

# ON-SITE MEASUREMENT: AMBIENT AIR QUALITY MONITORING



Executing expertly designed and highly accurate monitoring programs for effective compliance and detailed modeling



We help you understand how complex air quality regulations apply to your operations. With your unique needs in view, we choose a monitoring strategy that is suitable, accurate and efficient. As a trusted partner, we bring the same meticulous care to programs at any scale, whether a one-off measurement program or long-term, multi-site monitoring for large industry. In addition to compliance reporting, our monitoring programs support work in emissions modeling, toxicology and environmental impact assessments.

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## Our Service

### Field Sampling, Stations and Networks

We design, build, install, operate and maintain all types of ambient air quality monitoring programs. We provide both the instrumentation and the staff needed to get the job done.

Over the past 30 years, we've conducted hundreds of sampling programs throughout North America and across all categories: stationary and mobile exhausts, dust, odor, and accidental spills and releases. As an independent, reputable source, we have also consulted on monitoring programs worldwide.

We find solutions where others don't, because we understand all aspects of emissions: regulatory frameworks, methodologies, meteorological influences and operational needs. Examples of our solutions include real-time monitoring with automated warning or response systems; long-term, continuous monitoring at large or challenging sites; and customized methods for unique conditions or pollutants.

We take pride in our reputation for delivering impeccable data. Key to that success is our commitment to superior quality control practices. We care deeply about getting it right. Most of the equipment deployed by our field teams is our own, so we know it has been correctly maintained. This equipment pool includes several automated data retrieval systems we've built to maximize the accuracy of data acquisition.

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## Meteorology

Drawing on our firm's unique meteorological expertise and data resources, we can complement air quality monitoring with meteorological insights. A monitoring program can be designed to include continuous measurement of such conditions as wind speed, wind direction, relative humidity, ambient temperature and solar radiation. Our in-house meteorologists use such measurements to interpret air quality measurements more fully, for example to understand the unique surrounding influences on individual sources.

## RWDI is a valuable partner to clients seeking to...

### Explore Innovations

- Address unique monitoring situations (logistics, pollutants of concern) through expert strategies that win regulators' approval
- Capture the right data at the right time through smart implementation strategies:
  - Real-time, web-accessible reporting
  - Automated sampling linked to meteorological conditions
  - On-demand sampling activated by neighbors or employees

### Create Opportunities

- Size pollution-control equipment correctly for actual conditions
- Test the impact of new operating regimes (e.g., new fuels, products)

- Reduce labor costs with real-time reporting
- Show that increased production continues to meet limits (depending on jurisdiction)

### Meet Challenges

- Lower reported emissions (or open more operating options) by using methods that avoid accumulation of systematic errors
- Document compliance after operational changes

### Fulfill Expectations

- Meet reporting obligations with highly defensible monitoring plans
- Execute models and long-term plans based on data that has been collected in the most thorough and accurate way by conscientious, experienced professionals

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## How we work

We'll review your site conditions with you in detail and design a monitoring program that will provide results at the appropriate level of accuracy. We bench test all equipment before sending it to your site, provide testing checklists and a quality control plan in advance, and collect data with appropriate quality assurance and quality control. Our reports are clear and easy to understand: They've been refined through years of feedback and continuous improvement. As needed, we include expert recommendations and interpretations, drawing on expertise from throughout our company, to help you make the best use of monitoring data for your planning and operations.

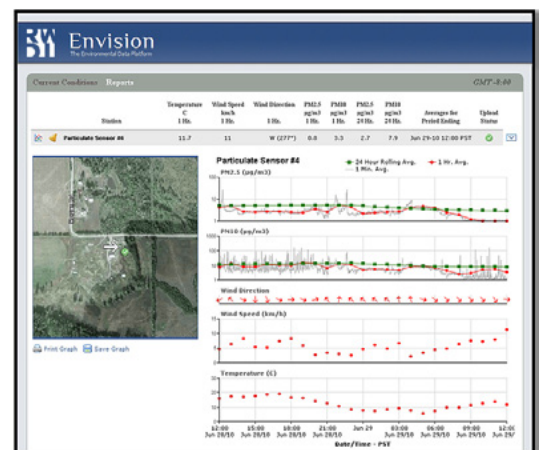
The methodology mandated in regulations sometimes allows a range of implementations, some better than others. If the implementation is not appropriate to your specific conditions, the data may not be adequate to fully demonstrate compliance. An example is a method that uses laboratory detection limits when no pollutant is detected; measuring in this way may return artificially high emissions values. Because we fully understand the science behind both the regulations and the instrumentation, we make the right choices within the scope allowed by law.

### Innovative solutions

Because of our in-depth understanding of testing methodologies and our broad technical resources, we excel at designing advanced solutions for large or challenging projects.

### Real-time monitoring.

For particulate monitoring at a large construction site, we saved the client significant labor and operation costs by installing a real-time monitoring network. Cellular modems post data to the Web, where it can be read by both staff and regulators. When a monitor reaches a specified value, it triggers a camera and an automated email to the site supervisors. The photo and monitored values are sent in the email and posted on a website. The client can immediately determine what caused an alert (e.g., a passing truck vs. wind-blown dust) and adjust operations appropriately. This network also reduces the need to staff each monitoring station continuously.



### Integrated meteorological data.

For hospitals that must test diesel generators monthly, we have installed wind-direction sensors along with warning signals. If wind conditions on the test day will disperse the diesel exhaust in a way that could generate complaints, the device alerts the user. The staff can choose to delay testing and thereby minimize complaints about nuisance odors.

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## Approved alternative methods.

A client was faced with spending \$350,000 to rebuild a damaged sampling site. We were able to use our understanding of the methodology to propose an alternate location. We satisfied the regulators that the new location would provide acceptable data—and the move cost the client next to nothing while also creating a safer, more accessible work environment.



## Applications of monitoring programs

- Measure a wide range of contaminants
- Assess compliance
- Validate or calibrate predictive models
- Compare actual to modeled conditions
- Provide results and estimates that are more tangible and less conservative than those indicated by modeling
- Provide estimates where modeling is not an option
- Establish existing or background levels of contaminants
- Establish emission rates for use as inputs to dispersion modeling
- Provide toxicologists with data for predicting environmental exposure
- Provide technical support for environmental impact assessments

## Typical Contaminants

- Criteria Air Contaminants (CACs)
- Sulphur Compounds (SO<sub>2</sub>, H<sub>2</sub>S, TRS)
- Volatile Organic Compounds (VOCs)
- Particulate Matter (Dust, TSP, PM<sub>10</sub>, PM<sub>2.5</sub>)
- Numerous others

## Services

### Measurement

- Design, build, operate and maintain monitoring stations/trailers/networks
- Design and build meteorological stations with remote reporting
- Design and execute monitoring protocols (real time, continuous, long term, short term, meteorology)

### Expertise

- Consult on and interpret regulations
- Negotiate with regulatory agencies
- Supervise monitoring programs
- Develop baseline conditions, potential impact scenarios, and emergency response zones
- Compare measurement to criteria
- Assess cumulative effects
- Recommend mitigation alternatives
- Quantify consequences from accidental releases
- Provide expert testimony

## Sectors

- Aggregates
- Airports
- Chemical and petrochemical
- Forestry, pulp and paper
- Government
- Manufacturing
- Mining and metals
- Oil and gas
- Pharmaceutical and biotechnology
- Power generation
- Transportation and infrastructure
- Vehicle manufacturing
- Waste management