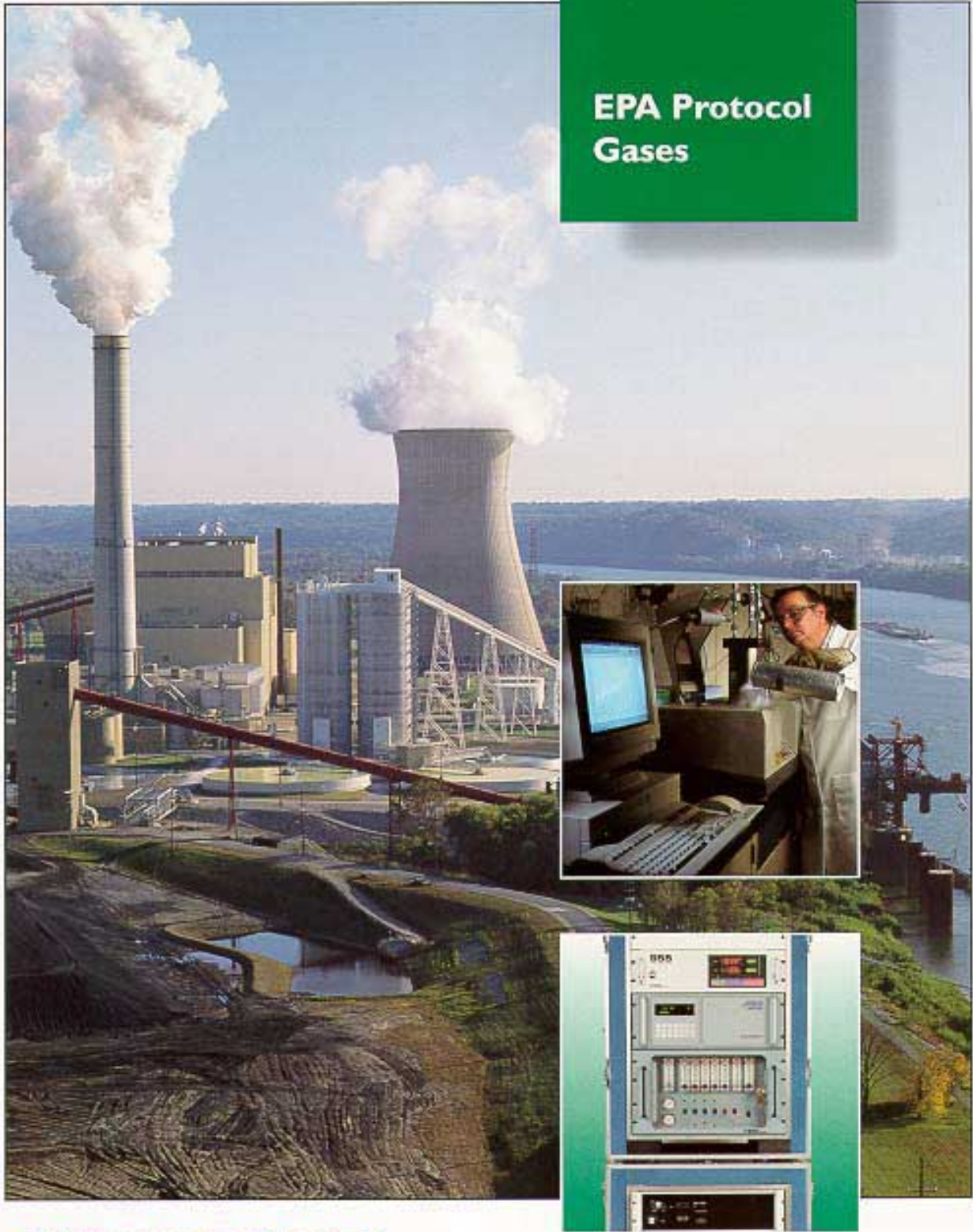


EPA Protocol Gases



 **BOC GASES**

Helping utilities, cogeneration plants, and others achieve accurate stack monitoring

QUESTION ANSWER

NEED TO MEET PERMIT EMISSIONS LIMITS?

BOC GASES CAN HELP YOU COMPLY.

The EPA has established strict guidelines for the calibration of continuous emission monitoring systems (CEMS). CEMS must be calibrated daily, with quarterly linearity evaluations and semiannual or annual audits. BOC Gases provides a full line of gases and gas mixtures enabling accurate calibration of stack monitors in accordance with EPA regulations.

EPA LIMITS UTILITY AND COGENERATION STACK EMISSIONS.

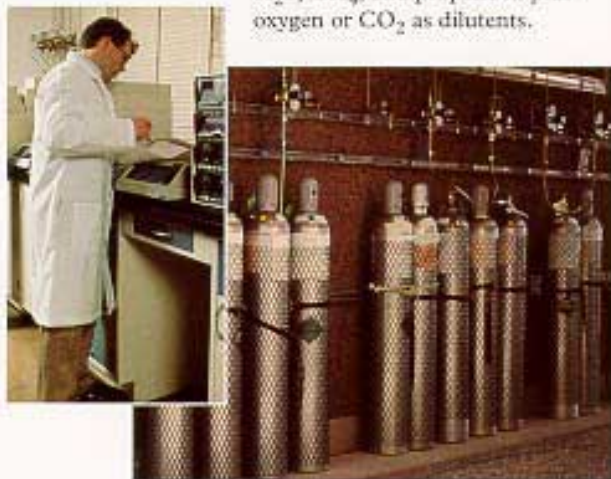
Title 4 of the Clean Air Act Amendments requires utilities and Phase II cogeneration plants to limit SO₂ and NO_x emissions ... and to monitor CO₂. Fines for failure to comply can be \$2,000 per ton of sulfur dioxide in excess of your permit limit. Enforcement includes both civil and criminal penalties as well as field citations.

Accurate stack monitoring tells you exactly how much SO₂ and NO_x is being generated and exhausted to the environment. This lets you operate at optimal electrical capacity while complying with EPA standards. You can then sell your unused allowances to generate extra revenue, or bank allowances for future use.

Other stationary sources are also held to strict standards.

Title 1 of the Clean Air Act Amendments affects cogeneration plants, waste incinerators, chemical manufacturers, industrial firms, and other major sources of criteria pollutants.

Part 60 of Title 40 of the Code of Federal Regulations requires EPA Protocol calibration for monitoring NO, NO₂, SO₂, CO, H₂S, CH₄, and propane ... plus oxygen or CO₂ as dilutents.



BOC Gases supplies all gases used in the calibration and audit of CEMS.

BOC GASES: YOUR SINGLE-SOURCE SUPPLY OF QUALITY EPA PROTOCOL GASES

The gas in every cylinder is certified accurate within $\pm 1\%$ of National Institute of Standards and Technology (NIST) reference materials. Gas mixtures are manufactured, analytically certified, and statistically validated in strict compliance with current EPA Protocol requirements.

BOC GASES EPA PROTOCOL GASES

Zero gases

- Zero ambient air
- Zero ambient nitrogen

Certified gases, primary standards, and EPA Protocol gas mixtures

- Multicomponent
- Carbon dioxide
- Carbon monoxide
- Hydrogen sulfide
- Nitric oxide
- Nitrogen dioxide
- Oxygen
- Propane
- Sulfur dioxide
- Ammonia
- Methane

A complete line

BOC Gases makes all zero gases and gas mixtures used for calibration and auditing of CEMS plus a complete line of bulk and cylinder gases for your other needs. You simplify purchasing and reduce costs by using BOC Gases as your single-source supplier of gases and gas delivery systems.

A nationwide distribution network

BOC Gases has the largest gas distribution network in North America, with more than 600 company-owned facilities and independent distributor locations. In addition, we can stock the gases and mixtures you need at any BOC Gases location ... to assure timely delivery of critical gases to your monitoring site.

EPA-COMPLIANT DOCUMENTATION

A TOTAL CAPABILITY FOR MEETING YOUR NEEDS

Advanced cylinder technology

Introduced by BOC Gases in 1973 as the first stable packaging for low-level reactive gas mixes, BOC Gases' Spectra-Seal® cylinders represent the state-of-the-art in cylinder packaging technology.

These passivated aluminum cylinders have an internal surface that is chemically inert and minimizes adsorption and desorption. Use of Spectra-Seal cylinders ensures the accuracy, purity, and stability of highly reactive calibration gas mixtures for the full length of their certification period.

Total Gas Management

BOC Gases has decades of experience in high-purity gases and gas mixtures. This translates into knowledge of how to handle complex logistics and distribution of cylinders for customers with multiple monitoring sites.

An account manager serves as your single point of contact for supply and purchasing. A centralized toll-free Hotline—800-892-7706—provides full-service technical support.

Production capacity

BOC Gases has a network of four EPA Protocol production plants nationwide, assuring availability of supply. These facilities are supplemented by an additional network of six specialty and electronic gases plants capable of producing a broad array of high-purity gases and precise mixtures.

Quality assurance

BOC Gases' comprehensive Quality Assurance program maintains conformance to EPA regulations. In addition, working closely with NIST and the EPA for more than two decades has enabled the development of highly stable reactive gas mixtures and cylinders that ensure maximum shelf life and meet all regulatory specifications for accuracy.

Interference-free EPA Protocol mixtures

Using proprietary, interference-free analytical techniques such as modified chemiluminescence and Fourier Transform infrared, BOC accurately measures NO, SO₂, CO, and other ppm components in mixtures, regardless of the amount of CO₂ present. Multicomponent EPA Protocol mixtures are certified interference-free within $\pm 1\%$ accuracy to NIST reference materials—without mathematical correction.

BOC Gases provides a full set of EPA documentation with each cylinder



BOC Gases has developed a cylinder documentation system that meets and exceeds EPA Protocol documentation requirements.

Cylinders are shrink-wrapped and covered with mesh netting. A plastic pouch attached to the cylinder keeps the certificate of analysis (which contains all of the information required by the EPA) with the cylinder from delivery to return. A certificate of analysis label, affixed to the side of the cylinder, and an analytical tag, tied to the valve

stem, further assure availability of required documentation. A duplicate of the certificate of analysis is mailed to you for your files.

BOC Gases invented the first stable packaging for low-level reactive gas mixes more than two decades ago ... and continues to improve on that original design today.



Cylinders are shrink-wrapped and covered with a protective mesh netting. An analytical tag, tied to the valve stem, tells you precisely what is in the cylinder and what the shelf life of the mixture is.



TURN TO THE EXPERTS

BOC Gases has a staff of specialists with extensive knowledge of gases, gas distribution, pollution control, and analytical chemistry. We understand the air pollution control guidelines imposed on utilities, cogeneration plants, hazardous waste incinerators, industrial manufacturers, and others — and can help you gear up to meet the regulatory challenge.

An abundant supply of NIST-certified primary reference gases in stock

BOC Gases has worked closely with NIST on the development of the NTRM (NIST Traceable Reference Material) program. We have available NIST-certified NTRM standards for assigning values to EPA Protocol gases. Our extensive inventory of NTRM and SRM cylinders ensures a reliable supply of critical NIST-certified primary reference gas.

Stability of low PPM Reactive Gas Mixtures



BOC Gases' EPA Protocol gas mixtures are validated and certified in our fully equipped analytical laboratories.

ABOUT BOC GASES

BOC Gases is a member of The BOC Group, a multinational company with operations in more than 60 countries. Annual sales are \$5 billion in such areas as gases and related products, health care, vacuum technology, and distribution services.

BOC Gases has been a leading gas supplier for more than 75 years, an environmental leader since the early 1970s, and has more than a decade of experience in manufacturing EPA Protocol gas mixtures.

THE NEXT STEP

Our experience in pollution monitoring and extensive knowledge of EPA and state agency requirements make BOC Gases the logical choice to provide gas mixtures for calibrations and audit of continuous emission monitoring systems.

In the next few years, stricter limits with severe fines on stack emissions will go into effect. We can help you identify how your plant will be affected, when, and what to do about it.

For more information and a free copy of our Special Gases Catalog, contact your BOC Gases representative today. Or call 800-892-7706 toll-free.



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