LOCAL AIR QUALITY

Supporting decision making with expertly gathered
source/monitoring data, comprehensive modeling
and user-friendly client-site software

Meeting local air quality goals can be challenging as solutions become more elusive: New information on air quality and health is emerging; regulations are being tightened; emission sources and sensitive land uses encroach on each other more often.

Our Service

We help you find a path to achieve your air quality goals, whether those goals concern corporate social responsibility, emergency response, land use compatibility, regulation or other issues. We provide regulatory expertise and technical measurement resources so you can stay focused on your core responsibilities.

Our focus is always on our clients' questions and practical needs. We're sensitive to timelines and experienced in meeting our clients' time constraints. And our working experience with regulators can be a particular help if you are looking for strategic advice for your specific objectives.

We offer source testing, air monitoring and computer simulation. We can provide any of these services independently; however, for the most complete assessment, we combine information from all three sources.

These studies have two purposes: (1) to evaluate the air pollutant levels near emission source(s) and (2) to determine whether those levels fall within an acceptable range based on air quality standards and criteria. We design the services to suit our client's need, whether that is a regulatory approval, a litigation or land use dispute, to meet conditions of an approval or to actively manage air emissions.

Redefining possible.

In these analyses, we brainstorm and work collaboratively with our clients, regulators and other stakeholders throughout the process. The first goal is to understand fully the issues and competing priorities. Then, with data in hand, we work to find the best win-win solutions.

Within RWDI our expertise spans many sectors, including mining and smelting, oil and gas, iron and steel, the aggregate industry, auto manufacturing, pulp and paper, cement manufacturing, laboratories and physical plants and transportation infrastructure (highways, railways, airports, shipping and more). By drawing on this exceptionally broad expertise, we can arrive at excellent air quality solutions quickly.

For active management of air emissions, our service is driven primarily by Plume-RT, a custom interface for use at client sites. This interface uniquely incorporates regulatory-approved air dispersion models, site-specific meteorology, weather forecasts and environmental monitoring. It provides real-time predictions and short-term forecasts of air contaminant levels. Users can customize reports to their needs and test different scenarios. The source weather data is proactively managed by our meteorology experts, and we're always available to consult on applications or interpretations.

Our clients use Plume-RT to manage such events as accidental releases from large industrial plants, odours from waste management facilities, and predicting smoke and visibility impacts from controlled burns of crop stubble and brush.

RWDI is a valuable partner to clients seeking to…

Explore Innovations

- Find creative win-win solutions to regulatory challenges, in the face of competing priorities

Create Opportunities

- Maintain good relations within neighborhoods and communities and with regulators

- Get accurate information on air quality and clear up misinformation

- Improve buy-in from non-specialist clients, managers and stakeholders by presenting clear, easy-to-understand documents

Meet Challenges

- Resolve disputes over air quality issues

Fulfill Expectations

- Comply with regulations efficiently and proactively

- Document commitment to corporate social responsibility

How we work

Air Quality Consulting Services

Our air quality consulting services are supported by three main technical techniques:
- Source testing
- FTIR analysis
- Air monitoring
- Computer simulation

But although tools are important, communication is crucial. We're technical experts, but we emphasize clear communication with clients, regulators and other stakeholders.

Source Testing

Source testing involves inserting probes into emission sources, such as exhaust stacks, to collect samples of the exhaust gases and analyze them to determine air pollutant emission rates. The precise method used depends on the type of air pollutant and type of emission source being tested.

The methods are often elaborate. Many are based on procedures established by the U.S. Environmental Protection Agency (US EPA), Environment Canada and others. High levels of skill and experience are required to apply these elaborate methods in the often-harsh industrial environments in which the source testers are working.

Air Monitoring

Air monitoring involves the use of electronic instruments to measure concentrations in the outside air, at the fence line of an industry or at the location of a sensitive land use located near an emission source (or sources). As with source testing, the instrumentation and methods vary depending on the type of air pollutant being monitored and other factors. Again, they are based on procedures set out by the US EPA, Environment Canada and others.

Computer Simulations

Computer simulations begin with information from source testing, or theoretical estimates of source emission rates in situations where source testing is impractical. These are combined with long-term

Redefining possible.

meteorological data to predict air pollutant concentrations at various locations in the area around an emission source or sources. These predictions are made for a wide range of weather conditions.

The computer simulations are generally performed using software systems that have been developed by the US EPA and other government agencies. These simulations are known by the term air dispersion modeling. We use a range of modeling software, including AERMOD, CALPUFF, SCIPUFF, CAL3QHCR, EDMS and ADMS. Some of these models are general in their application (e.g., AERMOD and CALPUFF). Others are intended for specific applications, such as modeling of emissions from motor vehicles on roadways (e.g., CAL3QHCR) or emissions from aircraft and other operations at airports (EDMS).

Air Quality and Emergency Response Management

For clients who need to make decisions based on air quality scenarios, we offer a custom simulation package called Plume-RT. This software is based on regulatory approved models for pollutant dispersion. It incorporates site-specific weather forecasts based on a state-of-the-art weather forecast model (WRF-ARW). Customized scenarios can be modeled. Forecast results are generated for 15-minute increments over a period of 48 hours.

Oil and gas clients use Plume-RT to help Incident Command teams manage such events as sour gas and acid gas well blowouts,

pipeline blowdowns, sour gas flaring and accidental releases from large facilities, such as sour gas plants and oil sands mines. In events like these, emergency response teams often deal with hydrogen sulphide (H_2S) released into the atmosphere. With Plume-RT, operators can use emergency resources efficiently and be confident that they have ensured the safety of employees, emergency responders and the surrounding community.

Accidental Releases and Hazard Modeling

For clients in a range of industries and municipalities, we prepare hazard studies for certain listed substances as required by Environment and Climate Change Canada (ECCC) under the Environmental Emergencies (E2) Regulations. These studies, or E2 plans, help clients to address prevention, preparedness, response and recovery in relation to uncontrolled, unplanned and accidental releases. The studies may also include modeling of an accidental release; ECCC requires such modeling when the stored

or transported volume of a listed substance will exceed the stipulated threshold for that substance. In conducting hazard studies, RWDI works with clients to :
- evaluate a range of hazards
- identify a suitable accidental release scenario(s)
- calculate the emissions profile(s) for the release(s) and dispersion modelling using specialized tools (e.g., PHAST.)

We have several further hazard-related services of particular value to clients in the oil and gas sector.
- We use Alberta Energy Regulator's (AER) ERCBH2S regulatory modeling tool to assist clients who must comply with Directive 71. This directive requires evaluation of specific hazardous release scenarios for sour and acid gas wells and pipelines.
- We use the PHAST model to determine emergency planning zones (EPZs) for facilitiessuch as high vapor pressure (HVP) and condensate pipelines, sour water flowback lines, and CO_2 pipelines and injection wells.
- Because hazard and safety planning go hand-in-hand, we provide hazard data that can inform engineering design, for example, by evaluating explosive gas levels (through accidental and routine release scenarios based on lLower eExplosive lLimitss [LELs]).
- Finally, we support commissioning of crude oil pipelines by modeling nitrogen gas release during line fills to identify safe working zones and worker personal protective equipment (PPE) requirements.