

# Atmosphere Control Services

## Air Quality Investigation and Issue Resolution

Developing and executing sampling analysis investigations into the cause of atmosphere-related problems and the provision of appropriate solutions.

### Sampling & Real Time Monitoring

The Atmosphere Control Services team has a proven track record in the design and implementation of monitoring and sampling regimes for a broad range of airborne contaminants. We have extensive experience in the monitoring of respiratory hazards in submarines, ships, armoured fighting vehicles and compressed gas systems. We also have experience of the instrumentation of large scale fire test rigs and environmental sampling.

Through our expertise in product assessment and site surveying we can provide solutions targeted towards specific sites of interest. We can use either commercial sampling systems or bespoke equipment, where environmental issues such as operating temperature, humidity or the presence of additional contaminants would render standard instrumentation inadequate.

### Onsite Surveys

QinetiQ carries out surveys of potential monitoring sites and can deliver an assessment, either as an independent consultant advising on third party monitoring solutions, or as part of a wider management package.

QinetiQ has carried out a wide range of onsite surveys which have proved vital to correctly designing a successful sampling regime for monitoring environmental contaminants. Surveys address all the issues which could affect the subsequent analysis and can include assessments of the temperature, pressure and humidity ranges likely to be found at the target site plus an assessment of the site air flows. Surveys will also identify any other

contaminant species present which could interfere with proposed monitoring techniques.

### Laboratory Analysis

QinetiQ's modern analytical capability and team of experienced chemists have considerable understanding and experience in the analysis of gases, liquids and solids. We are able to apply a comprehensive selection of methods including adsorption tubes, electropolished canisters and size selective aerosol samplers to obtain samples with a wide range of volatility.

We provide trace analysis, down to part-per-billion levels, using gas chromatography/mass spectrometry systems with a variety of inlet systems including thermal desorption, liquid autosampler and headspace analyser. Typical applications include:

- employee exposure to hazardous substances
- compressed breathing gas air quality assessment
- analysis of high-purity industrial gases

QinetiQ has built considerable experience in chemical analysis and target compound quantification including:

- quantification of multiple (currently over forty) target volatile organic compounds in atmosphere samples
- measurement of polycyclic aromatic hydrocarbons in airborne particulate
- determination of impurities in the hydrogen supply of fuel cells

Our Environmental Sciences Laboratory has UKAS accreditation for the analysis of compressed gases, e.g. air for breathing apparatus using Fourier transform infrared spectroscopy (FTIR). We are able to provide additional analytical capability using the following equipment:

- ion chromatograph
- high performance liquid chromatograph
- gas chromatographs fitted with flame ionisation and thermal conductivity detection
- specific analysers including oxygen, carbon dioxide, carbon monoxide, oxides of nitrogen, hydrogen and airborne particulates.



Breathing gas analysis suite

## About QinetiQ Atmosphere Control Services

QinetiQ Atmosphere Control Services support defence and commercial organisations that operate in challenging enclosed environments including aircraft, submarines and submersibles, armoured fighting vehicles, ships, trains, spacecraft and pressurised tunnelling operations.

With over 30 years' experience, QinetiQ is a leader in the modelling and assessment of enclosed atmospheres. Based on our deep understanding of enclosed environments and associated safety issues we provide a comprehensive range of services that include:

- test and evaluation of air quality to identify issues and demonstrate compliance
- preparation and management of air quality field trials
- design and support of air quality equipment and systems
- advice on the removal of contaminants.

In the defence market we have supported a number of military services including those of the UK, Spain and Canada.

Specifically, for the UK Royal Navy we are the contracted test and evaluation partner for enclosed atmosphere control services. This includes providing a rapid response team to investigate urgent atmosphere control issues. We have also provided

support to the UK MOD for the design, testing and installation of equipment to facilitate the introduction of mixed manning into submarines.

QinetiQ is the only commercial organisation able to offer such a broad range of services, delivering advice and guidance on enclosed atmosphere control, independent of any supplier. Our services are supported by an extensive range of state of the art equipment, facilities and software. Our Environmental Sciences Laboratory has United Kingdom Accreditation Service (UKAS) accreditation for the analysis of compressed gases (e.g. air for breathing apparatus) and carbon dioxide absorbing materials.

We provide strategic support throughout the full lifecycle of an enclosed environment from design and acquisition through to operations and disposal. Our services are delivered by a team of scientists and engineers who are highly knowledgeable and experienced in the application of science and technology to all aspects of atmosphere control.

Maintaining a safe working environment is of critical importance to us in all testing and evaluation activities and we have a team of specialists with the expertise and resources to support major projects across all domains (land, sea, air and space).

Delivering world class Atmosphere Control Services to defence and commercial organisations operating in challenging environments



Trace organic sample analysis

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