

# Air Quality Engineering

Atlantic Design Engineers, LLC. is a full service environmental engineering and sciences company whose expertise in air quality engineering includes:

- Pollution Control Equipment Selection
- Construction Management
- Expert Testimony
- Permit Applications and Assistance
- OSHA/Health and Safety Planning
- Installation Engineering Design
- Indoor Air Monitoring
- Emissions Inventory and Calculations
- Air Toxic Release Inventory (ATRI) Reporting
- Ambient Air Quality and Dispersion Modeling
- Regulatory Agency Liaison Including Compliance and Enforcement Negotiations
- Feasibility Studies and Evaluation of Process Modifications

Our environmental services are enhanced by our environmental engineering software programs and our state-of-the-art, computer-assisted design and drafting system. Use of these tools allows us to readily complete the air emissions modeling/calculations and technical drawings integral to air pollution control projects. Our professional staff is dedicated to developing innovative solutions and to providing the highest quality of technical service to our clients throughout the country.

We would be pleased to discuss with you any current or future needs for environmental engineering services. Please call us at our Sandwich, Massachusetts office for a confidential discussion about your air pollution control needs. Our telephone number is (508) 888-9282. Please ask for Simon Thomas or Charles Gravel.

## **OVERVIEW OF AIR QUALITY SERVICES**

Atlantic's work in Air Quality Engineering ranges from diagnostic and compliance air emissions tests to preparation of comprehensive permit applications and systems designs. These services are enhanced by state-of-the-art environmental engineering software programs and a computer assisted design and drafting system. Use of these tools allows us to readily model air emission sources and impacts and provide engineering drawings for air pollution permit applications and construction activities.

### **Pollution Control Equipment**

Based upon the nature and magnitude of potential emissions and a review of the regulatory requirements, and a BACT Analysis, we can evaluate and recommend control technologies that best suit an individual application based upon effectiveness, capital, and operating costs as well as compliance requirements. Control technology reviews include assessment and reduction of fugitive sessions.

### **Air Quality Permit Applications**

An air quality permit application is normally required for the installation of air pollution control equipment. Permit applications vary by State but usually include the following:

- Compilation of applicable facility data.
- Calculation of potential facility emissions both for current operations and with the proposed control technology on-line.
- Preparation of a schematic process diagram identifying process equipment vents, hoods, darnpers, exhaust fans, air pollution control equipment, and all vents and other discharges to the atmosphere.
- Performance of a BACT Analysis that reviews available control technologies and proposes the best technical solution, allowing for environmental, energy and economic considerations.
- Preparation of supporting technical documentation including engineering drawings, manufacturers specifications and brochures. engineering calculations, and operating and maintenance procedures.

### **Title V Operating Permit Applications**

Title V of the Clean Air Act requires major sources of air emissions to obtain a comprehensive, facility-wide Operating Permit. Steps to prepare an Operating Permit application include the following:

- Inventory Emission Sources

- Calculate Actual/Potential Emissions
- Identify Applicable Air Requirements
- Evaluate Compliance based on Current Operations Develop Operating Flexibility Strategies
- Propose/Modify Recordkeeping and Reporting Documents
- Prepare Permit Application
- Prepare Draft Permit Conditions
- Compliance Certification

### **Diagnostic/Compliance Testing**

Diagnostic air quality testing is performed to determine the nature and magnitude of emissions from facility operations or production processes. The data from this type of testing is used to assist in emissions calculations and air pollution control technology selection, as well to serve as a basis for air quality permit applications.

Compliance testing of air emissions is performed in order to verify that the emissions from a particular facility or process are in compliance with the air quality permit issued by the regulatory agency. Requirements and procedures for a compliance test are developed in accordance with the specific requirements of the air quality permit and applicable EPA test methods specified in 40 CFR Part 60. Atlantic has completed test protocols and emissions source tests for facilities that are located in a number of states including California, Rhode Island, Massachusetts, North Carolina, Virginia, New York, and Pennsylvania.

### **Emissions Calculations**

Facility emissions are quantified by use of appropriate technical data and EPA Air Pollution Emission Factors. Emissions factors may be based upon raw material usage, operating hours, production capacity and efficiency of air pollution control equipment. Emissions calculations are critical in determining whether control equipment and air quality permits are required for a particular application.

### **Air Quality Modeling**

A key aspect of air quality engineering is the determination of anticipated impacts on ambient air quality from expected emissions. Computerized air pollution models are utilized to predict the air quality impacts of various production levels and control technologies being considered for a particular site.

Completion of these analyses in conjunction with permit applications ensures that control technologies and emissions parameters being proposed will be accepted by the permitting agencies.

Air Quality Models available include EPA SCREEN, ISCLT and UNAMAP ISCST. In addition, a number-of screening tools based on these models are available to allow us to quickly evaluate the impact from proposed or existing sources.

### **Toxics Release Inventory Reporting**

EPA through its Clean Air Act Amendments, as well as local regulatory agencies are instituting requirements to submit comprehensive inventories of toxic air emissions. Our services in this area include development of plant-wide emissions inventories, construction of comprehensive databases, audits of the databases, and finally reporting and permitting of sources identified in the inventorying process. The end result is a package designed to bring facilities into full compliance with regulatory requirements, and to provide tools for managing plant resources.

### **Regulatory Agency Liaison**

Atlantic Design Engineers, LLC will serve as permitting agencies, both for applications under review and for maintaining compliance with existing permit conditions. This assistance allows for a timely review process as well as for clear communications on technical aspects of the permit application.

Additionally, in situations where compliance or enforcement issues are raised, Atlantic Design Engineers, LLC. can assist in responding to regulatory agency concerns by providing technical assistance and regulatory support.

We have successfully assisted a number of clients under consent orders. This assistance has included negotiations for acceptable emissions levels, control requirements, reductions and/or offset of assessed penalties, and compliance with terms of the final consent order.

Finally, Atlantic Design Engineers has extensive experience in representing clients during the variance process. We have successfully assisted clients seeking short-term regulatory relief by providing technical assistance. These services can include air quality modeling, health risk assessment, compliance scheduling, and economic impact analyses. This information is typically crucial to the successful outcome of the variance process.

## **REPRESENTATIVE PROJECTS**

The following program areas are representative of Atlantic Design Engineers, LLC. air quality services.

**Medical Device Manufacturers and Contract Sterilization Facilities** – Comprehensive permit applications, feasibility studies, engineering design and diagnostic/source testing services have been completed for large commercial sterilization facilities across the country. These facilities sterilize medical devices using Ethylene (EtO) sterilant gas in various blends including 100%, Carbon Dioxide, and HCFC blends. Services provided to industrial clients have included negotiation of Regulatory Consent Agreements, completion of engineering feasibility studies, selection of emissions control equipment, regulatory permitting and compliance planning, engineering design, project installation management, source testing of emissions control equipment, and OSHA compliance audits. Client facilities are located in North Carolina, New Jersey, Washington, Indiana, Illinois, Missouri, New York, Ohio, Texas, Kansas, Rhode Island, Massachusetts and Michigan.

**Hospital Sterilizer Operation** – Formal compliance plans and applications for permits to install air pollution control equipment and permits to operate have been completed for in-house hospital sterilizer operations in Pennsylvania, Rhode Island, Virginia, Indiana, New York, Texas, California, Michigan, Wisconsin, Florida and Washington. Air toxic regulations have been passed in these states that require most hospitals to install emissions control equipment for their Ethylene Oxide Gas Sterilizers. Technical services have included installation layout plans, technical drawings, emissions reduction calculations, risk assessments, air quality modeling, completion of regulatory agency permit packages, and emissions source testing.

**Industrial Manufacturing Facilities** – Title V operating permits, annual source restrictions, toxic use inventories, emissions screening, diagnostic testing, emissions calculations, modeling and permit negotiations to assure compliance with state and local air pollution control regulations, and selection, design, installation, and compliance testing of air pollution control systems. Services provided have included development of specialized laboratory testing protocols in order to model air quality emissions from custom engineered production equipment; process analysis and toxic use inventories have been performed to assist client firms in developing Toxic Use Reduction Plans incorporating Best Available Control Technologies; and emission estimates for Storage Tank farms have been completed at various locations using EPA-approved computer models.

## **SELECT CLIENTS**

The following is a list of select clients for whom we have provided air quality engineering and permitting services:

- Cook, Inc.  
Ellettsville, Indiana
- Davol, Inc., Subsidiary of CR Bard  
Cranston, Rhode Island
- Davol, Inc.  
Lawrence, Kansas
- Chicago Sterilization Services, Inc.  
Chicago, Illinois
- Zimmer Patient Care  
Dover, Ohio
- Advanced Air Technologies, Inc.  
Corunna, Michigan
- AK Steel Company  
Middletown, Ohio
- Clean Harbors of Baltimore, Inc.  
Baltimore, Maryland
- Clean Harbors Technology Corporation  
Kimball, Nebraska
- Fiberspar, Inc.  
West Wareham, Massachusetts
- MG Industries, Inc.  
Malvern, Pennsylvania
- Midwest Sterilization Corp.  
Jackson, Missouri
- Pacific Foods, Inc.  
Kent, Washington
- Wilson Cook Medical  
Winston-Salem, North Carolina
- Parkedale Pharmaceuticals  
Rochester, Michigan
- Mathieu Oil Company  
Fall River, Massachusetts
- Polycold Systems International  
San Rafael, California
- Ward Transformer Company  
Morrisville, North Carolina
- Worthington Steel Company  
Malvern, Pennsylvania
- Garment Express  
New Bedford, Massachusetts
- CF Sauer, Inc.  
Richmond, Virginia
- Mathieu Oil Company  
Fall River, Massachusetts