Recommendations for Sampling Fungi in the Indoor Environments

Investigation of fungal contamination in the indoor environments normally includes visual inspection and sampling. The sampling strategy and sampling methods should depend on the goal of the investigation. This document is aimed to providing basic recommendations for sampling air, surface, bulk and dust matrices for fungal detection and enumeration.

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Air Sampling

In indoor mold investigations, air sampling is performed to detect and quantify airborne mold spores and other allergens in order to assess of the possible health effects due to the human exposure, to monitor the effectiveness of control measures during remediation, and for post-remediation clearance testing.

Air samples may be analyzed by direct microscopy, culture method, or by quantitative polymerase chain reaction (QPCR). The type of analysis to be performed dictates the sampling media and air volume sampled. These three methods are outlined in detail below.

General Air Sampling Recommendations

- The number of samples per area will vary and depend on the specific case and size of individual rooms, but enough samples should be collected to draw conclusions that are scientifically sound and legally defensible. In many cases where health issues are involved, larger numbers of samples or re-sampling at different times of day may be required to obtain statistically sound results.
- Airborne fungal spores are a natural part of all locations, outdoor and indoor. Always include an outdoor control sample for comparison with air samples taken in indoor environments.
- It is recommended to include an air sample from an unaffected area within the sample building for comparison.
- Periodic submission of a field blank sample is recommended as a quality control measure. These cassettes/plates should be opened in the testing area in the same fashion as regular samples, but no air is drawn through them.
- Correct calibration of the pump is imperative to obtain accurate quantitative results. Make sure your rotameter or primary calibration device is working properly.
- Never use plates or cassettes that appear opened or damaged, or are past their expiration date.

- The use of protective equipment such as a mask, gloves, and protective clothing is recommended in highly contaminated environments or by sensitive individuals

Air sampling for direct microscopy analysis

Direct microscopy allows detection and quantification of bioaerosols in air regardless of their viability. Air samples from direct microscopy are collected using a commercial slit impactor, or "spore trap", such as Air-O-Cell® and Allergenco-D® cassettes. The most common spore trap design is an adhesive-coated slide inside a plastic cassette. A known volume of air is drawn through the cassette using a calibrated vacuum pump, and airborne particles, including fungal spores, adhere to the slide as they pass through the cassette. The adhesive eliminates sample loss from vibration during handling and shipment, and samples may be held for weeks before analysis without loss of sample. Upon receipt by the laboratory, the slide is removed from the cassette, stained, and directly examined using a microscope. The analyst identifies and counts all fungal spores present in the sample, and results are expressed in spores per cubic meter of air (spores/m^3).

Advantages of direct microscopy:

- Rapid turn-around times: results can be obtained on the same day samples are received by the laboratory.
- Quantifies all airborne spores, whether viable or non-viable: for mold-related health issues that do not require bioaerosols be viable, such as allergies and asthma, the results from this method can be more indicative of the actual exposure than culture-based systems.
- Non-fungal particles of concern may also be counted and identified using this method.

Drawbacks of direct microscopy:

- Genus or species identification of spores is not always possible with direct microscopy. (For example, *Aspergillus* and *Penicillium* spores are indistinguishable using direct microscopy, and are reported as "*Aspergillus-Penicillium*-like" spores.)
- Samples may become overloaded with non-fungal particulate if sample volume is too large or there is a high amount of airborne debris at time of sampling. Overloaded slides result in under-reporting of fungal spores in a sample.
- In cases where spore viability is a concern, note direct examination cannot distinguish between viable and non-viable spores.
- Bacteria cannot be detected using direct microscopy.

<u>Materials</u>

- Spore trap cassettes. The technician should read and follow manufacturer's recommendation for air flow rate and general use for all other types of spore trap cassettes.
- Vacuum pump capable of pulling at least 15 Liters per minute (lpm) with flexible 1/2" tubing.
- Calibrated rotameter to calibrate the pump or, in sensitive cases, a primary pump calibration device such as a DryCal flowmeter (BIOS International Corp., Butler, NJ).

<u>Procedure for taking spore trap samples</u>

1. Calibrate the vacuum pump at the manufacturer's recommended flowrate. Most cassettes, including Air-O-Cell®, are designed to work best at 15 Liters per minute.

a. Use of higher-than-specified flow rates may cause particles to "bounce off" the slide instead of adhering, and use of lower-than-specified flow rates may prevent smaller spores from adhering to the slide.
b. Some less common cassette types may specify a flow rate as low as 5 lpm; always follow manufacturer's instructions for optimal particle capture.

2. Remove (but do not discard) tape covers from both the inlet and outlet of cassette. Insert tubing in the outlet (round hole) of the cassette and direct inlet (narrow slit) to the area to be sampled.
3. Turn on the pump and take sample for the desired time. Recommended sampling time varies depending on the environment sampled:

Recommended Sampling Time

Environmental Conditions*	Sampling time (minutes)
Outdoor environment on a windless day	5-10
Indoor environment, clean / low activity	10
Indoor environment, high activity	5
Indoor environment, evidence of drywall renovation or industrial dust	1-2
Indoor environment, visible dust emissions from point sources present	0.5

Note weather and/or geographic location will impact the optimal duration of sampling, especially in outdoor environments. For example, if it is actively raining at time of sampling or there is snow on the ground, there may be a reduction in the number of bioaerosols in the outdoor environment; and after a rainy period there may be a temporary increase in the number of outdoor bioaerosols. In some cases where large investigations are in process it may be prudent to conduct preliminary screens to determine optimal collection times.

4. Remove the cassette from the tubing and replace the tapes on both ends of cassette to seal. Label the cassette, or note the cassette's serial number.
5. Fill out all the information in the Chain of Custody form, including sample identifier (label or cassette serial number), flow rate and sampling duration for each sample.
6. Ship samples and paperwork directly to AEMTEK, Inc. Package samples with cushioning material to avoid breakage of the glass slides inside the cassettes during transport. Samples do not need to be shipped on ice, nor insulated for temperature.

Air sampling for culture-based analysis

The presence of culturable molds may be an indication of active growth in indoor environments. Active mold growth in indoor environments and the underlying causes need to be immediately addressed to stop further contamination. The presence of culturable molds in indoor environments implies not only the presence of allergens and mycotoxins, but also potential pathogens that may cause disease, especially in people with compromised immune systems. Detection of culturable organisms in the air is performed by impacting air samples directly onto agar-based culture media. Unlike direct microscopy, culturable air sampling allows quantitative identification of fungi and bacteria to both genus and species level.

Culturable air sampling is most commonly performed using an Andersen-type particle impactor. These devices are designed to pass a specified volume of air over the surface of agar-based media in a Petri dish, resulting in airborne particles (including spores) becoming trapped on the agar surface. The type of agar-based media in the Petri dishes depends on the mold, bacteria, or specific genera to be isolated. Agar

plates are sent to the laboratory where they are incubated for a specified period, usually 3 days for bacteria and 7 days for mold. At the end of this period laboratory analysts quantify and identify (to the species level if requested) most organisms that grow on the media. Results are expressed in colony forming units per cubic meter of air (CFU/m^3).

Advantages of culturable analysis:

- The ability to obtain generic and species identification of the organisms. For example, *Aspergillus* and *Penicillium* spores cannot be differentiated using direct microscopy, but these genera produce distinctive colonies in culture allowing genus and species identification.
- Culture based methods can provide quantitative data on culturable fungi and bacteria. Presence of culturable organisms in air may be an indicator of actively growing organisms in the testing area, and identification can assist in tracking potential pathogens.

Drawbacks of culturable analysis:

- Long turn-around times for fungi: it takes 5-10 days for captured spores to mature enough to allow identification.
- Selection of appropriate growth medium is critical for culturable air sampling; some organisms may need a specific medium to grow in culture.
- Some organisms do not grow well, or at all, on some culture media, resulting in non-detection of some organisms which may be allergenic and/or irritants.
- If air volume sampled is too high, organisms may be too crowded resulting inaccurate quantifications, and the presence of fast-growing ("spreader") colonies may overgrow slower growing organisms, masking their presence.

Materials

- Vacuum pump able to draw 28.3 Liters per minute (lpm)
- Flexible tubing
- Calibrated rotameter to calibrate the pump or, in sensitive cases, a primary pump calibration device such as a DryCal flowmeter (BIOS International Corp., Butler, NJ)
- Andersen N6 single stage impactor (or equivalent)
- 70% alcohol and cotton balls, or pre-packaged alcohol wipes
- Latex or nitrile gloves
- 15x100mm Petri dishes containing agar-based culture media; note media type will depend on the type of sampling and the objective of the sampling:
    - Malt extract agar (MEA) is recommended for recovery of most environmental fungi
    - DG18 agar is recommended for recovery of fungi in dryer environments
    - Cellulose agar is recommended for selective recovery of *Stachybotrys* and *Chaetomium*
    - Tryptic soy agar (TSA) or TSA with 5% sheep blood (Blood Agar) is recommended for recovery of most bacteria
    - MacConkey agar is recommended for recovery of Gram negative bacteria

Procedure for taking culturable air samples

1. Agar plates should be stored in a refrigerator or cooler on blue ice. Allow plates to warm up to room temperature immediately before use.
2. Use the rotameter or primary calibration device to calibrate the pump to 28.3 lpm:
    a. Attach one end of tubing to the intake of the pump and the other end to the inlet of the sampler.

   b. Turn on pump and calibrate to a flow rate of 28.3 lpm. Allow it to equilibrate for 1-2 minutes, then turn pump off.
3. Disassemble sampler by unscrewing the knobs and removing the perforated cover. Avoid touching the inside of sampler. Use of gloves is recommended.
4. Disinfect sampler by wiping interior with 70 % alcohol, and allow to air-dry.
5. Label Petri dish with sample identifier on the bottom (agar side) of the plate with permanent marker. Open the Petri dish and place lid in a clean bag (e.g. a zip lock bag) and keep it there until sampling is complete.
6. Place the agar-containing side of the plate in the sampler agar-side up. Reassemble the sampler by replacing the perforated cover.
7. Turn on the pump. Optimal sampling duration varies depending on the environment. In most environments, 2-5 minutes of sampling is optimal. In very clean environments such as healthcare facilities, up to 10 minutes is acceptable.
8. Once sampling is complete, disassemble sampler and remove plate. Replace the plate's lid immediately. Be careful to avoid any contamination of the plate by touching the agar surface or by leaving the lid off for more time than necessary. Secure the lid with Parafilm or tape.
9. Fill out the Chain of Custody with sample identifier and corresponding flow rate and sample duration. Pack the plates securely and ship to AEMTEK for overnight delivery in a small cooler or other insulated container containing with blue ice packs (never dry ice or wet ice).

Air Sampling for QPCR

Quantitative real-time PCR (QPCR) detects and quantifies fungal DNA in an air sample. An air sample is collected on a polycarbonate filter that traps fungal spores as air is passed through it. The entire filter is processed and all DNA from the air sample is extracted. A set of "primers" and "probes" are used to amplify the DNA of target organisms, and the instrument (real-time thermal cycler) detects and calculates the amount of target DNA in the sample.

Advantages of QPCR analysis:

- Presence of non-target organisms and airborne debris do not interfere with analysis. This means large volume air samples (4000L-8000L) are possible, reducing the detection limit and increasing sensitivity significantly in comparison to culture and direct microscopy methods.
- Rapid turn-around time: species-level identification and quantification can be obtained on a same-day basis.
- QPCR detects all target DNA in a sample, whether from viable or non-viable spores, or from hyphal fragments and other non-spore fungal structures that are not identifiable by direct microscopy.

Drawbacks of QPCR analysis:

- QPCR analysis is more expensive than culture-based and direct microscopy methods.
- Unlike direct microscopy where all spores present are counted, with QPCR if a fungal species is not expressly probed for, it will not be detected by the instrument.
- In cases where spore viability is a concern, note QPCR cannot distinguish between viable and non-viable spores.
- An excess of some non-fungal particles, such as gypsum dust, may interfere with the instrument's ability to read results. In these cases the DNA extract is either diluted or purified further, which may lead to a decrease in sensitivity.

Materials

- Vacuum pump with flexible tubing.
- Calibrated rotameter to calibrate the pump or, in sensitive cases, a primary pump calibration device such as a DryCal flowmeter (BIOS International Corp., Butler, NJ).
- PCR cassette (3-piece, 37 mm cassette preloaded with a 0.45 µm polycarbonate filter).

Procedure for taking air samples for QPCR analysis

1. Calibrate pump. Air flow for PCR sampling is recommended to be between 3-15 lpm.
2. Remove the red cap (outlet) from cassette and connect it pump. Remove the blue cap (inlet) from cassette and direct it toward the sample site.
3. Turn on the pump. Collect 500-3000 liters of air, and/or sample for up to 8 hours. In dusty or other high particulate environments, less volumes are recommended to avoid clogging and possible instrument interference from the particulate.
4. Once sampling is complete, replace both caps in cassette and label with permanent marker. Fill out all the information in the Chain of Custody form, including sample identifiers, flow rate and sampling duration.
5. Inclusion of a field blank cassette is recommended as a control.
6. Pack and ship cassettes to AEMTEK. Cassettes should be cushioned to protect from breakage, but do not need to be shipped on ice or in an insulated container.

Surface Sampling

Material surfaces are sampled directly to identify organisms that are producing visible growth, to investigate whether staining is due to organism growth, or to determine whether organisms are still present post-remediation. Surfaces may be sampled by tape-lifts, by swabbing the material, by removing the material itself (bulk samples), or by vacuuming settled dust. Results may be quantitative or semi-quantitative, depending on the analysis performed.

Tape-lift samples

The primary purpose of the tape-lift sampling method is to confirm the existence of mold growth and to identify the type of fungi at the sampling site, referred to as source sampling. The secondary purpose is to obtain fungal spore distribution data to determine if the sampling site is normal or contaminated, referred to as content sampling. Tape-lift sampling is best used in conjunction with air sampling for verification of indoor mold growth by direct fungal examination. It is also the simplest way of source sampling.

Tape-lifts are performed by pressing a piece of clear adhesive tape to a surface. The adhesive pulls the material directly off the surface and holding it in place until analysis. Upon receipt by the laboratory, the analyst stains the tape and directly examines it to identify the fungal spores. Spores are given a semi-quantitative rating, e.g. rare, some, common, abundant, or colony growth.

Advantages of tape-lifts:

- Tape-lifts preserve the fungal structures during sampling, allowing analysts to identify similar organisms to genus; for example, *Penicillium* and *Aspergillus* can be differentiated in tape-lift samples where the spore-producing structures are present and intact.
- Tape-lift samples do not allow growth of organisms during shipping, making analysis less time sensitive than with some other methods.
- Non-fungal particulates of interest such a fibers, pollen, soot, etc. may also be identified.

Drawbacks of tape-lifts:

- Direct microscopy for fungi and non-fungal particulates is the only analysis compatible with tape-lift samples. Culturable analysis is not possible, and bacteria cannot be identified with this method.
- If the material is wet, the adhesive may not hold the sample.

Material

- Clear/completely transparent Scotch tape (do not use thick packing tape, nor opaque tapes)
- Microscope slide (optional)

Procedures for taking tape-lift samples

1. Discard the first 1-2 inches of tape from the roll to prevent sample contamination.
2. Remove a 2 inches piece of tape from the roll. Be careful to not touch the adhesive in portion in the center of the tape; hold the tape from long edges only.
3. Apply the sticky side of the tape onto the target site, gently press the middle portion of the tape to sample an area of approximately 1 square inch, and lift the tape.
4. Stick the tape directly onto a microscope slide, or onto the inside of a thick Zip-lock bag. Do not allow the tape to fold onto itself or to adhere to itself in any way.
5. Clearly label the slide, put it inside of an individual slide mailer, and send directly to AEMTEK. Use cushioning material to prevent breakage during transport. Transport time and temperature is not critical for tape-lift samples.

Swab samples

Swabs are used to sample both bacteria and fungi on surfaces. Swabs are preferred for areas that are wet and/or difficult to reach, and for non-porous materials that cannot be cut to create a sample. Swabs can be analyzed by direct microscopy (for fungi only), and by QPCR (fungi and bacteria), and by culturable methods (fungi and bacteria.) If a known area is swabbed, quantitative results are possible; or results may be given as a semi-quantitative rating, e.g. rare, some, common, abundant, or colony growth.

Advantages of swab sampling:

- Swabs are compatible with direct microscopy, culturable methods, and QPCR.
- Both bacteria and fungi may be sampled with swabs, and when culturable method is used, both bacteria and fungi may be recovered from a single swab sample.
- Swabs allow sampling of moist surfaces, or hard-to-reach areas.

Drawbacks of swab sampling:

- Swabs must be kept cool post-sampling and delivered to the laboratory quickly to prevent organism growth during transport. Growth of organisms may artificially amplify quantitative results.
- With direct microscopy, swabs may not preserve the observable fungal structures required for differentiation of similar genera like *Penicillium* and *Aspergillus*.

Materials

- Transporter Swab: sterile swab in a tube containing a sponge soaked with transporter buffer, i.e. Stuart swabs or similar
- Optional: plastic sampling template (1" x 1", 4" x 4", or other desired area) and 70% alcohol wipe

Procedures for taking swab samples

1. Select the area to sample. It should be relatively non-porous material. A plastic template may be used to delineate the area to be sampled; if used, wipe the template with 70% alcohol before and between uses.
2. If the area to be sampled is dry, moisten the swab by dipping it into the tube so the tip contacts the sponge within. Be careful to not touch or otherwise contaminate the swab.
3. Swab the desired area thoroughly by rolling the swab over the sample area. Place the swab in its tube, and press the lid to ensure it is completely sealed.
4. Label the sample, and record the area sampled, if known, on the Chain of Custody. Make sure to specify analysis requested.
5. Ship the sample *overnight* to AEMTEK, Inc. in a cooler on blue ice for all culturable analyses; shipping at room temperature is acceptable for direct microscopy and QPCR for fungi only. Samples should be sent as soon as possible to prevent growth of organisms on the swab during transport, which can amplify the number of organisms detected.

Bulk samples

"Bulk sample" refers to a portion of material (e.g. pieces of wallboard, duct lining, carpet, etc) that is removed from a site. Bulk samples can be analyzed for both bacteria and fungi, can be analyzed by direct microscopy (for fungi only), and by QPCR and culturable methods (for both bacteria and/or fungi.) Bulk samples may look completely clean, show some discoloration, or have visible microbial growth on it upon collection.

Advantages of bulk samples:

- Bulk samples are compatible with direct microscopy and culturable methods.
- Both bacteria and fungi may be recovered from bulk samples.
- Bulk samples preserve the fungal structures during sampling, allowing analysts to identify similar organisms to genus.

Drawbacks of bulk samples:

- In many cases, directly cutting the material to be tested is undesirable or impossible.

Materials

- Clean Zip-Lock or Whirl-Pak bags
- 70% alcohol wipes
- Latex or nitrile gloves
- Cutting instrument such as a knife or razor blade

Procedure for taking bulk samples

1. Remove pieces of material to be tested, using a cutting instrument where necessary.
    a. Sample should be small enough to be easily packaged and transported to the laboratory.
    b. If material shows different tones of discoloration or morphology, it is recommended to send either a large enough piece to represent the damage or take several samples to have a full representation of the possible different bacteria or fungi present in the damaged area.
    c. Wipe cutting instrument with alcohol between samples.
    d. Wear latex or nitrile gloves during sampling and wipe gloves with alcohol between samples to reduce cross-contamination.
2. Place sampled pieces *individually* in sealable bags to prevent cross-contamination between samples. Label each bag with sample identifier, and record analysis requested on the Chain of Custody.
3. Package bulk samples with protective wrapping material and ship to AEMTEK Inc. If samples are to be cultured and/or are visibly damp, it is advisable to ship overnight in a cooler on blue ice.

Dust Sampling

Dust sample can be analyzed by direct microcopy, by culture-based methods or by QPCR. Dust is the recommended sample type for ERMI QPCR analysis. Dust can also be analyzed by direct microscopy for fungi, and for non-fungal particle identification. Allergen, mycotoxin and endotoxin analyses are also performed with dust samples.

Advantages of dust samples:

- Dust samples are compatible with direct microscopy, QPCR and culturable methods. Dust samples are suitable for ERMI analysis.
- Allergen, mycotoxin and endotoxin analyses are performed on dust samples.
- Dust sampling allows a larger area to be sampled than with other surface sampling methods.
- Non-fungal particles, such as fibers, pollen, etc. may be identified from dust samples.
- Dust samples are relatively stable and do not require rush shipping.

Drawbacks of dust samples:

- With direct microscopy, dust may not preserve the observable fungal structures required for differentiation of similar genera like *Penicillium* and *Aspergillus*.
- Dust sampling is not advisable for collecting bacteria.
- Filter type used in collection cassettes is important for QPCR analysis: only use polycarbonate filters or a Dustream™ (Indoor Biotechnologies Inc.) dust collector when requesting QPCR/ERMI analysis.

Material

- 3-piece 25mm or 37mm filter cassettes containing 0.4 - 0.8 µm filters supported on cellulose pads.
    - Mixed cellulose ester (MCE), polycarbonate (PC), or polyvinyl chloride (PVC) filters may be used for most analyses, but note PC filters are advised for QPCR analyses.
- Vacuum pump.
- Short piece of ½" flexible tubing.
- Alternate method: Dustream™ collection device may be used where vacuum pumps are not available; these are used with standard household vacuum cleaners and are available from Indoor Biotechnologies Inc. Please follow instructions provided from Indoor Biotechnologies for use of this device.

Procedures for dust sampling

Note: these instructions refer to collection of dust using a 3-piece filter cassette and a vacuum pump. With 3-piece filter cassettes, the blue plug is in the air inlet hole, and the red plug is in the air outlet hole. Remove both plugs of the cassette. Attach a small piece of tube to the inlet to collect dust. For better collection, cut a 45 degree angle at the end of the tube.

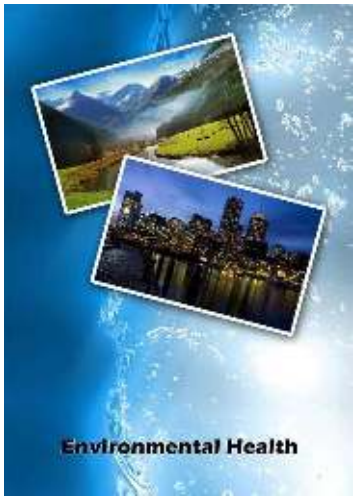
1. Connect the outlet of the cassette to a vacuum pump. Airflow rate can be 10 - 20 lpm for 25 mm cassettes, or 20-25 lpm for the 37 mm cassettes, calibrated using a direct-reading 60 mm rotameter with a range of 0-30 lpm. The investigator can determine how much dust to collect or how large an area to be sampled.
2. It is advisable to outline the area to be sampled with tape or other method. Turn on the pump, and brush the tube attached to the sampler inlet across the entire surface area in a horizontal and then vertical pattern.
3. Samples can be collected as variable-area or variable-weight. According to the investigator's preference, the results can be reported as colony forming units per gram of dust (cfu/g), or on an area basis as cfu/cm^2 or cfu/100 cm^2 if reported.
4. Ship dust samples directly to AEMTEK. No refrigeration is needed.

AEMTEK SERVICE TEAM

COMPANY INFORMATION	
Address	AEMTEK, Inc. 46309 Warm Springs Blvd., Fremont, CA 94539
Main Phone / Fax	Phone: 510-979-1979 / Fax: 510-668-1980
Sample Receiving Hours	Monday – Friday: 9:00 AM – 6:00 PM Saturday: 11:00 AM – 6:00 PM
Main E-mail	labreports@aemtek.com
Website	www.aemtek.com
Primary Technical Service Contact:	**Florence Wu, Ph.D., *President*** Office: 510-979-1979 / Mobile: 408-206-6899 E-mail: Lab@aemtek.com
SERVICE TEAM	
Sample Receiving / Pick-up	**Sharon Spencer, Customer Service Manager** Phone: 510-979-1979 / E-mail: labreports@aemtek.com
Sampling Supplies	Order online through the AEMTEK Store: store.aemtek.com Order by phone: 510-979-1979
Accounts Payable/Receivable	**Linda Cui, Accounting Manager** Phone: 510-979-1979 / E-mail: accounting@aemtek.com

Guidelines for Sample Submission and Transport

To ensure sample integrity and analytical quality, clients are advised to follow these guidelines when submitting samples.



- All samples must be accompanied by a Chain of Custody form. Use your own sample submission form or download a COC from www.aemtek.com
- All samples must be clearly labeled and identifiable with the information provided on the Chain of Custody form. Please specify sample volume/area, analysis requested, turnaround time desired, and reporting preferences.
- Samples should be individually sealed and properly separated to avoid cross-contamination.
- Samples should be adequately packed to avoid leakage of liquid, breakage of slides, or other physical damage to the contents.
- Samples for direct microscopic examination (e.g., Air-O-Cell, tape, bulk, etc.) can be shipped at ambient temperature.
- Samples for culture-based analysis (e.g., viable fungi, bacteria, water, and sewage screen samples) should be transported to the laboratory as soon as possible after collection, or kept at 4°C for no more than 24 hours during shipping. These samples should be packed with blue ice packs and/or in coolers to avoid high temperature during shipping. (Do not use wet ice or dry ice.)
- If the culture samples are to be shipped out on Friday, make sure to mark **conspicuously** for Saturday Delivery and notify the lab for Saturday receiving.
- AEMTEK reserves the right to reject samples if we feel that the quality of our analytical data might be compromised due to the condition of the samples upon receiving.
- Some sampling supplies such as swabs and media are provided free of charge if returned to the lab for analysis. Please contact the lab in advance for sampling needs.
- Local clients may prefer to drop off samples at the lab, or use express carrier to ship the samples. Clients are encouraged to contact AEMTEK analysts to discuss any special sampling and sample submission procedures.
- Sample drop off or shipping address: AEMTEK, Inc., 46309 Warm Springs Blvd., Fremont, CA 94539. Phone: 510-979-1979; Fax: 510-668-1980. Email: lab@aemtek.com.

Please feel free to call the lab at 510-979-1979 with any questions. We look forward to being a part of the success of your projects!