** Schedule A: HSE/T3743**

**SPECIFICATION FOR THE PROVISION OF A CENTRIFUGAL VACUUM CONCENTRATOR 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. **SCOPE OF THE SERVICES REQUIRED**

2.1 This equipment is required to maintain the analytical capability of HSE and enable it to meet the requirements of the HSE and other external customers. This equipment would be used to prepare samples for numerous analytical chemistry and biological monitoring applications.

2.2 Many samples analysed in the laboratory require preparation or some form of processing. This usually involves a step to reduce the amount of matrix or solvent completely or at a suitable level to prepare exact concentration suitable for required limits of quantitation. This is particularly important for determinations involving samples used for enforcing work place exposure limits.

2.3 The equipment will need to process a wide range of sample types, corrosive such as TFA and acetic acid, highly volatile solvents such as dichloromethane and diethyl ether and high boiling solvents such as dimethyl sulfoxide and toluene.

* 1. Samples to be concentrated will be of various volumes and in different types of container that the system will need to accommodate.
  2. To reduce environmental impact effective solvent collection will be necessary. Hazardous and volatile organic solvents will be collected and disposed of rather than allowing vapours to escape to the atmosphere through a fume cupboard. The equipment is expected to save considerable time and improve accuracy with sample preparation.
  3. A 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 complete system for vacuum concentrating samples accurately in a short period of time while maintaining analyte integrity and with efficient collection of evaporated vapours.

* 1. Tenderers are invited to submit supporting information to demonstrate the operation and effectiveness of their equipment.
  2. Tenderers may wish to nominate a previous client with similar instrumentation who would be prepared to discuss their system with HSE staff.
  3. The complete system may be composed of three modular units; a) centrifugal vacuum concentrator, b) refrigerated vapour trap, c) high vacuum pump.
  4. The centrifugal vacuum concentrator should be able to process samples of different volumes from at least 1 ml to at least 150 ml. It should be able to accommodate various types of sample container including; 16mm x 100mm round bottom glass culture tubes, 28 x 114 mm 50ml centrifuge tubes and 250 ml round or flat bottomed flasks or bottles. The concentrator should have protection against corrosive vapours and a source of heating to allow controlled and fast evaporation. The system should be automated, be able to control evaporation to a set point including to a dry residue or powder, have means to prevent bumping of volatile solvents and ideally a vacuum gauge.
  5. The capacity, ie number of each type of container the system can accommodated should be clearly stated and will be a factor in the evaluation process.
  6. The refrigerated vapour trap should have sufficient capacity and cooling ability to trap the most volatile solvents such as diethyl ether efficiently and prevent vapours from reaching the vacuum pump.
  7. The vacuum pump unit should be sufficient to enable efficient and speedy evaporation of high boiling solvents such as dimethyl sulfoxide, dimethylformamide and toluene.

**4 DELIVERY, INSTALLATION & TRAINING**

4.1 Tenderers should indicate procedures and associated price for delivery, installation and training along with any specific requirements such as electrical power supply and any services required.

**5 SAFETY CONSIDERATIONS**

5.1 Operate from a 230V single phase supply. 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.

**6 WARRANTY AND MAINTENANCE AGREEMENT**

6.1 Provide details of the warranty period.

6.2 Following expiry of the warranty period, please provide details of any maintenance agreements that are available with indicative prices. Please include the best prices for 1, 3 and 5 year agreements.