# “Portable Emission Measurement System”

VCU #15-026

## Applications

- Air pollution and emission testing
- On-site testing
- Research tool

## Advantages

- Immediate testing on-site
- Portable casing for pollution testing
- Increases accuracy of hazard assessment
- Reduces overall time for measurement procedure


## Inventors

Nastassja Lewinski, Ph.D.
Lynn Secondo

## Contact

Afsar Q. Mir, MS
Technology Manager
miraq@vcu.edu
Direct 804-827-2213


## Technology Summary

The Lewinski Laboratory has developed a portable *in vitro* exposure cassette (PIVEC) that allows for immediate air quality testing using lung cells. By adapting conventional filter cassettes to support live cells grown on membrane inserts, this hand-held device enables scientists, researchers, and trained field operators to bring cell cultures to on-site locations. Exposed samples can be acquired on-site as opposed to the confinements of a laboratory and better spatial resolution can be captured by running several PIVECs simultaneously in different locations. The PIVEC system can directly expose cultured cells to air contaminants such as soot, microorganisms, and engineered nanomaterials. This device improves test accuracy while reducing the overall time of the procedure by eliminating sample processing steps. During sample processing, aerosols are either collected on standard filters and transferred to liquid media or captured in liquid media using devices such as impingers. The media containing extracted particles is then added to well plates supporting live cells. Because the physico-chemical properties of aerosols can be altered during sample processing, tests conducted using the PIVEC where air contaminants are deposited directly onto cells can better capture the potential biological effects. This device is easy-to-use and enables scientists to quickly determine the effects of aerosol emissions on lung cells.

## Technology Status

Patent Pending: U.S. and Foreign rights available
This technology is available for licensing to industry for further development and commercialization.