

# Environment Agency Monitoring Certification Scheme (MCERTS)

## ENVIRONMENTAL ANALYSIS

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The Environment Agency has established its Monitoring Certification Scheme: MCERTS to deliver quality environmental measurements. The scheme provides for the product certification of instruments, the competency certification of personnel, an inspection scheme and the accreditation of organisations based on international standards. The term 'organisation' is used generically. It includes commercial 'test houses', laboratories, and industrial operators' in-house monitoring arrangements. MCERTS is progressively being extended to cover all regulatory monitoring activities.

### Background to the scheme

The Environment Agency requires operators of regulated processes to deliver monitoring results that are valid, reliable, accurate and appropriate. Good quality monitoring data depends on using:

- the correct methods
- approved standards
- trained personnel
- accredited organisations
- effective planning
- equipment which is suitable

To this end, the Environment Agency has established its Monitoring Certification Scheme (MCERTS) to improve the quality of monitoring data. MCERTS provides:

- A UKAS accredited product certification scheme to ISO/IEC Guide 65 for...
- Continuous emissions monitoring systems (CEMS)
- Continuous ambient air quality monitoring systems (CAMS)
- Continuous Water Monitoring Equipment (CWMS)
- Portable equipment for air and water monitoring
- Performance standards for organisations carrying out manual stack emission monitoring, chemical testing of soils and direct toxicity assessments. These standards supplement UKAS accreditation to ISO/IEC 17025
- A UKAS accredited personnel certification scheme under ISO/IEC 17024 for personnel carrying out manual stack emission monitoring
- An inspection scheme under ISO/IEC 17020 for the self-monitoring of effluent flow

The MCERTS scheme is managed by the Environment Agency's Monitoring & Assessment Process. It is operated in accordance with the requirements of European and

### Structure of the scheme

**sira**

International standards. For example ISO/IEC Guide 65 for product certification, ISO/IEC 17020 for inspection, ISO/IEC 17024 for personnel certification and ISO/IEC 17025 for laboratory accreditation.

The Environment Agency has appointed Sira Certification Service (SCS) as the certification body to operate MCERTS on its behalf. SCS is an independent certification body accredited by UKAS for product and personnel certification.

For product certification, laboratory and field-testing can be carried out by a number of laboratories, chosen by the equipment manufacturer provided that they are accredited to ISO/IEC 17025. There is also a procedure for accepting test reports of continuous emission monitoring systems that already have UBA approval in Germany.

Under MCERTS product certification SCS evaluates the laboratory and field test data using a group of independent, qualified people known as the MCERTS Certification Committee. This, and the scheme's Steering Committee, includes industry representation through trade associations such as GAMBICA, the Council for Gas Detection (CoGD), and the Source Testing Association (STA).



The MCERTS personnel certification scheme is aimed at personnel involved in manual stack emission monitoring. SCS sets the examinations and evaluates the competence of monitoring personnel assisted by a group of independent, qualified people known as the MCERTS Examination Board.

Organisations carrying out stack emission monitoring are required to be accredited by UKAS to ISO/IEC 17025 for the MCERTS standard for organisations. The standard includes a requirement to use certified personnel.

### Benefits of the scheme

- MCERTS delivers a certification scheme that is both accepted and formally recognised within the UK and internationally.
- It provides assurance to regulatory authorities that equipment and services approved to MCERTS standards are suitable, and capable of producing results of the required quality and reliability.
- It gives users of monitoring equipment confidence that equipment approved by MCERTS is robust and conforms to performance standards related to current international Standards.
- It supports the delivery of accurate and reliable data to regulators and the public.
- it provides a framework whereby further monitoring instrumentation and other aspects of compliance monitoring can be formally certified.
- It meets the growing requirements of EC Directives, which increasingly specify that monitoring systems must meet minimum performance requirements.



### MCERTS - Continuous emissions monitoring systems

The initial focus of MCERTS was on continuous emissions monitoring systems (CEMS) for chimney stacks. The scheme covers:

- Extractive stack emission-monitoring instruments, where a sample of the stack gas is drawn from the stack, generally through a sample conditioning line, into the measuring cell.
  - Cross-stack or in-situ emissions monitoring instruments, where measurements of the target species are made within the gaseous atmosphere of the stack or duct.
- The performance standards cover a wide range of emission levels including:
- large combustion plant; including gas turbines
  - incineration of municipal and hazardous wastes;
  - solvent-using processes.

The atmospheric pollutants covered by the scheme are selected so that there is maximum overlap with, and benefits to, a wide range of industrial processes. These now include greenhouse gases and pollutants such as HF and ammonia.

Other instruments, which monitor temperature, pressure and mass flow of the stack gas, are also included.

### MCERTS - Portable systems for air emissions monitoring

Portable equipment is often used to monitor pollution from industrial chimney stacks, landfill sites and for fugitive emissions. The performance of monitoring equipment is certified under the MCERTS Portable Emission Monitoring Systems scheme.



### MCERTS - Continuous ambient air quality monitoring systems

MCERTS was extended to continuous ambient air quality monitoring systems (CAMS) to provide a means of demonstrating compliance with the requirements of the Air Quality Framework and Daughter Directives. It has been developed to help industry and other organisations select suitable systems for monitoring ambient air quality and to promote public confidence in air quality data. Including ambient air quality instrumentation in the scheme enables the Agency to gather more reliable information on the environmental impacts of regulated industries and to fulfil its regulatory obligations in this area.

MCERTS for ambient air quality monitoring systems covers instrument systems that measure nitrogen monoxide (NO), nitrogen dioxide (NO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), carbon monoxide (CO), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), lead, cadmium, arsenic, nickel and mercury, benzene and polyaromatic hydrocarbons (PAHs).

The instruments are tested against a range of performance criteria in line with the forthcoming CEN standards to give users of the monitoring equipment confidence in their robustness and ability of delivering accurate and reliable data.

### MCERTS - Automatic Isokinetic Samplers

It is required that some industrial companies sample pollutants in chimneys and flues using isokinetic samplers. Isokinetic means that the velocity gas enters the sampler is the same as in the chimney or flue.

Many isokinetic samplers work automatically and must be approved under the MCERTS Automatic Isokinetic Samplers scheme. Two main types of equipment are covered:

- automatic samplers used for dust and aerosol monitoring
- continuous samplers used for long term dioxin monitoring

### MCERTS - Manual stack emission monitoring

MCERTS for manual stack emission monitoring was developed in collaboration with the Source Testing Association (STA), the Scottish Environment Protection Agency (SEPA) and the Environment and Heritage Service, Department of Environment, Northern Ireland. The scheme consists of two components – the certification of stack emission monitoring personnel and the accreditation of



stack emission monitoring organisations.

#### **Certification of stack emission monitoring personnel**

The MCERTS personnel competency standard enables stack emission monitoring personnel to be formally certified as competent based on experience, training and examination. The associated MCERTS examination syllabuses specify the topics covered at the various levels of competency.

#### **Accreditation of stack emission monitoring organisations**

The Environment Agency requires organisations who wish to undertake MCERTS approved monitoring to be accredited by UKAS to the international standard ISO/IEC 17025 for the MCERTS performance standard for organisations. The MCERTS standard provides an application of ISO/IEC 17025 in the specific field of stack emission monitoring.

#### **MCERTS - Continuous water monitoring equipment**



The Environment Agency is interested in the monitoring of waste-water discharges and receiving water quality as a means of assessing the environmental impact of the industries it regulates. Actions can then be taken to prevent, or minimise, any impact and prevent potential harm from occurring.

Continuous water monitoring equipment must be of an acceptable standard to ensure that the environment remains properly protected. Regulations such as Pollution Prevention and Control (PPC) require operators to use MCERTS approved products.

Equipment is certified and tested under the MCERTS Continuous Water Monitoring Equipment scheme, which covers three types of equipment:

- Automatic wastewater sampling equipment
- On-line analysers for turbidity, pH, COD, TOC, dissolved oxygen, total phosphorous, nitrates and total oxidised nitrogen
- Water flowmeters

#### **MCERTS - Portable water monitoring equipment**

The requirements for certain types of portable water monitoring equipment are also addressed. Portable water monitoring equipment is used for the monitoring of water and waste-water, rivers, lakes and estuaries, reservoirs, boreholes and trade effluents. The determinands covered include temperature, pH, conductivity, dissolved oxygen, turbidity, ammonia, nitrate, nitrite, orthophosphate and chlorophyll a. This list of determinands may grow in the future if there is sufficient support from manufacturers and/or user groups.

#### **MCERTS - Chemical testing of soils**

The Environment Agency has published an MCERTS performance standard for the chemical testing of soils. The key aim is to deliver greater consistency of data from laboratories carrying out the chemical testing of soils, particularly for regulatory purposes. Laboratories undertaking such work are required to maintain accreditation to ISO/IEC 17025 for the MCERTS standard.

#### **MCERTS - Self-Monitoring of effluent flow**

Effective environmental protection and management of water bodies receiving effluent discharges requires knowledge of the mass release rate of pollutants. This is achieved by combining flow-measurement data with pollutant concentration data.

The Environment Agency's requirements for the self-monitoring of effluent flow include:

- Performance requirements for flow-metering installations in terms of a target measurement uncertainty
- Quality-assurance system requirements to ensure the ongoing performance of flow-metering installations

Process operators discharging effluent to a river, small watercourse or the sea must monitor the volume of effluent discharged. So far this has only applied to large sewage treatment works, but from February 2007 is being extended to PPC installations with effluent flow monitoring specified in their permits. This will include discharges to public sewer too.

Operators are required to have their flow monitoring arrangements inspected by a nominated "MCERTS Inspector" under the MCERTS Self Monitoring of Effluent Flow Scheme. Flow monitoring arrangements which meet the Environment Agency's requirements can apply to Sira Certification Service for an MCERTS Site Conformity Inspection Certificate.

#### **Summary**

MCERTS is an expanding scheme covering all areas of regulatory monitoring, including air and water quality monitoring, flow measurement, chemical testing, software and operators' on-site monitoring arrangements.

Although the Environment Agency regulates processes in England and Wales, there is significant support for MCERTS elsewhere, particularly overseas. Recognition of MCERTS approved products and services extend throughout Europe, Africa and parts of Asia and Australasia.

MCERTS will continue to grow and ultimately, will provide a comprehensive framework for industry for choosing suppliers of monitoring systems and services that meet the Agency's performance standards.

### **Contacts for scheme operators and technical support for the MCERTS schemes**

For general information visit [www.mcerts.net](http://www.mcerts.net)

#### **MCERTS air schemes for:**

- Continuous emissions monitoring systems
- Portable systems for air emissions monitoring
- Continuous ambient air quality monitoring systems
- Manual stack emission monitoring

Scheme operators;

#### **SIRA Environmental Ltd**

[www.sira.co.uk](http://www.sira.co.uk)  
Telephone +44 (0) 1322 520500

**UKAS** for Manual stack monitoring organisation accreditation  
<http://www.ukas.com/>  
Tel +44 (0) 20 89178400  
Technical support  
Source Testing Association  
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#### **MCERTS water schemes for:**

- Continuous water monitoring equipment
- Portable water monitoring equipment
- Self-Monitoring of effluent flow

Scheme operator;  
**SIRA Environmental Ltd**  
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Technical support

#### **WRC**

[www.wrcplc.co.uk](http://www.wrcplc.co.uk)  
Telephone +44 (0) 1793 865000  
MCERTS - Chemical testing of soils  
Scheme operator

#### **UKAS**

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**Find out more! Visit the MCERTS Conference and Exhibition 25th-26th April - [www.mcerts.uk.com](http://www.mcerts.uk.com)**