



HP ENVIRONMENTAL
INCORPORATED

104 Elden Street, Herndon, Virginia 20170
P: (703) 471-4200 F: (703) 471-0020

WALL CAVITY SAMPLING

APPLICATION

Wall cavities have been recognized for some time as significant amplification sites for toxigenic and/or allergenic fungi. Growth of these fungi in wall cavities can occur as a result of a number of circumstances ranging from construction and design to defects and accidental water incursions.

The WallChek™ system is an investigative tool used to determine possible fungal growth within the walls. It is a non-destructive sampling technique that assesses fungal contamination without encouraging further contamination within a dwelling or risk exposure to the sampling technician. The WallChek™ is used in conjunction with Air-O-Cell(Zefon)/Laro/Cyclex cassettes and yields total fungal spores, pollen, dust particles, fruiting structures, hyphal fragments and fibers test results.

EQUIPMENT REQUIRED

WallChek™ HPE Kit

1. WallChek Adapter
2. 1/4" Scratch Awl or Hand Drill with 1/4" Bit
3. Cap Removal Rod
4. Air-O-Cell Cassette with Adapter
5. Black End cap
6. Stanley Stud Finder
7. In-Line Filter
8. 1/4" Flexible Tubing

Additional Equipment

1. Stanley Stud Finder
2. Gast 110V Vacuum Pump with Dwyer Flow Meter
3. Extra 10 ft. of 1/4" Flexible Tubing depending on number of sampling sites
4. Isopropyl Alcohol

SAMPLING METHODS

WallCheck™ Sampling Method

1. Choose wall cavity that is to be checked. Punch a 1/4-inch hole 4 to 6 inches from the floor with the scratch awl. This can be done in a nonconspicuous location such as just behind the top edge of a baseboard. Take special care not to pound on the awl while penetrating the wall as this could aerosolize dust from within the wallboard.
2. If the wall cannot be penetrated with the scratch awl (i.e. wood paneling), a low-speed cordless drill can be used.

Warning: High-speed drilling may induce aerosolization of gypsum dust.

3. With the O-ring in place (approximately 1.5 inches from the end) place a disposable cap over the end of the vinyl tubing.
4. Gently insert the cap and tubing through the penetration until the O-ring makes contact with the wall.
5. While holding the tubing in place by keeping the O-ring snug against the wall, use the Cap Removal Rod to remove the end cap inside the wall by completely inserting the rod into the tubing.
6. When the rod is removed, the end cap should fall to the base of the interior of the wall cavity.
7. Maintain a firm grip on the O-ring and tubing so the dust inside the penetration is not disturbed, and attach an Air-O-Cell™ cassette to the WallCheck.
8. From the Air-O-Cell™ cassette, attach tubing to the electric pump, which has been pre-calibrated to 15 liters per minute.
9. Gently tap on wall two times approximately 4 feet above the sampling penetration.
10. Turn on the pump and draw air at 15 liters per minute for 2 minutes.
11. Disconnect WallCheck™ and Air-O-Cell™ cassette. Replace the seal to the inlet on the Air-O-Cell™ cassette.
12. Label Air-O-Cell™ cassette and place in a Zip lock bag.
13. Rinse WallCheck™ and tubing with water followed by isopropyl alcohol and thoroughly dry. The drying process may be accelerated by attaching to the pump. Failure to completely dry the unit may adversely affect the next sample
14. Warning: Do not expose the WallCheck™ to excessive heat (i.e. dishwasher, autoclave, etc.)

WallCheck™ II Sampling Method

1. Choose wall cavity that is to be checked. Slowly drill a 1/4-inch hole 3 to 6 inches from the floor with the hand drill. This can be done in a nonconspicuous location such as just behind the top edge of a baseboard. Take special care not to drill too rapidly, as this could aerosolize dust from within the wallboard.

2. If the wall cannot be penetrated with the hand drill (i.e. wood paneling), a low-speed cordless drill triggered to drill as slowly as possible can be used. **Warning:** High-speed drilling may induce aerosolization of gypsum dust.
3. Gently insert the tubing through the penetration until the end has reached the wall cavity.
4. Attach an Air-O-Cell™ cassette to the WallCheck™. This will be used to "vacuum" the dust out of the tube and immediate sampling area. **Note:** This is not the sample to be submitted for analysis, it is only to collect excess dust, and may be re-used.
5. Gently tap on wall two times approximately 4 feet above and 4 feet to each side of the sampling penetration.
6. Place the in-line filter on the inlet side of the pump, between the inlet port and the Air-O-cell™ cassette.
7. Attach the tubing from the pump to the "vacuum" cassette assembly, and turn on the pump for 10 seconds.
8. Remove the "vacuum" cassette and keep for re-use.
9. Attach a new Air-O-Cell™ cassette to the WallCheck™ without disturbing the tubing into the wall.
10. From the Air-O-Cell™ cassette, attach tubing to the electric vacuum pump, which has been pre-calibrated to 15 liters per minute.
11. Turn on the pump and draw air at 15 liters per minute for 2 minutes.
12. Disconnect WallCheck™ and Air-O-Cell™ cassette. Before replacing the seal to the inlet on the Air-O-Cell™ cassette hold the cassette up to a bright light and see if you can see through it, a microscopist cannot analyze the impaction; hence, you must take another sample.
13. Label Air-O-Cell™ cassette and place in a Zip lock bag.
14. Rinse WallCheck™ and tubing with water (or IPA) and sling dry it. The drying process may be accelerated by attaching to the pump. Failure to adequately dry the unit may adversely affect the next sample.
15. If the tubing becomes unsightly or too dirty to rinse, replace with new tubing.
16. **Warning:** Do not expose the WallCheck™ to excessive heat (i.e. dishwasher, autoclave, etc.). Due to in-line flow restrictions, the WallCheck™ system should not be used with the Zefon Air-O-Cell™ Mini Pump.

QUALITY CONTROL

Multiple samples should be collected for comparison studies to include at a minimum: a sample from the source of possible contamination and an additional source that lacks contamination. Never use Air-O-Cell™ cassettes that have been damaged or appear to have broken slides within the cassette.

HPE's Analytical Test Codes & Descriptions for WallCheck™ samples

- T-1212 Fungal total spore trap analysis-quantitative with ID, pollen, fruiting bodies and mycelial fragment count.

References

1. Aerotech Laboratories, Inc., 1998, WallCheck™ Operating Manual Wall Cavity Sampling Device.
2. Zefon International, 1999-2001, Air-O-Cell™ Bioaerosol Sampling Cassettes, www.zefon.com.