



### ***S1.3.1 - Residential Air Filtration - Laboratory Results vs. Real-Life Effectiveness***

Thad Ptak<sup>1</sup>

<sup>1</sup>Thad Ptak Consulting

Indoor air pollutants are among one of the environmental health risks. The exposure of residential occupants to indoor air pollutants such as particulate matter (PM), acrolein, formaldehyde, and ozone is associated with the most significant impacts on chronic health. There is scientific evidence that air filtration may be an effective strategy in reducing exposure to air pollutants and reducing health issues. The indoor concentration of air pollutants can be reduced using a properly designed and maintained HVAC system, as well as the use of portable air cleaners. In order to select air cleaning devices with appropriate performance, they must be tested in accordance to the accepted test methods. However; questions remain on whether current test methods are capable of adequately addressing the complexity of the indoor contaminants, their sources and their impact on the performance of air-cleaning devices. In this presentation, the results of an in-situ experimental evaluation of the effectiveness of air-cleaning devices are compared to the laboratory test results. Factors affecting the effectiveness of the residential HVAC filters and portable air cleaners in real-life applications are identified and discussed. Simulation of the concentration decay for selected air pollutants supports the experimental results.

## **Thad Ptak**

Dr. Thad Ptak has over 30 years of experience in filtration technologies, aerosol science, and indoor air quality. He has conducted extensive research in the areas of development of filter media and filters, portable air cleaners, indoor air quality, sensors for IAQ, and instrumentation for particle generation and measurement.

### **Keywords:**

Residential air filtration

Portable air cleaners

Air Pollutants