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**SPECIFICATION FOR THE PURCHASE OF A CLINICAL MICROWAVE DIGESTER FOR THE HSE LABORATORY IN BUXTON**

1. **HEALTH & SAFETY EXECUTIVE, SCIENCE DIVISION**

1.1 The Health and Safety Executive (HSE) is a Crown non-departmental public body with specific statutory functions in relation to health and safety. It is appointed by the Secretary of State for Work and Pensions and employs around 3500 staff including policy advisers, inspectors, technologists and scientific and medical advisers. HSE’s job is to prevent people being killed, injured or made ill by work.

* 1. HSE consists of a governing Board comprising of a Chair and nine non-executive members, all of whom are appointed by the Secretary of State for Work and Pensions after consultation with organisations representing employers, employees, local authorities and others, as appropriate. HSE comprises various directorates and groups and is led by a senior management team. HSE`s Science & Research Centre is located within a 550 acres site near Buxton in Derbyshire and is part of HSE`s Science Division. HSE works from over 30 locations throughout Great Britain.
  2. The science and research centre is Britain's leading industrial & occupational health and safety research facility. Science Division supports HSE’s mission to protect the health and safety of the national workforce by ensuring risks in the workplace are adequately controlled.
  3. Science Division employs circa 420 people including scientists, engineers, psychologists, social scientists, health professionals and technical specialists. Its capabilities encompass a wide range of topics including: health solutions, risk and human factors, fire, explosion and process safety; occupational and environmental health; safety engineering; work environment; and specialist photographic and technical services.

Services Include:

* Research and development
* Specialist advice and consultancy
* Forensic investigation into the causes of accidents
* Environmental and biological monitoring
* Assessment of levels of risk and investigation of their control
* Establishing realistic requirements for standards, and processes or meeting those standards
* Validation and certification
* Training   
  1. To deliver these services Science Division has advanced facilities that range from high power computers for modeling and analysis, well equipped laboratories covering biomedical, occupational hygiene and environmental work to unique facilities for large scale experiments in the areas of engineering, fires, explosions and process safety.

1. **BACKGROUND**

2.1 This equipment is required to enhance the analytical capability of HSE and enable it to meet the requirements of the HSE and other external customers. This system would be used for the digestion of small clinical samples (10 mg or 10 µL solution) in biological matrices, e.g. tissue, blood and small filter paper blood spots.

2.2 The microwave will allow the sample to be microwave digested in a microwave vessel and then for the vessel to be directly transferred to a suitable instrument autosampler.

2.3 The instrument is expected to help develop new areas of business and improve existing ones. General requirements are that the microwave can be set up to digest batches > 30 vessels and that each vessel used is a disposable entity. Small acid volumes should be required (100 µL-200µL)

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| **Note to Bidders:**  Vessels should have low levels of trace elements, especially lead and cadmium. |

2.4 The more detailed specification is outlined below and is not based on any particular individual supplier’s system. **HSE require interested parties to show how their proposed systems could meet such parameters.**

1. **TECHNICAL SPECIFICATION**

3.1 HSE is seeking a microwave digestion system for small clinical samples with low volumes of acid required for digestion.

3.2 Bidders are invited to submit up to three application notes demonstrating the use of their proposed equipment in clinical or forensic applications. If these applications use instrumentation not offered in the bid, these should be made clear.

3.3 Bidders may wish to nominate a previous client with similar instrumentation who would be prepared to discuss their system with HSE staff.

3.4 The following requirements are required:

* Disposable, trace element/metal free tubes, 4ml and 10 ml volumes fitting ICPMS autosampler racks (Cetac 60 and 90 autosampler tube racks) for use in the digester.
* Capability for batch sizes of more than 30 samples at a time with quick sample digest and cool down times.
* Samples to be digested to a clear liquid.
* An auditable pressure and temperature control of each disposable vessel, to ensure that volatile elements are not lost.
* A fully programmable system including a venting option
* If possible, contactless technology should be available.
* Ability for flexible sample digests, mixed runs with different sample types

**4 TRAINING**

4.1 The bidder shall provide comprehensive training in the hardware and software and in the operation and routine maintenance of the system

4.2 Full training for two people in both the operation of the equipment and in basic maintenance.

4.3 Training of the operators must be performed on site with the instrument that is ordered while it is installed.

**5 CONSUMABLES**

5.1 Sample tubes suitable for small clinical digestions (that fit the aforementioned Cetac autosamplers and that are metal free) should be supplied-At least **500** suitable tubes supplied with the instrument.

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| **Note to Bidders:**  Include in the tender price 500 suitable (low trace metal concentrations) vessels (preferably low volume <5ml total volume) for small clinical sample digestions. |

**6 DELIVERY, INSTALLATION & COMMISSIONING**

6.1 Delivery and installation are required by **31st March 2021**.

Please indicate what the procedure is required for delivery, installation and commissioning.

**7**  **SAFETY CONSIDERATIONS**

7.1 The system is required to emit no harmful substances, radiation or noise. It is required to meet all UK electrical and environmental regulations and operate in a laboratory temperature range of 15 to 35 degrees Centigrade. In addition the venting of samples must be contained and any extraction required outlined.

7.2 Please specify electrical power supply.

**8 MAINTENANCE AGREEMENT**

8.1 Following expiry of the warranty period, please provide details of maintenance agreements that are available with indicative prices.

**9** **WARRANTY**

9.1 Please state the warranty period.

**10 TRADE IN AVAILABLE**

10. If possible please state is there could be a trade in available for a CEM MarsXpress Digestion system bought in 2005.

**11 EVALUATION CRITERIA**

11.1 Quotes will be evaluated on the following

* Bidder able to match our requirements closest.
* Lowest price
* Ability to deliver before the end of the financial year.