stop automatically.
- 3.3. Sequential Sampling Mode
- 3.3.1. There is an option on the Zefon Bio-Pump Air Sampler to take sequential samples. For example, if the sampler feels that a more representative sample would be taken over ten hours, one minute an hour, in order to look at the particulates over an entire day, this can easily be set up by the following steps:
    - 3.3.1.1. Set up the sampler as described in steps 1 – 3 in the section "Operation" of this Standard Operating Procedure.
    - 3.3.1.2. Using the arrow keys, select 'Sequential Sampling Mode' and press 'Set'.
    - 3.3.1.3. Using the arrow keys, select the number of ON/OFF cycles and press the 'Set' button.
    - 3.3.1.4. Again using the arrow keys adjust the cycle run time and press the 'Set' button.
    - 3.3.1.5. Using the arrow keys, adjust the cycle off time and press the 'Set' button.
    - 3.3.1.6. Press the 'Start' button to begin sampling.
    - 3.3.1.7. When the sample is finished, a beep will sound and the red 'sample complete' light will turn on.
    - 3.3.1.8. Remove the cassette and replace the tabs on the outlet and inlet ports. Fill in the GAP EnviroMicrobial Services Ltd Chain of Custody with the appropriate information and send in to the laboratory with your sampling cassettes.

**4. HISTORY OF CHANGES:**

4.1. Revision 2 – May 1, 2006

4.1.1. Minor formatting changes were made. The **History of Changes** and **Reference** sections were added.

4.1.2. Added that the GAP EnviroMicrobial Services Chain of Custody can be found on the website [www.gaplab.com](http://www.gaplab.com).

4.2. Revision 3 – October 10, 2007

4.2.1. This SOP was revised to reflect the company name change.

4.2.2. Section 3.2.2 was included to record calibration on the Calibration Record (GAP-F-102) prior to use.

4.3. Revision 4 - June 6, 2008

4.3.1. Revision 4 was reviewed and no changes were required.

**5. REFERENCE :**

5.1. Operating Manual “Operating Instructions for Zefon Bio-Pump”.