

# Greater environmental protection from monitoring lower levels of contaminants

Next generation calibration gas mixtures are essential to enable new air quality analysis technologies. Stephen Harrison reports.

**Below** Increasing regulatory requirements mean contaminants need to be measured at lower levels.

Some chemicals hailed as scientific breakthroughs in the advancement of society have, in time, actually proved to be environmentally destructive. Chlorofluorocarbons (CFCs) are a prime example. The environmental impact of CFCs and related compounds led to the Montreal Protocol in 1987, signed by many nations who pledged to reduce CFC production. But with the phase-out of CFCs, industry was left with a

need for a similar compound. CFCs were subsequently replaced by hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) which were later also found to either destroy the ozone layer and/or contribute to an unnatural warming of the planet's climate.

Once a chemical is found to be potentially hazardous, it is critical to determine at what level it is harmful, so it can be controlled or eliminated.

With increasing regulatory requirements, more rigorous demands in measurement and even new contaminants to monitor, laboratories performing environmental analysis to detect and monitor our air quality are being constantly confronted with change and are under continuous pressure to expand their scope and expertise. Innovative, next generation calibration gas mixtures are essential to enable new air quality analysis technologies and meet the needs of laboratories researchers. Linde Gases plays a pioneering role in the global speciality gases market and through these highly innovative gas standards.

Offering a range of high purity gases for conducting daily measurements in soil, water and atmospheric phases to calibration gas mixtures to ensure optimal functionality of measurement instrumentation, Linde strives to develop increasingly sophisticated gases to identify and quantify increasingly minute levels of potentially harmful contaminants in the environment.

In producing calibration gas mixtures, Linde uses the most reliable reference materials from international entities like NIST (National Institute of Standards

and Technology, US), the VSL (Van Swinderen Laboratorium, formerly NMI, NL) and the NPL (National Physical Laboratory, GB) to ensure that our customers can conduct their environmental measurement in line with international standards.

To keep pace with technological advances and increasingly stringent legislative requirements, Linde's SPECTRA-SEAL calibration gas mixtures use state-of-the-art packaging technology with proprietary cylinder treatment processes that exceed the increasingly demanding requirements for consistency and stability in a wide variety of calibration standards — down to part-per-billion levels. SPECTRA-SEAL offers long-term stability for binary calibration gas mixtures requiring low-level carbon monoxide, carbonyl sulphide, methyl mercaptan, hydrogen sulphide, nitric oxide, nitrogen dioxide or sulphur dioxide. These components are among the most analysed and controlled substances in the atmosphere around us.

A further development in emissions monitoring and detection has been the miniaturisation of emissions monitoring devices, which are often dispersed across remote locations. These instruments demand smaller, highly portable gas calibration solutions. Linde's ECOCYL range of compact, light-weight refillable gas cylinders, not only meet the challenge of calibrating distributed devices, but are significantly more environmentally-friendly than disposable cylinders traditionally used for this specific application.

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