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National Homeland Security Research Center
Cincinnati, OH 45268

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EPA United States Environmental Protection Agency

OFFICE OF RESEARCH AND DEVELOPMENT

National Homeland Security Research Center

Aerosol Test Facility at Research Triangle Park

ADVANCING OUR NATION'S SECURITY THROUGH SCIENCE

Aerosol Test Facility at Research Triangle Park

EPA's Aerosol Test Facility (ATF) is located in Research Triangle Park, North Carolina. It is available to outside agencies and businesses for research into the behavior of aerosols under controlled conditions. Researchers, engineers, and product designers can obtain highly accurate data that will form a scientifically sound basis for their decisions.

The EPA Aerosol Test Facility includes one of the largest aerosol wind tunnels in the world. It has a cross-section of 4 x 4 meters and can be used with full-sized adult manikins.

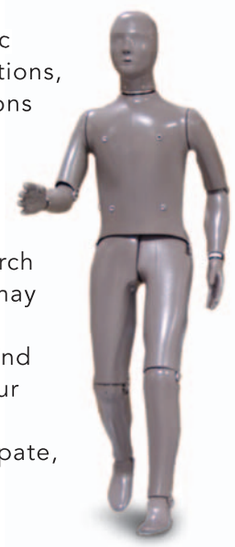
The ATF offers agencies or businesses all the advantages of a large test facility — without the upfront investment in equipment and continuing upgrades.

For additional information on this facility, or on NHSRC products or tools, visit us at www.epa.gov/nhsrc.

Small aerosol chamber (below), a researcher with aerosol measurement equipment (above), and an adult-sized heated, breathing manikin (right) for human exposure testing

Using Our Facilities

EPA's campus in Research Triangle Park is home to one of the world's largest groups of scientists, engineers, policy makers, and administrators dedicated to understanding and solving environmental problems. Specialty laboratories and other unique research resources can be used by scientists and engineers in other federal and state agencies, academic institutions, organizations, and companies. Provisions are in place to ensure that EPA research will not be affected by any agreements with other users. EPA's research and development ATF may be used for a variety of research purposes. To find out more about how your agency, business, or organization can participate, please contact:



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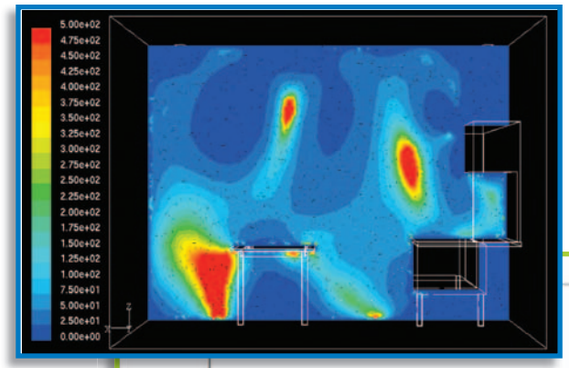
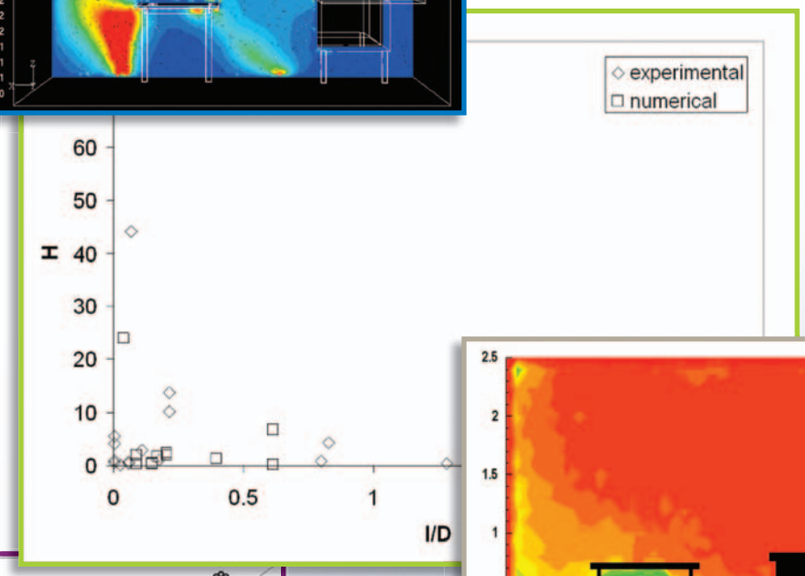
Research Areas for Possible Exploration at the ATF

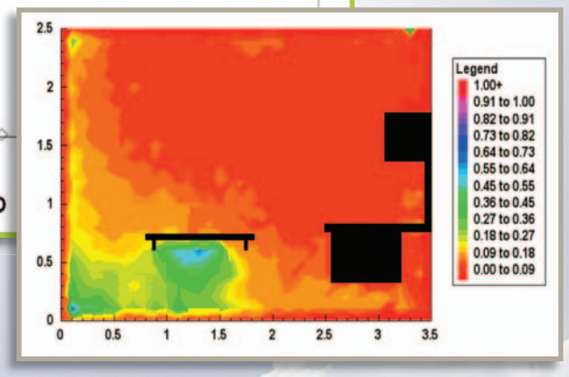
- Aerosol and gas transport, dispersion, and dynamics
- Aerosol residence time and decay
- Wake/eddy/stream/turbulence
- Ventilation characterization
- Particle collector research and design
- Isokinetic sampling comparisons
- Flow-rate behaviors
- Aerodynamic interactions
- Human exposure
- Concept/prototype verification
- Technology verification

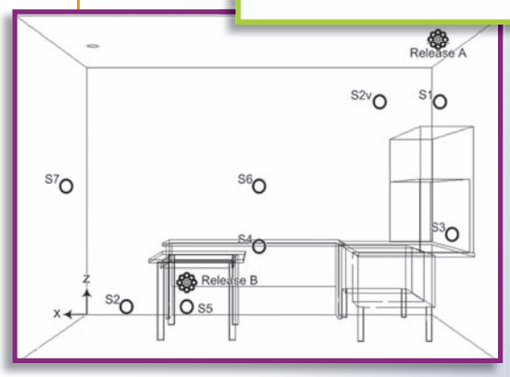
Effective Research Tools



The ATF's experimental and computational fluid and particle dynamics tools enable researchers to determine and compare aerosol residence time, velocity, and turbulence characteristics at various points within the test room.







ATF Essentials

- Aerosol generation and sampling
- Wind tunnels with separate human exposure (low velocity) and atmospheric exposure test sections
- Particle Digital Image Velocimetry (PDIV) and three-dimensional Laser Doppler Velocimetry (LDV) measurement
- Experimental and numerical tools for fluid and particle dynamics

The ATF has a heat exchanger and humidification/dehumidification system to ensure constant temperature and humidity. Large filters are strategically located in the test section, at the safety screen, and just before the heat exchanger. Doors are equipped with Magnalock switches for safe and easy release.