

Air Quality and Exposure



RTI performs high-quality R&D in partnership with leaders in air quality, including

- Corporations
- Academia
- Foundations
- Consortia
- State and local agencies
- Federal agencies

What We Do

RTI International conducts innovative research in aerosol technologies and health effects. Our research supports studies from the personal exposure level to global monitoring and modeling of air quality. Our clients rely on our non-partisan, objective approach to discovery and analysis, and we have applied our expertise for federal agencies, corporations, and foundations to improve the quality of the air we breathe.



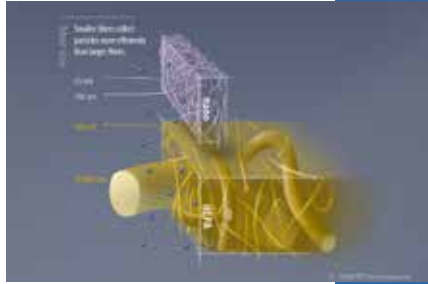
Our researchers address challenges related to air quality, such as environmental justice, maternal and child health, airborne pathogens, and protective garment assessment for first responders and the military. Whether we are field testing new air quality sensors, working with citizen scientists to evaluate satellite data, or developing new air filtration media, RTI performs applied R&D to deliver high-quality results and add value for our clients.

Air Quality and Exposure Research



Micro-/Bioaerosols

- Advanced approaches to assessing aerosol transmission
- Bioaerosol sampling technologies
- Assessment of bioaerosol sensors and air cleaners



Filter Material R&D

- Innovative filter materials development
- Custom filter product research
- Filter performance testing



Sensor Technology

- Novel devices for personal and stationary measurements
- Sensor deployment strategies
- Sensor technology assessment



Exposure Assessment

- Personal exposure measurements and modeling
- Multimedia, multi-pollutant measurements
- Novel analytical methods
- Integrated aerosol collection and chemical analysis



Protective Garments

- Aerosol penetration assessment
- Custom methods development
- Fabric to full-system testing



Measurements and Modeling

- Advanced real-time aerosol composition measurements
- Regional air quality modeling
- Satellite data assessment and application
- Quality assurance
- Capacity building

Enhanced Children's MicroPEM (ECM)

The ECM can aerodynamically separate and detect very fine airborne particulate matter (PM) at two sizes: PM₁₀ and PM_{2.5}. It also measures temperature, humidity, and movement and can function for 48 hours before needing a recharge. Data are stored on a MicroSD card, eliminating the need to clear sample data between deployments. In 2017, RTI produced 400 ECMs for the Bill & Melinda Gates Foundation. Many will be deployed in a widely anticipated 5-year clinical trial that seeks to define the relationship between PM exposure among women and children in developing countries and adverse health outcomes.



Zika Transmission

Zika is transmitted when an *Aedes* mosquito bites an infected person and then transfers the virus via its salivary glands to others. However, recent research has shown the presence of Zika in semen persisting longer than in blood, raising questions about other means of transmission. RTI is conducting research to determine whether Zika can survive in respiratory, oral, and salivary environments; whether oral and respiratory tract cells allow for propagation; and how long the virus can persist in saliva. Our early findings suggest that Zika can be transmitted through infectious saliva to the oral and respiratory tracts.



Protective Garment Testing

RTI's Protective Garment Program is the gold standard in aerosol testing and evaluation of protective garments. We offer unmatched capabilities and expertise in aerosol penetration of protective clothing. From swatch to systems, we provide tailored solutions at every stage of development. Our capabilities include expertise in aerosol generation, measurement, and analysis that are complemented by a dedicated aerosol test facility. We support government and industry by providing technical services to improve protective garment performance.



Air Quality Citizen Science

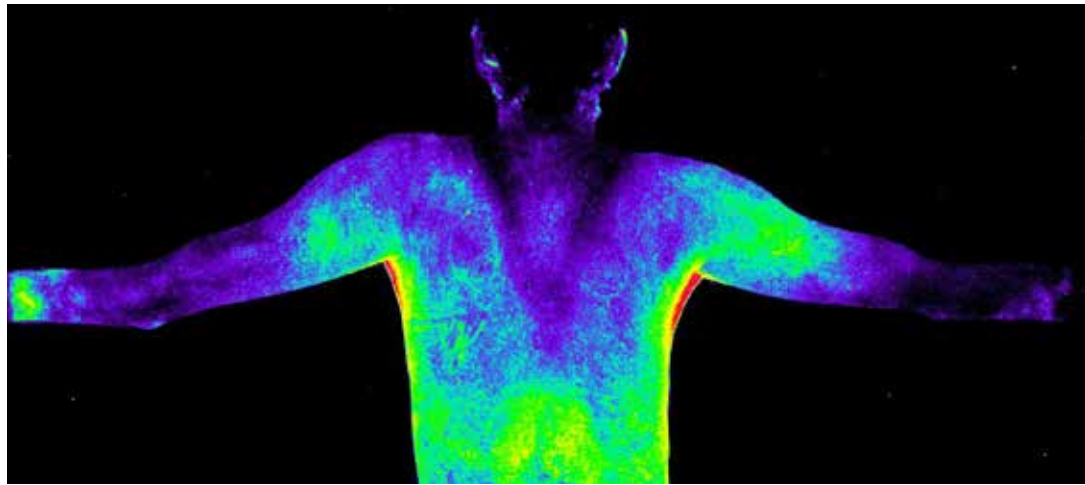
As part of a NASA-funded grant, RTI is leading a study examining the use of low-cost sensors by citizen scientists to improve the value of satellite data for surface aerosol estimates. Aerosol optical depth estimates derived from satellite measurements, while often correlated with surface PM_{2.5}, are not a column measure of the aerosol loading. Our objective is to determine the value of using spatially and temporally resolved air quality data from sensors to complement and improve satellite-derived estimates of surface PM_{2.5} concentration. A prototype deployment of low-cost sensors has been completed in Southern California, generating valuable data. Learn more at aqcitizenscience.rti.org.



Nanofiber Technology Development

RTI has a long history of harnessing the potential of nanofiber technologies for a vast array of applications, including air filtration and lighting. We have worked with federal and commercial partners to develop nanofiber-enabled technologies as well as functionalized nanofiber technologies. We understand how to maximize fiber performance for the application in need (e.g., chemical/biological defense) and have produced materials in a wide range of basis weights.





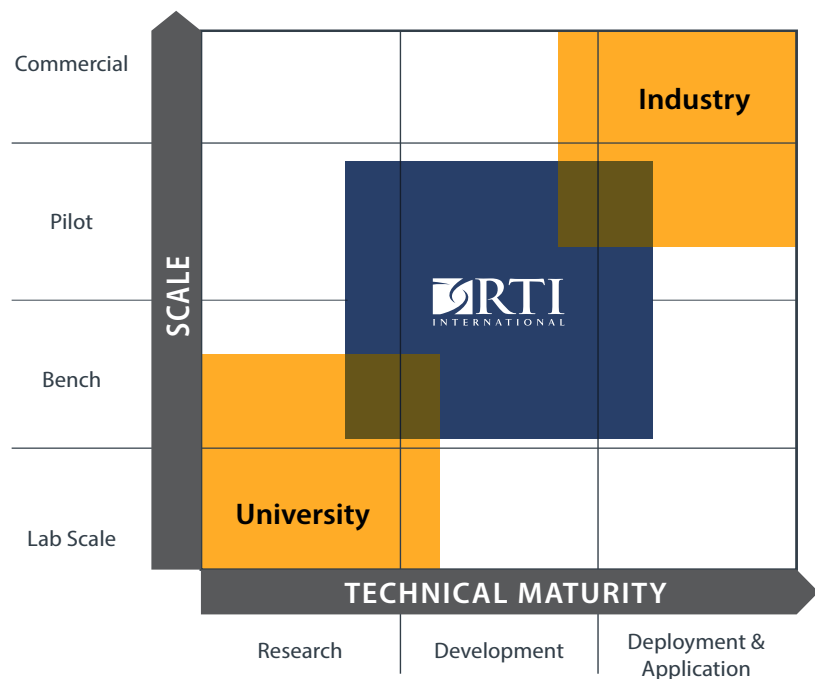
Intellectual Property

RTI takes a pragmatic approach to managing intellectual property (IP) along this pathway to commercialization. We realize that all clients are unique and so are their IP requirements. We have the ability to

- License our patented technologies
- Enter joint development and licensing arrangements with particular clients
- Divest technologies as opportunities present themselves.

RTI does not subscribe to the “one size fits all” approach to dealing with our clients on IP matters.

How We Do Business



Partnering with RTI

RTI’s mission is to improve the human condition by turning knowledge into practice. We work at the intersection of basic science, research and development, and real-world applications. Our scientists and engineers are RTI’s most valuable assets, helping to realize our mission by applying integrated, systems-based solutions to the world’s most critical problems. We have a track record of moving technologies from concept to commercialization, and we rely on creativity and innovation to meet our client’s needs. We invite you to partner with us in solving global challenges involving air quality and human health effects.

More Information

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RTI International is an independent, nonprofit research institute dedicated to improving the human condition. Clients rely on us to answer questions that demand an objective and multidisciplinary approach—one that integrates expertise across the social and laboratory sciences, engineering, and international development. We believe in the promise of science, and we are inspired every day to deliver on that promise for the good of people, communities, and businesses around the world. For more information, visit www.rti.org.

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