FUNCTIONAL REQUIREMENTS OVERVIEW

SLAC NATIONAL ACCELERATOR LABORATORY CHEMICAL MANAGEMENT SERVICES

INTRODUCTION

SLAC National Accelerator Laboratory (SLAC) is one of the world's leading research laboratories. Established in 1962, it is owned by the federal government and occupies 426 acres of Stanford University land. SLAC's mission is to design, construct, and operate state-of-the-art electron accelerators and related experimental facilities for use in a wide spectrum of research endeavors, while providing a safe working environment and maintaining excellence in the matter of environmental concern. SLAC employs approximately 2000 full-time equivalent staff, and more than 3000 scientists from many nations utilize SLAC facilities each year.

To carry out its research mission, SLAC uses a variety of chemicals, including cryogens, compressed gases, process and laboratory chemicals, epoxies, solvents, paints, fuels, and water-treatment chemicals. In 2010, SLAC spent over $3.0 million on chemicals through its chemical management services (CMS) provider. There are approximately 250 direct delivery locations on site at SLAC and about 15 delivery locations at Stanford University

PROJECT OBJECTIVES

SLAC's objective is to develop a strategic long-term relationship with a CMS provider. To be considered for the subject subcontract, the CMS provider must offer SLAC the following capabilities:

- A web-based purchasing interface for chemicals and chemical products that is compatible with SLAC IT security requirements
- A web-based Safety Data Sheet (SDS) management system
- Management and oversight of all direct-delivery chemical suppliers to ensure compliance and implementation of SLAC Work Planning and Control (WPC) program requirements
- Pre-programmed and ad-hoc facility-wide and building-specific chemical usage, compliance, and financial reporting
- An on-site presence providing system and chemical management support.

The goals for implementing of a CMS subcontractor continue to be the following:

- Streamline chemical purchasing
- Facilitate order tracking
- Enhance the safe and timely delivery of chemicals and gases to point-of-use
- Improve security and accountability of the hazardous materials located onsite via localized inventories
- Minimize the costs associated with the purchase, management, and use of chemicals and gases
- Enhance environmental performance through minimizing onsite inventory of chemicals, decreased numbers of containers being deemed off-specification or

excess, reduced waste quantities, and continuous improvement of the chemical supply chain

- When requested, be able to suggest "greener" chemical alternatives including (but not limited to): recycled materials (e.g., re-refined oils), bio-based materials (e.g., products certified USDA Bio-preferred), non-ozone depleting substances (ODS), less toxic and hazardous chemical alternatives, and chemicals with low global warming potential to satisfy Federal Agency and DOE Sustainable Acquisition program goals
- Implement the best management practices for facilities in the DOE complex, as described in the DOE guidance document *Chemical Management Handbook (Volumes DOE-HDBK-1139-2006, DOE-HDBK-1139-2-2006, DOE-HDBK-1139/3-2018)* and sustainable practices in DOE Order 450.1A, *Environmental Protection Program*

SCOPE OF SERVICES

There are five required objective areas of service that need to be addressed to successfully meet the needs of SLAC:

1. Chemical procurement
2. Inventory tracking to point-of-use
3. Off-site storage and inventory
4. Chemical Management Information System (CMIS)
5. On-site presence and chemical management/inventory support

Task tables are provided to identify program functionality. At this time, SLAC is looking for industry capabilities. Please indicate in the tables below if the program Meets or Does Not Meet the listed requirements.

SLAC's mission includes managing its chemicals in compliance with all federal, state, and local regulations. SLAC's mission critical needs require chemicals, such as He and N2, to keep the accelerators operable. Service providers should use the following websites to familiarize themselves with the chemical management standards applicable to SLAC.

United States Department of Energy's (DOE) Chemical Safety Program (Chemical Safety Management Program)

- DOE Chemical Management Handbook, Volume l (*DOE-HDBK-1139-2006*), Chemical Management,
- DOE Chemical Management Handbook, Volume 3(*DOE-HDBK-1139/3-2018*), Consolidated Chemical User Health and Safety Requirements

UNIDOCS guidance on hazardous materials management (UNIDOCS :: Documents:: Hazardous Materials & Hazardous Waste). The California Certified Unified Program Agency (CUPA) responsible for overseeing SLAC's hazardous materials and waste management programs is the San Mateo County Environmental Health Services.

Other applicable requirements include Executive Orders 13423 and 13514, DOE Order 450.1A, FAR Part 23, and the SLAC ES&H Manual: in particular, Chapters: 16, *Spills*; 17, *Hazardous Waste*; 22, *Waste Minimization & Pollution Prevention*; 40, *Hazardous Materials*; 53, *Chemical Safety*; and 58, *Laboratory Safety*.

HIGH-LEVEL OVERVIEW

The table below is an overview of the objective areas:

Focus Area	Key Requirements/Objectives
Chemical Procurement	1. Provide a web-based ordering system that is compatible with SLAC systems (i.e., interface with Accounting Information Database (AID) matrix/procurement system) and meets SLAC IT security requirements. 2. Manages procurement of controlled, restricted, or banned materials
Delivery to Point-of-Use	1. Vendor owns chemicals until delivery onsite 2. Tag all containers prior to/upon delivery with inventory label 3. Deliver to all existing delivery locations 4. Maintain SDS Database
Off-site storage and inventory	1. Load information system with all relevant information about delivered chemicals 2. Provide an off-site storage hub in a location that allows one business day delivery. *(table cont.)*
Chemical Management Information System	1. Manage procurement, use, inventory, and disposal of chemicals. 2. Easy way to understand how much of a chemical is stored in a lab, building, etc. and where they are stored. Building maps ideally with color coding of chemical inventory (i.e., 394,000 individual containers. 2,469 rooms. 873 chem owners). 3. Requires data migration from SLAC's current CMS. 4. Ability to scan tags/codes and present relevant info quickly. 5. Support reporting into CERS (Tier II data, California specific reporting website). 6. Support UBC/IBC type reports for fire code compliance for existing buildings and control areas, maximum allowable quantities, and planning inventories for new building construction and laboratory renovations. 7. Tied into procurement system - when purchased, initiate workflow to set up ESH properly. 8. Compare quantities to limits (and system should allow timestamping of limits/regs/codes) and chem classification data for regulatory reporting. Provide reports for control areas, rooms, buildings, etc. for production and planning inventories. Provide means of hazard classification with validation and ESH approval prior to system use that integrates/supports the chemical database. 9. Mobile/tablet queries of chem data can improve usage (as all labs don't have desktop PCs). Via website or mobile applications.

	10. Flagging chemicals with tags (e.g., time-sensitive), and creating notifications/workflow based on this. 11. Help identify the "right" chemical in searches - easy filtering/search (challenging today). 12. Validate chem inventory checks are occurring.
On-Site Presence	1. Perform initial baseline chemical inventory. 2. Provide dedicated on-site personnel to effectively manage the day-to-day operations of the Chemical Management Services Program. 3. Support sustainability efforts: provide personnel and expertise to provide recommendations for chemical and product substitutions in support of SLAC sustainability initiatives when requested