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Technical Procedure

HLMI-PRO-SH-50151

ATS-LO-150-063

Chemical Management for the 222-S Laboratory Complex

Revision 0, Change 7

Published: 01/25/2024
Effective: 01/25/2024

Topic: Safety and Health

Technical Authority: Birdsong, Nita
Alternate Technical Authority: Strong, Andrea
Technical Owner: Hexum, Troy

Use Type: Reference

- Not Required :
  Categorical Exclusion: GCX-1 - Inconsequential Changes
  Screener: Millar, Dustin

JHA: Administrative
Periodic Review Due Date:06/17/2025
Rev. 0, Chg. 7

Change Summary

Description of Change

Changed wording "End User" in section 5.2 to Chemical Inventory POC / Work Planner / Stockroom for clarification.

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1.0 INTRODUCTION

1.1 Purpose and Scope

This procedure details the 222-S Laboratory Complex method for management of chemicals. The purpose of this procedure is to implement requirements that will protect the worker, general public, and the environment from chemical hazards. Applicable regulations and requirements include, but are not limited to, 10 CFR 851, "Worker Safety and Health Program"; DOE O 420.1C, *Facility Safety;* and HLMI-PLN-SH-51116, *Integrated Safety Management System Description*.

This process also implements Core Function 2, "Identify/Analyze the Hazards," as part of the Integrated Safety Management System core functions. Additionally, this procedure applies to all contractors at the 222-S facility ensuring that there is a single process for management and control of chemicals at the facility.

This procedure applies to all 222-S Laboratory Complex personnel involved in the procurement, receipt, storage, inventory, justification, or disposition of chemicals at the 222-S Laboratory Complex. This includes all HLMI employees and their respective subcontractors.

For the purpose of this procedure, chemicals are defined as any element, chemical compound, or mixture of elements and/or compounds that are hazardous according to the definitions of the Occupational Safety and Health Administration (OSHA), and the National Fire Protection Association (NFPA). Chemicals that are managed by this procedure include, as a minimum, materials subject to the *Emergency Preparedness and Community Right to Know Act* (EPCRA), materials required to be tracked by management, and materials defined as hazardous by 29 CFR 1910, "Occupational Health and Safety Standards," Subpart Z, "Toxic and Hazardous Substances"; NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response*; or NFPA 1, *Fire Code*.

Examples of when chemicals or products are subject to this procedure can be found in Appendix A.

1.2 Exclusions

The use of hazardous chemicals is outside the scope of this procedure. Procedures and work packages include precautions that must be taken when using chemicals. The responsible Method Chemist, the Laboratory Industrial Hygienist, or the Chemical Hygiene Officer (CHO) shall be contacted if additional information regarding the use of hazardous chemicals is required.

2.0 ROLES AND RESPONSIBILITIES

2.1 End User

May also be referred to as a requestor, this may be any employee who is requesting a chemical for laboratory use and/or general use.

2.2 Chemical Inventory POC

The Chemical Inventory Points of Contact (POC) is a Chemical Technologist(s) assigned by management for the role of submitting orders for chemicals into the Enterprise Asset Management (EAM), of receiving chemical orders and input that information into the Chemical Inventory Tracking System (CITS), of updating the database when chemical movements occur, and of performing a physical chemical inventory. If more than one Chemical Technologist is assigned as Chemical Inventory POC, they may be responsible for different aspects of the Chemical Inventory POC duties.

2.3 Chemical Management POC

The 222-S Laboratory Complex Chemical Management POC is a person assigned by the 222-S Complex management to ensure the requirements of this document are met. In addition to carrying out specific activities identified in the procedure, this individual provides assistance and direction to the Chemical Inventory POC in performing their role. The Chemical Management POC inspects and approves chemical acquisitions. The Chemical Management POC also compiles data using CITS to generate periodic reports that meet U. S. Department of Energy (DOE) and OSHA requirements. Contact information for the 222-S Laboratory Complex Chemical Management POC may be found on the 222-S Laboratory Complex Chemical Management Webpage.

2.4 Chemical Hygiene Officer

A person assigned by the 222-S Complex management to ensure the requirements of HLMI-PLN-SH-51037 (ATS-310, Section 4.5), *222-S Laboratory Complex Chemical Hygiene Plan*, are met. The CHO acts as the Chemical Management POC for NEW laboratory-use chemicals ordered and received at the laboratory. CHO provides guidance and suggestion to Chemical Management POC and cognizant chemists. Contact information for the 222-S Laboratory Complex CHO is found on the 222-S Laboratory Chemical Hygiene Committee Webpage.

2.5 Material Coordinator

The Material Coordinator ensures all received chemicals are either delivered to the Standards Laboratory or notifies Standards Laboratory personnel of the arrival of the chemical(s) and the location where it is staged.

2.6 Fire Protection Engineer

The Fire Protection Engineer reviews acquisition requests that include flammable, combustible, explosive, pyrophoric, peroxide forming, strong oxidizers, and water reactive chemicals in quantities that exceed limits listed in Appendix C and provide notification to the Chemical Management POC whether the chemical request is approved or rejected. As requested, the Fire Protection Engineer will aid facility personnel in identifying special handling and storage controls.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Laser Safety

The chemical inventory barcode scanners are Class II laser products. Class II lasers are low power, visible light lasers that could possibly damage a person's eyes if viewed directly for an extended time period. Laser products will be used in accordance with requirements in HLMI-PRO-SH-50576, *Laser Safety*.

3.2 Container Handling

The chemicals managed under this procedure have various degrees of hazardous properties. The chemicals may be flammable, toxic, corrosive, oxidizing, etc. Users of this procedure should ensure that they have a general understanding of each hazard class associated with the chemicals encountered by this procedure. The selection of appropriate gloves and other personal protective equipment (PPE) for handling the chemicals managed by this procedure should be based on a graded approach, taking into consideration hazard levels, the quantity of material, exposure potential, and any engineered controls available. For example, a user would not select neoprene gloves to inventory a refrigerator of sealed ampoules; however, neoprene gloves would be an appropriate glove selection if the user was putting a broken bottle of concentrated sulfuric acid into a safe configuration. Gloves should be based on a glove selection source (i.e., HLMI-PLN-SH-51037 [ATS-310, Section 4.5]) and upon the hazards present while working.

When receiving and unpacking new chemicals; employees may encounter unknown chemical hazards such as damaged, broken, or leaking containers. Some of the chemicals received have higher than normal hazards - High hazard chemicals - associated with them. High hazard chemicals include highly volatile organic chemicals (i.e., benzene or methylene chloride), highly toxic chemicals (chemicals noted with a U.S. Department of Transportation [DOT] Poison label or a DOT Inhalation Hazard label), or highly corrosive chemicals (i.e., fuming nitric acid or hydrofluoric acid). When employees receive high hazard chemicals they shall wear at a minimum; nitrile or latex gloves, a lab coat, long pants, shoes that fully enclose the foot, and safety glasses with side shields. All high hazard chemicals shall be opened in an operating laboratory fume hood when possible. If the outer packaging of these chemicals prevents them from being opened in a fume hood, the chemicals shall be opened on a cart placed in front of an operating laboratory fume hood.

Caution must be taken when handling chemical containers while performing inventory or surveillance.

- Those performing manual handling tasks are at risk of repetitive stress injuries. Care must be taken to reduce that stress. Precautions include but are not limited to job rotation, second person to assist with lifting, frequent breaks and neutral postures.
- Moving large containers or compressed gas cylinders may cause pinching, bumping or crushing hazards. Use leather gloves and protective footwear to improve safety.

Improperly stacked containers may become dislodged, fall, and cause a spill, resulting in a possible exposure to personnel or the environment. Use stable configurations for any stacked containers.

3.3 Reactive and Time Sensitive Chemicals

Peroxidizable chemicals declared as waste are to remain in the active CITS inventory until they have been stabilized or transferred off site.

4.0 EQUIPMENT, MATERIALS, AND SUPPLIES

Users must be trained and have access to the current chemical inventory program(s) and barcode scanners in order to receive chemicals and perform chemical inventory.

Computer workstation configured to connect with the chemical inventory program(s) and barcode scanners.

Hazard Labels: Carcinogen, Flammable, Reproductive Toxin, Toxic, Shock Sensitive, Peroxide Forming, U.S. Environmental Protection Agency mark for polychlorinated biphenyls (PCBs), etc.

Barcode labels, approved for use by the Chemical Management POC.

Particularly Hazardous Substances listing.

Reactive and Time Sensitive Chemicals listing.

5.0 PROCESS

NOTES:

- *The Shift Operations Manager (SOM)/Building Emergency Director and 911 (509-373-0911 on a cell phone) are contacted in an emergency situation.*
- *This procedure is written to provide instructions in performing chemical management at the 222-S Laboratory Complex. Procedure steps may be performed out of sequence, as necessary unless specifically noted otherwise.*
- *Unless directed differently, notifications required in the performance of this procedure may be made by e mail, memo, or other suitable written or electronic method.*
- *All chemical acquisitions shall be approved prior to acceptance and use at the laboratory. Acquisition of chemicals shall include the actual purchasing of chemicals or any other means of acquiring chemicals such as borrowing from another Hanford facility or receiving free chemical products from vendors.*
- *Expedited Requests are those where any priority other than "normal" is selected. Any request for priority shipping must be justified and approved.*
- *Completed 222-S Standards Laboratory Order Forms (A-6008-601) and Standards Laboratory Reagent/Standard Order Forms (A-6008-600) should be submitted via email to Standards_Laboratory@rl.gov. For expedited requests, include the priority in the subject line.*
- *Reports and forms generated during the addition and update of the CITS database while performing such activities as receiving, storage, disposition, or inventory are not record materials. This database can be used for general reporting of day-to-day operations.*
- *For products sold after June 1, 2015, manufacturers are required to provide an OSHA compliant Globally Harmonized System (GHS) aligned Safety Data Sheet (SDS) for products subject to OSHA 29 CFR 1910.1200, "Hazard Communication" or 29 CFR 1910.1450, "Occupational Exposure to Hazardous Chemicals in Laboratories". Material Safety Data Sheets (MSDS) are acceptable for products that meet one or more of the exemptions in 29 CFR 1910.1200.*
- *If a GHS-SDS/MSDS is not on file with the Hanford MSDS Administrator or if the existing GHS-SDS/MSDS is more than three years old, the request shall not be approved until either confirmation that the GHS-SDS/MSDS on file is the current version or an updated GHS-SDS/MSDS is provided to the Chemical Management POC, or designee, for submission to the Hanford MSDS Administrator. The exception to this is that GHS-SDS/MSDS for custom orders and standards will be available upon receipt since they are shipped with the packages.*
- *In compliance with 10 CFR 851 "Worker Safety and Health Program", DOE O 436.1, Departmental Sustainability, Attachment 1, Contractor Requirement Document, this procedure implements actions to reduce the quantity of toxic and hazardous chemicals that are acquired, used or disposed of at the 222-S Laboratory Complex.*

5.1 Requesting Laboratory Use Chemicals

Actionee	Step	Action
End User	1.	IDENTIFY the need for specific chemicals required to support the end user's needs.
	2.	DETERMINE if the desired chemical will be a Standards Laboratory prepared reagent or standard, OR will be acquired from an external source such as a vendor or another Hanford contractor. a. IF a chemical being acquired is a Standards Laboratory prepared reagent or standard, THEN COMPLETE form A-6008-600. b. SUBMIT form A-6008-600 to the Standards_Laboratory@rl.gov for processing in accordance with HLMI-PRO-LQ-50056 (LQ-150-004), *Standards Laboratory Quality Affecting Operations*.
		NOTES: • *The HLMI Sustainable Program webpage[1] contains a link to the Sustainable Acquisition requirements and a Search Databases webpage with links to guides that can identify alternate products and product classes that meet specific content requirements including bio-based products.* • *The cost and means of waste disposal will be a consideration in selection and procurement of chemicals when evaluating less hazardous alternatives.*
	3.	CHECK for nonhazardous OR less hazardous alternative chemicals. a. IF a nonhazardous or less hazardous alternative chemical is identified, THEN SELECT that product as the chemical if it meets the specific need.
	4.	ENSURE an appropriate storage location has been identified for the chemical according to the requirements of Section 5.7.

[1] http://web.hlmi. /page.cfm/EnvironmentalProgram/SustainabilityProgram

Actionee	Step	Action
		NOTES:
		• *All chemical requests will be identified with the quality assurance (QA) level of QL-0 unless the Customer specifies otherwise. QA support will be obtained as needed to determine appropriate QA level.*
		• *The Approved Chemical Supplier List (ACSL) is maintained in accordance with HLMI-PRO-ASYS-51046 (ATS-310, Section 8.3), Administration of the Approved Chemical Suppliers List and Approved Suppliers of Critical Consumables, Supplies, and Services List.*
		• *Except as allowed in this procedure, laboratory-use chemicals are to be reagent grade or better.*
		• *Standard reference materials used for industrial hygiene analysis are required to be purchased from suppliers accredited to International Organization for Standardization (ISO) 17034:2016, General Requirement for the Competence of Reference Material Producers in combination with ISO/IEC 17025:2017, General Requirements for the Competence of Testing and Calibration Laboratories for the class or type of reference materials produced whenever possible. New Standards requests require QA Engineer approval.*
		• *Special industrial chemicals such as those used to test or simulate the form or behavior of Hanford tank waste (such as Gibbsite or Boehmite), or to test or confirm an industrial process that will be used to produce laboratory samples or test material, should use the same commercial material to be encountered in the field and not laboratory grade chemicals. These chemicals are exempt from the requirement to have a certificate of analysis and may be acquired from a supplier who is not on the ACSL.*
		• *Standards Laboratory personnel are not required to complete a Standards Laboratory Order Form when they are the End User of the chemical for a request that is restocking existing inventory. New chemicals, including a new manufacturer for an existing chemical require the use of the Standards Laboratory Order Form.*
		• *Submitted Standards Laboratory Order Forms that are missing required information may be returned to the End User for re-work.*
End User	5.	DETERMINE if the needed chemical(s) is available from a source on the ACSL.

Actionee	Step	Action
End User		a. IF the needed chemical(s) is available from one or more sources on the ACSL, THEN SELECT the product from a supplier on the ACSL. b. IF the needed supplier is not on the ACSL, THEN COMPLETE form A-6005-519. c. SUBMIT request to the QA Engineer for processing, in accordance with HLMI-PRO-ASYS-51046 (ATS 310, Section 8.3). d. IF the request has not yet been approved, THEN INCLUDE a copy of the submitted request (A-6005-519) when submitting the Standards Laboratory Order Form.
	6.	IDENTIFY if the requested chemical is a new chemical that will be used as reference material in an Industrial Hygiene procedure.
		NOTES: • *The following steps require access to EAM. Your manager can assist in determining if you need to request access.* • *All chemicals must have an appropriate Catalog Identification (CID) to be able to initiate a Material Requisition (MR) in EAM.*
	7.	OPEN EAM.
	8.	SELECT “Parts Search Tool” to search for the desired material.
	9.	DETERMINE if the chemical already has an appropriate CID. a. IF the chemical has an appropriate CID, THEN PROCEED to step 11.
		NOTES: • *Appendix F provides guidance on information to be included in an EAM CID for chemical products. The electronic form is available through the HLMI Procurement webpage.* • *NEW analytical standards must have QA approval during the new EAM CID request process. Follow directions in Appendix F.* b. IF the chemical does not have an appropriate CID, THEN SUBMIT a CAT ID Request using the electronic form on the HLMI Procurement webpage.
		NOTE: *A manufacturer quote is required for first time requests that include custom standards or reagents.*
	10.	ENSURE any manufacturer quote includes a quantitative analysis as part of the price quoted.

Actionee	Step	Action
End User	11.	IF the requested chemical(s) will be acquired as an external purchase, THEN COMPLETE AND SUBMIT the request to the Standards Laboratory for processing using form A-6008-601. ***NOTE:*** *Procurement priorities include 0-Normal, 1-Emergency, 2-Performance-Based Incentive (PBI), 3-Critical. Anything other than Normal is an expedited priority.* a. IF an expedited priority is selected, THEN PROVIDE manager approval for expedited shipping (e.g., email) AND INCLUDE the priority in the subject line of emails sent to Standards_Laboratory@rl.gov.
Chemical Inventory POC	12.	ENSURE the Chemical Management POC or Manager is notified about all requests for fissile materials, all plutonium isotopes, uranium 233, and uranium 235 (>1 weight percent enrichment).
Chemical Management POC or Manager		a. ENSURE the quantities acquired will not exceed the limits specified for Standards Laboratory in HLMI-PRO-RAD-50182 (ATS-LO-180-107), *222-S Laboratory Radiological Sample Inventory Control,* given the existing inventory for the Standards Laboratory in the Material At Risk System database.
Chemical Management POC		b. ENSURE the Standards Laboratory Chemist is notified of these requests.
Chemical Inventory POC	13.	ENSURE a manufacturer quote accompanies first time requests that include custom standards or reagents.

Actionee	Step	Action
		NOTES:
		• *Certificates of Analysis (COA) as prepared by the certifying company, either the manufacturer or a company hired by the manufacturer to perform the analysis, may not be altered. COA modified by a third-party distributor are also not acceptable.*
		• *The COA shall be signed or otherwise authenticated by a person who is responsible for this QA function and whose function and position are described in the purchaser's or supplier's QA program.*
		• *Including "laboratory-use chemical(s)" in the title of the MR informs Material Coordinators that the MR is exempt from the requirement to attach a completed Determination of Required Approvals (A-6007-792) in EAM.*
		• *Consult the Determination of Required Approvals (DRA) for assigning minimal approvals.*
Chemical Inventory POC	14.	INITIATE an MR within EAM in accordance with HLMI-PRO-CMT-50318, *Procurement of Materials*.
		a. INCLUDE the term "laboratory use chemical(s)" in the MR Description field (title).
		b. ASSIGN the following required approvals identified on the 222-S Chemical Acquisition Approval Authorities as applicable:
		• All Chemical MRs: Manager, Project Analyst, Chemical Management POC, and Cost Account Manager
		• New Chemical: Environmental, Waste Services Group, Safety and Health/Industrial Hygiene, and Fire Engineer
		• New Industrial Hygiene reference material: QA Engineering (Quality Assurance) and Engineering
		• If QL-3 is required: QA Engineering (Quality Assurance) and Engineering
		NOTES:
		• *COA are not required for chemicals that are marked as exempt from the requirement on the 222-S Standards Laboratory Order Form (A-6008-601).*
		• *Chemicals from manufacturers that are on the ACSL, including the conditional approval, by the virtue of being on the ACSL, have QA Engineer approval.*
		• COA is required but not available: QA Engineering (Quality Assurance) and Engineering

Actionee	Step	Action
Chemical Inventory POC		• Radioactive material, including standards and dilutions of uranium and thorium: Rad Con • Additional Approvals: As determined by the Chemical Management POC.
		c. ENTER a statement in either the Additional Description or the Comments section of the MR that COA as prepared by the certifying company are required for each applicable chemical.
		d. IF any item for which a COA is required but is not marked on the Standards Laboratory Order Form as available, THEN ENSURE the end user has provided a justification statement for each applicable item on the Standards Laboratory Order Form.
		e. ENTER applicable information in the MR comments section as identified in the 222-S Standards Laboratory Order Form (A-6008-601).
		f. Unless the user states on the 222-S Standards Laboratory Order Form (A-6008-601) that substitutes are allowed, ENTER comment in the MR stating, “NO SUBSTITUTES are allowed unless approved by the requestor”.
		g. For materials that have expiration date assigned by manufacturer, ENTER a statement in either the Additional Description or the Comments section of the MR that the “material must have an expiration date of one year or greater from the date of shipment by the vendor”.
		h. ATTACH a copy of the completed Standards Laboratory Order form to the MR.
		i. ATTACH copies of applicable supporting documentation such as quotes or sole source justification to the MR.
End User	15.	IF a chemical is being acquired from an external source through a means other than purchasing, at a minimum, THEN ENSURE procedure steps 3 through 6 are completed prior to requesting the material for use.
		a. OBTAIN the required approvals from the 222-S Chemical Acquisition Approval Authorities list in accordance with Appendix B, including any additional approvals that are needed if the request includes a NEW chemical.
		b. CONTACT the Chemical Management POC for assistance as needed.

5.2 Requesting General Use Chemicals

NOTES:

- *Request should be for the minimum amount needed to ensure continuous operations.*
- *All chemical requests will be processed as the quality assurance level of QL-0, unless the Customer specifies otherwise.*
- *QA support shall be obtained as needed to determine appropriate QA level.*

Actionee	Step	Action
Chemical Inventory POC / Work Planner / Stockroom	1.	IDENTIFY the need for specific chemicals required to support the end user's needs.
	2.	IF a chemical is being acquired at the laboratory through a means other than purchasing, at a minimum, THEN ENSURE procedure steps 2.a through 4 are completed prior to requesting the material for use.
		a. OBTAIN the required approvals from the 222-S Chemical Acquisition Approval Authorities list in accordance with Appendix B.
		b. CONTACT the Chemical Management POC for assistance as needed.
		NOTES:
		• *The HLMI Sustainable Program webpage[2] contains a link to the Sustainable Acquisition requirements and a Search Databases webpage with links to guides that can identify alternate products and product classes that meet specific content requirements including bio-based products.*
		• *The cost and means of waste disposal will be a consideration in selection and procurement of chemicals when evaluating less hazardous alternatives.*
	3.	CHECK for nonhazardous OR less hazardous alternative chemicals.
		a. IF a nonhazardous or less hazardous alternative chemical is identified, THEN SELECT that product as the chemical if it meets the specific needs for the End User.
	4.	ENSURE an appropriate storage location has been identified for the chemical according to the requirements of Section 5.7.

[2] http://web.hlmi. /page.cfm/EnvironmentalProgram/SustainabilityProgram

Actionee	Step	Action
		NOTES:
		• *The following steps require access to EAM. Your manager can assist in determining if you need to request access.*
		• *All chemicals must have an appropriate Catalog Identification CID to be able to initiate an MR in EAM.*
Chemical Inventory POC / Work Planner / Stockroom	5.	OPEN EAM.
	6.	SELECT “Parts Search Tool” to search for the desired material.
	7.	DETERMINE if the chemical already has an appropriate Catalog Identification CID.
		a. IF the chemical has an appropriate CID, THEN PROCEED to step 9.
		NOTE: *Appendix F contains guidance on the specific information that should be provided when submitting a Material Request (MR). The electronic form is available through the HLMI Procurement webpage.*
		b. IF the chemical does not have an appropriate CID, THEN SUBMIT a CAT ID Request using the electronic form on the HLMI Procurement webpage.
	8.	PROVIDE the CID and product specific information for each item being requested to ensure timely processing of the MR.
	9.	PROVIDE the name of the End User’s immediate manager, Code of Accounts and Cost Account Charge Number (CACN) information (available from immediate manager).
		a. IF more than one CACN will be used (e.g., 50:50, 20:80), THEN INCLUDE split information.
	10.	PROVIDE the date the material is required.
		a. IF the request is needed in less than two weeks, THEN SELECT the applicable increased priority: • 0 – Normal Priority • 1 – Emergency • 2 –PBI • 3 – Critical.
		b. IF an increased priority is selected, THEN PROVIDE a justification statement for expedited shipping per HLMI-PRO-CMT-50318.

Actionee	Step	Action
		NOTE: *Only Material Coordinators are permitted to purchase chemicals in accordance with HLMI-PRO-CMT-50314, Purchasing Card (P-Card). All other requests will be submitted for procurement in accordance with HLMI-PRO-CMT-50318.*
Chemical Inventory POC / Work Planner / Stockroom	11.	INITIATE an MR in accordance with HLMI-PRO-CMT-50318 or HLMI-PRO-CMT-50314, as applicable. a. ASSIGN the following required approvals as identified on the 222-S Chemical Acquisition Approval Authorities as applicable: • All Chemical MRs: Manager, Project Analyst Chemical Management POC, and Cost Account Manager • New Chemical: Environmental, Safety and Health/Industrial Hygiene, Waste Services Group, and Fire Protection • QL-3: QA Engineering (Quality Assurance) and Engineering • Radioactive material, including standards and dilutions of uranium and thorium: RadCon • Additional Approvals: As determined by the Chemical Management POC. b. ENTER information indicating whether the requested material is a chemical that is new or current to the 222-S Laboratory Complex in the item Comments section of the MR.

5.3 Chemical Management POC Review

NOTE: *Unless otherwise noted, all steps in this section are completed by the Chemical Management POC.*

Actionee	Step	Action
Chemical Management POC	1.	IF requested chemicals are NEW, THEN ENSURE the following actions have been completed on the MR: a. ENSURE approvals for Environmental, Waste, Safety and Health/Industrial Hygiene, and Fire Protection have been assigned on the MR. b. ENSURE the information that the item is a NEW chemical has been entered on the MR.

Actionee	Step	Action
		NOTE: *Step 1.c.i is a single step as EAM will not permit the user to complete the rejection step without entering a comment to explain the rejection.*
Chemical Management POC		c. IF the Chemical Management POC is not also the CHO, THEN OBTAIN CHO approval as follows: i. REJECT the MR. ii. RETURN the MR to the requestor with direction to remove the Chemical Management POC as approver AND add the CHO as approver. d. IF the chemical has any special handling or storage controls, THEN ENSURE the information is captured in the MR Comments field. 2. IF requested chemicals are not NEW, THEN DETERMINE if material is already available in the 222-S chemical inventory using CITS. a. IF chemicals are available, THEN DETERMINE if the material is usable (e.g., not expired, containers not almost empty). b. IF chemicals are available, THEN CONFIRM if the material usable meets End User criteria. i. IF chemical(s) meet(s) End User criteria, THEN PROVIDE the End User with container specific information. 3. CONFIRM that the End User's manager has been assigned as an approval authority on the MR. 4. DETERMINE if there is a GHS-SDS/MSDS for the requested chemical(s) entered in the Hanford SDS/MSDS Database (http://www7. /msds/). a. IF a Hanford GHS-SDS/MSDS reference is provided, THEN CONFIRM the reference matches the requested chemical. b. DETERMINE if it has been more than three years since the GHS-SDS/MSDS was revised. i. IF there is no GHS-SDS/MSDS in the Hanford database, THEN ASSIST in obtaining an updated GHS-SDS/MSDS.

Actionee	Step	Action
Chemical Management POC		ii. IF the GHS-SDS/MSDS is more than three years old, THEN ASSIST in obtaining an updated GHS-SDS/MSDS OR CONFIRM the existing GHS-SDS/MSDS in the database is current.
		c. ATTACH new GHS-SDS/MSDS to the MR pending addition to the Hanford SDS-MSDS Database.
		d. IF the requested item is a first time order of a custom standard for which a GHS-SDS/MSDS has not yet been published, THEN ENSURE a statement requiring that a GHS-SDS/MSDS must be included in the shipment has been entered on the MR.
		e. SUBMIT any new or updated GHS-SDS/MSDS to the Hanford MSDS Administrator for entry into the GHS-SDS/MSDS system and CITS.
	5.	IF the request is an emergency order, THEN CONFIRM the following actions have been completed: • The End User has provided emergency justification information with the chemical request (the 222-S Standards Laboratory Order Form [A-6008-601] for laboratory use chemicals). • The emergency order status has been entered on the MR.
	6.	IF the request will exceed any quantity limits listed in Appendix C, THEN ENSURE Safety and Health/Industrial and Emergency Preparedness approvals have been assigned on the MR. a. PROVIDE a copy of the order to the Fire Safety Engineer requesting a review of the order. b. INCORPORATE the response of the Fire Safety Engineer as part of the Chemical Management POC review.
	7.	IF the MR contains any chemical that would result in exceeding any threshold in 29 CFR 1910.119, “Process Safety Management of Highly Hazardous Chemicals”, THEN REJECT the MR with the notation that 29 CFR 1910.119 thresholds may not be exceeded. a. ENSURE information containing the specific chemical AND threshold has been entered on the MR.

Actionee	Step	Action
Chemical Management POC	8.	IF the order will cause the 222-S Complex to exceed any emergency planning thresholds specified in 40 CFR 68.130, "List of Substances," 40 CFR 302.4, "Hazardous Substances and Reportable Quantities," or 40 CFR 355, "Emergency Planning and Notification" THEN ENSURE the following actions have been completed: • Emergency Preparedness approval has been assigned. • Information containing the applicable regulation(s) AND specific chemical threshold has been entered on the MR.
	9.	IF the quantity of any chemical being requested is greater than 50% of the reportable quantity as specified in 40 CFR 302.4, or 40 CFR 355, THEN ENSURE the following actions have been completed: • Environmental approval has been assigned. • Information containing the applicable regulation(s) AND specific chemical threshold has been entered on the MR.
		NOTE: *Additional information on the DOE O 151.1D, Comprehensive Emergency Management System, hazardous material screening process as implemented through DOE-0223, Emergency Plan Implementing Procedures, RLEP 3.27 is available in Appendix D.*
	10.	PERFORM a hazardous material screening in accordance with the requirements of DOE O 151.1D for all chemicals being ordered to determine if the request is exempt from further evaluation. a. IF further evaluation is required, THEN ENSURE the following is entered on the MR: • Engineering approval is assigned • A note stating that an "Emergency Planning Hazard Assessment Evaluation" is required in accordance with DOE O 151.1D. b. SUBMIT a copy of the 222S Complex Emergency Preparedness Hazard Assessment Evaluation Request (A-6008-709) to Emergency Preparedness for further evaluation of the requested product. c. ATTACH a copy of the completed form A-6008-709 to the MR.
	11.	DETERMINE if the request includes laboratory use chemicals. a. If yes, CONTINUE to step 12.

Actionee	Step	Action
Chemical Management POC		b. If no, GO TO step 18.
	12.	DETERMINE if the selected product is from a supplier on the ACSL.
		a. If yes, CONTINUE to step 13.
		b. IF the product isn't on the ACSL, THEN ENSURE a copy of the submitted 222S Laboratory Approved Chemical Supplier Request (A-6005-519) has been attached to the MR.
		c. IF the product isn't on the ACSL, THEN ENSURE QA and Engineering approval have been assigned.
		d. IF the product isn't on the ACSL, THEN CONTACT the QA approver to verify the requested supplier was approved and the update to the ACSL is in progress.
		NOTE: *COA are not required for general use chemicals and chemicals used for testing industrial processes.*
	13.	CONFIRM COA are available.
		a. IF no COA are available, THEN ENSURE a note stating the COA are not available, has been entered on the MR.
		b. IF no COA are available, THEN ENSURE the applicable chemicals are justified for procurement since they are NOT reagent grade quality.
		c. IF the product does not meet one of the identified COA exemptions, THEN ENSURE QA Engineering and Engineering approvals are assigned.
	14.	DETERMINE if the chemicals are reagent grade or better.
		a. IF chemicals are not reagent grade, THEN ENSURE Engineering and QA Engineering approvals have been assigned.
		b. IF chemicals are not reagent grade AND the chemicals are NEW, THEN ENSURE a procurement justification has been provided in the comments section of the MR.
	15.	DETERMINE if any requested chemicals are custom standard or reagent.
		a. IF chemicals are custom standard or reagent, THEN CONFIRM a chemical quote has been provided AND submitted with the MR.

Actionee	Step	Action
		NOTE: *Quotes that do not include quantitative analysis MUST BE RE QUOTED.*
Chemical Management POC		b. IF chemicals are custom standard or reagent, THEN CONFIRM the quote includes a specification for a quantitative analysis.
	16.	IF the MR contains new chemicals that are Particularly Hazardous Substances (i.e., carcinogen, reproductive toxin, or have a high degree of acute toxicity) OR the MR contains new chemicals that are Reactive/Time Sensitive, THEN COMPLETE the following actions: a. CONFIRM a procurement justification has been provided on the Standards Laboratory Order Form for each applicable chemical. b. CONFIRM that Safety and Health/Industrial approvals have been assigned to the MR.
	17.	IF the MR contains radioactive standard material, THEN CONFIRM that the material does not meet the definition of a sealed radioactive source per the requirements of HLMI-PRO-RAD-50818, *Sealed Radioactive Source Accountability and Control*. a. IF the radioactive standard material is NOT a sealed radioactive source, THEN ENSURE the 222-S Radiological Control approvals have been assigned. i. ENTER “This is not a sealed source” in the Comments section in the MR. b. IF the radioactive standard material is a sealed radioactive source, THEN STOP processing the MR according to this procedure. c. FOLLOW the requirements of HLMI-PRO-RAD-50818.
	18.	IF any additional approvals need to be added to the MR, THEN REJECT the MR to return it to the requestor. a. PROVIDE direction to the requestor which approvals need to be added.
	19.	IF the MR includes chemicals in quantities exceeding the threshold identified in Appendix C, THEN OBTAIN a review/approval from the Fire Protection Engineer.

Actionee	Step	Action
Chemical Management POC		a. IF the request is approved, THEN ENSURE any identified additional controls such as storage requirements or additional labeling are entered in the MR. b. IF the request is not approved, THEN REJECT the MR to return it to the requestor. i. PROVIDE the information to the requestor that the Fire Protection Engineer did not approve the MR. c. ATTACH a copy of the Fire Protection Engineer's notification to the MR.
	20.	APPROVE OR REJECT the MR as appropriate.

5.4 Receipt of Chemicals

NOTE: *Unless otherwise noted the steps in Section 5.4 are performed by the Chemical Inventory POC.*

Actionee	Step	Action
Material Coordinator	1.	ENSURE all received chemicals are either delivered to the Standards Laboratory OR NOTIFY Standards Laboratory personnel of the arrival of the chemical(s) and the location where it is staged.
	2.	ENSURE any COA are provided to the Chemical Inventory POC.
Chemical Inventory POC	3.	If possible, ENSURE received chemicals are processed in accordance with this section in a timely manner (i.e., within two to three business days after the arrival at the facility). a. NOTIFY the End User and Material Coordinator who requested the material of any delays in receipt.
	4.	For Standards Laboratory prepared standards and reagents that require tracking in the CITS database, BEGIN at step 22.
	5.	IF any unexpected conditions (e.g., leaking containers, broken seals, illegible labels, missing certificates) are encountered during the receipt of the chemical, THEN PERFORM the following: a. IF any broken, bulging or leaking containers are discovered, THEN CONTACT the SOM. i. FOLLOW the applicable steps in Section 5.11. b. FOLLOW (for other situations) the applicable steps in Section 5.11.

Actionee	Step	Action
Chemical Inventory POC	6.	Before processing chemicals, DON PPE as necessary.
	7.	INSPECT the packaging for damage or signs of leaking.
	8.	PERFORM the following for radioactive standard material: a. CONTACT a Health Physics Technician (HPT) for coverage, upon notification of delivery. b. ENSURE the HPT confirms the container is NOT contaminated. c. ENSURE the Standards Laboratory Chemist or Manager is notified of the receipt of any fissile materials – all plutonium isotopes, uranium 233, uranium 235 (> 1 weight percent enrichment), uranium 236, and americium 241. d. TAKE the following actions for quantities of special nuclear materials that are required to be managed in a material balance area (MBA): i. STOP using this procedure to receive the material. ii. CONTACT the MBA custodian. e. CONTACT the MBA custodian if uncertain whether the container meets/exceeds the special nuclear material limit.
	9.	IF the package contains high hazard chemicals, THEN MOVE the chemical package into or near an operating fume hood.
	10.	UNPACKAGE the material.
	11.	INSPECT the container(s) for leakage.
		NOTE: *If the material is not acceptable, a Material Coordinator can assist in determining the appropriate path forward.*
	12.	DETERMINE if the label on the bottle is illegible but material is identifiable: a. IF the material is identifiable, THEN CONFIRM with the responsible chemist, engineer, or laboratory management that the material is acceptable for use. b. For laboratory use chemicals found acceptable, RELABEL the chemicals using procedure HLMI-PRO-LO-51229 (LO-120-001), *Labeling of Standards and Reagents by Standards Laboratory Personnel*. c. For general use chemicals found acceptable, RELABEL in accordance with the requirements of HLMI-PRO-SH-50572, *Hazard Communication*.

Actionee	Step	Action
Chemical Inventory POC		d. IF the material is not identifiable or not acceptable, THEN CONTACT the Chemical Management POC and the Material Coordinator for direction on the path forward.
	13.	For laboratory use chemicals, ENSURE the material expiration date is clearly marked on both the chemical container and the material certificate of analysis. a. IF the expiration is listed on the material certificate of analysis is in the form of MONTH/YEAR, THEN ASSIGN the expiration date as the last day of the month. b. For laboratory use chemicals and standards, IF the material does not have an expiration date assigned by the manufacturer, THEN ASSIGN an expiration date as follows: • For material that is a peroxidizable chemical, 12 months from the date of receipt. • For chemicals in which the manufacturer requires storage in a refrigerator, 2 years from the date of receipt. • For chemicals in which the manufacturer requires storage in a freezer, 1 year from the date of receipt. • For all other chemicals and standards, 5 years from the date of receipt.
	14.	If present, INSPECT the condition of the integrity seals (intact/not intact).
	15.	IF a chemical is acquired through any means other than purchasing (e.g., receipt from another Hanford facility or free requests from vendors), THEN PROCEED directly to step 22.
	16.	For laboratory use chemicals, RETRIEVE the 222-S Standards Laboratory Order Form (A-6008-601) if provided by the End User.
	17.	PRINT a copy of the MR that shows the following: • All the required approvals • The date ordered • Quantity of material ordered • The item order number.

Actionee	Step	Action
		NOTE: *For laboratory use chemicals, one 222-S Standards Laboratory Order Form (A-6008-601) may have material submitted on multiple MRs. Generally, this is true if different manufacturers/distributors, receipt locations, or approvals are identified for the individual chemical products.*
Chemical Inventory POC	18.	COMPARE the materials received to the vendor invoice, the MR, and the 222-S Standards Laboratory Order Form (A-6008-601).
		a. IF the vendor invoice is missing, THEN NOTIFY the Buyer/Material Coordinator.
		b. RECORD on the MR that the vendor invoice was not received with the order
		c. PROVIDE a copy of the MR to the Material Coordinator.
		d. RECORD the receipt date on the vendor invoice, if available, and the MR.
		e. CONFIRM receipt inspection by writing the date received, receiver's initial and marking INSPECTED BY: (Inspector's Name) on the vendor invoice.
	19.	CHECK if a GHS–SDS/MSDS has been sent with the package.
		a. IF a GHS–SDS/MSDS has been included, THEN PROVIDE the GHS-SDS/MSDS to the Chemical Management POC for submission to the MSDS administrator.
		b. (Chemical Management POC) IF the GHS-SDS/MSDS is not already present in the MSDS system and CITS, THEN SUBMIT the GHS-SDS/MSDS to the SDS/MSDS Administrator for entry into the SDS/MSDS system and CITS.
	20.	CHECK the chemical, chemical packing list and the MR to determine if the product has or should have a tag indicating a QA level greater than QL-0.
		a. If yes, REQUEST laboratory QA personnel to be present during the processing of the chemical.
		b. RECEIVE the chemical by using the checklist in Quality Assurance Chemical Receipt Inspection (A-6008-708).
QA		c. IF any answer on a check listed item is NO, THEN ENSURE that information is included prior to acceptance of the chemical.
		d. IF the chemical is acceptable, THEN SIGN AND DATE the Quality Assurance Chemical Receipt Checklist (A-6008-708).

Actionee	Step	Action
QA		e. IF the chemical is a laboratory use chemical, THEN ENSURE the Quality Assurance Chemical Receipt Checklist (A-6008-708) is kept with the analytical certificate of analysis. f. For laboratory use chemicals, IF the material claims National Institute of Standards and Technology traceability or other nationally or internationally recognized standard agency, THEN CONFIRM the information required per HLMI-PRO-ASYS-51046 (ATS 310, Section 8.3) is present.
Chemical Inventory POC	21.	For laboratory use chemicals, CONFIRM that all the required information has been provided by the vendor. a. For laboratory use chemicals, IF not already present, THEN RECORD the following information on the COA: • Batch/lot number of the received items • MR number, assigned in EAM • Purchase Order number, from the MR • Receipt date • Chemical inventory /barcode number(s). ***NOTE:*** *The Chemical Inventory POC's signature attests that all required information has been verified and is acceptable.* b. IF a signature page is available, THEN SIGN OR INITIAL the page. i. DATE (as applicable) both the MR and Material Certificate to validate all of the required information is present. c. If available, MAKE a copy of the invoice. d. ENSURE the laboratory chemical receipt inspection documentation, which includes the following, are managed as record materials: • The 222-S Standards Laboratory Order Form (A-6008-601) • The copy of the vendor invoice • The printed copy of the MR report. e. ENSURE the COA, including any related chemical product information, is managed as record material.

Actionee	Step	Action
		NOTE: *Standard lot information for standards for the Inorganic and Radiochemistry groups needs to be entered into OMNILIMS. See Appendix G.*
Chemical Inventory POC	22.	ADD radioactive material label to single element and multi element standards containing thorium, uranium, or other radioactive elements.
		a. ENSURE containers are stored in a posted radiological area, either a Radioactive Material Area or a Contamination Area/High Contamination Area.
	23.	ADD additional hazard labels in accordance with the relevant procedure if the manufacturer's label does not identify the applicable hazard(s):
		a. For laboratory use chemicals identified as Particularly Hazardous Substances (see HLMI-PLN-SH-51037 [ATS-310, Section 4.5]), APPLY a carcinogen label, a reproductive toxin label, or toxic label to the chemical container as applicable.
		b. IF a general use chemical is identified as a carcinogen (see HLMI-PRO-SH-50578), THEN APPLY a carcinogen label if the manufacturer's label does not provide this information.
	24.	ADD needed label(s) to the chemical container as required by HLMI-PRO-LO-50150 (ATS-LO-150-062), *Management of Reactive and Time Sensitive Chemicals in the Laboratory*:
		a. IF the chemical is identified as reactive, THEN ADD a reactive label to the container.
		b. IF the chemical is identified as peroxidizable, THEN ADD a peroxidizable chemical label to the chemical container.
		c. IF the chemical is identified as an auto polymerizer, THEN ADD an auto polymerizer label.
		d. ENSURE receipt date is noted on label.
		e. ENSURE conditions to avoid, such as heat, light, etc., are noted on label.

Actionee	Step	Action
		NOTE: *Standards containing PCBs must be marked in accordance with 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions." If not marked by the manufacturer, supplemental labeling is required.*
Chemical Inventory POC		• If the container and existing labeling will accommodate a PCB Mark that is at least 2 inches on each side, it should be marked with a PCB Large Mark (ML). Use of the PCB Small Mark (MS) should be limited to containers that cannot accommodate an ML.
		25. ADD a PCB Mark (see Appendix E) to the chemical container if the chemical contains ≥ 50 ppm PCBs (i.e., PCBs, Aroclor, Clophen, Kanechlor).
		a. IF the chemical container is not large enough to allow an MS, THEN MARK the outer packaging with an MS mark.
		NOTES:
		• *Due to ergonomic hazards, routinely acquired compressed gases are not individually labeled but are entered and tracked a Fixed Inventory item in CITS. Reagent grade gases are tracked via information on the certificate of analysis.*
		• In the event barcodes cannot be printed, temporary label with the SL number will be placed on the containers.
		26. PLACE a chemical inventory /barcode label on the chemical container.
		NOTES:
		• For the 222-S Standards Laboratory prepared chemical reagents and standards, the laboratory procedure number used to prepare the reagent/standard is entered into the CITS database as the manufacturer catalog number. The Standards Laboratory Notebook number is entered into the CITS database as the manufacturer lot number.
		• For the 222-S Standards Laboratory prepared standards for the Inorganic or Radiochemistry Groups, enter the lot information into OMNILIMS. See Appendix G.
		27. INPUT the chemical information into the CITS database.
		28. IF the message "A temporary inventory item has been created" appears after the chemical has been input into the CITS database, THEN PERFORM the following actions as applicable:

Actionee	Step	Action
Chemical Inventory POC		a. CORRECT any data entry errors for the inventory item. b. IF the message is due to the product being a “new” CITS product, THEN PROCEED to step 28.a. i. CONTACT the Chemical Management POC for direction regarding any other errors. c. IF the appropriate GHS-SDS/MSDS has been submitted but is not yet entered in the MSDS system, THEN ENSURE a copy of the GHD-SDS/MSDS is provided to the End User. d. IF the appropriate GHS-SDS/MSDS is not available, THEN STOP processing the chemical. i. PLACE the chemical into a chemical holding area. ii. NOTIFY the Chemical Management POC and the End User that a GHS-SDS/MSDS needs to be obtained and submitted to the MSDS Administrator.
	29.	IF the received item is radioactive standard material, THEN PERFORM the following: a. IF the radioactive standard material is a sealed radioactive source, THEN STOP. b. NOTIFY a 222-S Source Custodian to receive the material in accordance with the requirements of HLMI-PRO-RAD-50818. c. If required, DOCUMENT the standard information in a controlled notebook following procedure HLMI-PRO-LQ-50056 (LQ-150-004). d. ENSURE fissile materials – all plutonium isotopes, uranium 233, uranium 235 (>1 weight percent enrichment), uranium 236, and americium 241 – information such as container /barcode number, isotope name, and container quantity are provided to the Chemical Management POC or Manager for submission to the laboratory criticality safety representative for tracking of total gram quantity in the laboratory as required by HLMI-PRO-RAD-50182 (ATS-LO-180-107).
	30.	ENSURE the original material invoice, if available, is returned to the Material Coordinator to be managed as part of the procurement record.
	31.	NOTIFY the End User that the material has been received.

5.5 222-S Preapproved Chemical List

NOTES:

- *In limited situations where normal procurement practices are not feasible, certain chemicals may be preapproved for purchase. This option permits individual requests of the preapproved chemicals to be submitted on an MR needing only the approvals required for non-chemical requests.*
- *There are specific conditions that must be met for chemicals to be granted preapproved status and approval will be granted on a case-by-case basis at the discretion of the Chemical Management POC.*
- *The 222-S Preapproved Chemical List will be authorized for a limited time period not to exceed three years.*

Actionee	Step	Action
End User or Delegate	1.	CONTACT the Chemical Management POC AND REQUEST a chemical be placed on the 222-S Preapproved Chemical List.
		a. PROVIDE the following chemical information: • Product name • Hanford GHS–SDS/MSDS number • Applicable quality grade • Container size • Container type • Specific storage location • Maximum number of containers in the location • Estimated number of containers acquired in a one-year period.
		NOTE: *Material Services can provide assistance identifying the correct Catalog ID CID.*
	2.	PROVIDE for each requested item on the list, an applicable CID.
		NOTE: *Appendix F provides guidance on information to be included in an EAM Catalog Identification CID for chemical products.*
		a. IF an applicable CID is not available, THEN SUBMIT a CID request using the electronic form on the Material Assets webpage.
	3.	STATE the justification for placing chemical on a preapproved List.

Actionee	Step	Action
End User or Delegate	4.	IF Fixed Inventory status is also being requested for the chemical(s), THEN STATE the justification for this request.
	5.	IF the material is a reagent grade gas, THEN IDENTIFY if the containers will be tracked via lot/batch numbers as identified in Section 5.4.
Chemical Management POC	6.	DETERMINE if the chemical and the conditions are suitable for pre-approved status: a. IF pre-approved status is determined to be appropriate, THEN INITIATE a revision of the 222-S Preapproved Chemical List. b. IF the requested chemicals or conditions are determined to be inappropriate for Pre-Approval status, THEN PROVIDE the requestor with the results of the determination.
	7.	GENERATE a revision of the 222-S Preapproved Chemical List that includes the following information: • The scope of the Pre-Approved List • Limiting conditions for the pre-approval • Chemical Inventory Tracking Requirements (e.g., container barcoding, fixed inventory) • Specific procurement method(s) as applicable (e.g., how requests are submitted to procurement) • Specific listing of the pre-approved chemicals • Approved supplier • Approved vendor, if different from the supplier • Quality grades as applicable • Purity grade (e.g., pre purified, ultra-high purity, research grade) including minimum purity concentration • Any additional criteria provided by the requestor such as maximum contaminant parameters (e.g., Total Hydrocarbon <0.5 ppm) • Requirements for COA as applicable • Catalog ID • Expiration date of approval

Actionee	Step	Action
Chemical Management POC		• Approval signatures.
		NOTES:
		• Appendix B contains guidelines for assigning and performing reviews.
		• The request may be processed separately or as part of the periodic revision of the 222-S Pre-Approved Chemical List.
	8.	ASSIGN the required approvals as specified on the 222-S Chemical Acquisition Approval Authorities list in accordance with Appendix B.
Approval Authorities	9.	APPROVE OR REJECT the request as appropriate.
		a. IF the request is rejected, THEN PROVIDE the reason for the rejection.
	10.	RETURN the request to the Chemical Management POC.
Chemical Management POC	11.	PROVIDE End User with results of the review.
		a. IF the request is not approved, THEN DIRECT the End User to contact the applicable approver to address the issue.
End User or Delegate	12.	IF the request is not approved, THEN FOLLOW one of the approaches below.
		a. ADDRESS the issue of concern,
		b. RESUBMIT the request for approval.
		c. IF one or more of the approvers have determined the requested material is not suitable for pre-approved procurement listing THEN TERMINATE the request process.
Chemical Management POC	13.	REVISE the 222-S Pre-Approved Chemicals List as needed.
	14.	SUBMIT the updated 222-S Pre-Approved Chemicals List to an approved Record Storage Area for records processing.

Actionee	Step	Action
Chemical Management POC	15.	PROVIDE 222-S Operations with a copy of the 222-S Pre-Approved Chemicals List as a link on the 222-S Chemical Management web page[3] or other suitable format.
End User or delegate	16.	SUBMIT procurement requests as needed to the 222-S Operations or as identified in Procurement Methods.

5.6 Fixed Inventory Items

NOTES:

- *In a limited number of cases where individual container tracking is not practical, chemicals may be tracked as fixed inventory items. This option permits the tracking of chemicals as an unchanging inventory item instead of tracking each individual container. Examples of items that may be suitable for fixed inventory tracking include: routine compressed or liquefied gases, emergency light batteries and general use ice melt. There are specific conditions that must be met in order to use the "Fixed" option and approval will be granted on a case by case basis at the discretion of the Chemical Management POC.*
- *Any fixed inventory items are still acquired in accordance with 7.1 for laboratory use chemicals and 7.2 for general use chemicals.*

Actionee	Step	Action
End User	1.	CONTACT the Chemical Management POC, AND REQUEST assignment of a fixed inventory item. a. PROVIDE the following chemical information: • Product name • Hanford GHS–SDS/MSDS number • Container size • Container type • Specific location • Maximum number of containers in the location • Estimated number of containers ordered in a 1 year period. b. PROVIDE a justification for exemption from individual container tracking.
Chemical Management	2.	DETERMINE if the chemical and the conditions are suitable for fixed inventory item status.

[3] http://web.hlmi /page.cfm/Operations/ChemicalManagement

Actionee	Step	Action
POC	3.	PROVIDE the End User with the results of the determination.
		a. IF fixed inventory status is not appropriate to the conditions, as requested, THEN ASSIST the End User to determine an appropriate alternative.
	4.	ENSURE applicable container entry information is entered in CITS.
End User	5.	PROVIDE information on any changes to the parameters identified in step 1.a to the Chemical Management POC.
Chemical Management POC	6.	DETERMINE if the change may be reflected as an update to the existing CITS container entry or if a new container entry will be created.
	7.	ENSURE applicable container entry information is entered in CITS.

5.7 Storage of Chemicals

Actionee	Step	Action
End User	1.	IF any unexpected conditions (i.e., leaking, damaged, broken, or unidentifiable container, etc.) are found in chemical storage areas, THEN PERFORM the following:
		a. For any broken or leaking containers, CONTACT the SOM, AND FOLLOW the applicable steps in Section 5.11.
		b. For other situations, FOLLOW the applicable steps in Section 5.11.
		NOTES:
		• Manufacturer's recommendations include information for temperature, moisture, humidity control, and compatibility with other materials.
		• 29 CFR 1910.106(d) (2) and NFPA 45 specify container type (e.g., glass, metal, approved plastic) and container size limits for flammable liquids.
	2.	STORE the chemical as specified HLMI-PLN-SH-51037, *222-S Laboratory Complex Chemical Hygiene Plan*, in accordance with the recommendations of the manufacturer, such as those listed in material's GHS-SDS/MSDS or container label.
	3.	ENSURE an appropriate gas dock storage location is available, before requesting procurement of a new compressed or liquefied gas.

Actionee	Step	Action
End User	4.	Before requesting installation of a compressed gas bottle or liquefied gas inside a building, ENSURE a compressed gas bottle permit has been issued and is current according to the requirements of HLMI-PRO-OPS-51034 (ATS-310, Section 4.19), *Administrative Control of Gas Bottles at 222-S*.
Room Owner	5.	ENSURE the room and storage area where chemical products containing ≥50 ppm PCBs are posted with the PCB Mark, large (ML) (see Appendix E).
	6.	ENSURE flammable liquid storage cabinets are managed according to the requirements of HLMI-PRO-FP-51050 (ATS-310, Section 9.8), *Control of Flammable Liquid Storage Cabinets*.
	7.	ENSURE refrigerated units that store flammable and combustible liquids conform to the requirements of NFPA 45.
	8.	ENSURE refrigerators and freezers are marked as chemical storage areas (related labeling such as “Flammable Liquid Storage” meets this requirement).
	9.	ENSURE incompatible materials shall not be stored in flammable liquid storage cabinets and flammable liquid storage refrigerators/freezers when they contain flammable and combustible liquids.
	10.	ENSURE flammable liquid storage cabinets and flammable liquid storage refrigerators/freezers shall not contain more liquid volume than their listed capacity.
End User	11.	STORE material at the proper temperature recommended by the manufacturer or by taking into account quality and safety affecting properties.
	12.	IF feasible, THEN STORE chemicals compatible with each other in alphabetical order.
		NOTE: *Segregation may be achieved through the use of separate containment devices, such as bins, trays, beakers, or other storage containers. Containment devices must be capable of storing the full volume of the largest container stored in the area and must be constructed of a material compatible with the chemical being stored. Segregation may also be achieved through the use of separate storage cabinets, especially those specifically designed as chemical cabinets, such as acid storage cabinets or NFPA approved flammable liquid cabinets.*
	13.	SEGREGATE incompatible chemicals using separate containment devices.
	14.	When possible, USE chemicals on a first in, first out basis.

Actionee	Step	Action
		NOTE: *The 222-S Chemical Location Change Form (A-6005-485) may be used to provide this notification. Use of this form does not generate a record.*
End User	15.	ENSURE the Chemical Management POC is notified of permanent movements between laboratory rooms and/or buildings (e.g., movements from the 222-SH/Room 1 or the 222-S contamination area laboratory rooms).
	16.	ENSURE the Chemical Management POC is notified if the chemical has been moved to another facility (e.g., Tank Farm Maintenance, PFP).
Chemical Management POC	17.	ENSURE the CITS database is updated with any storage changes every two weeks. a. ENSURE CITS updates of storage locations are completed BEFORE chemical dispositions are done.

5.8 Disposition of Chemicals

WARNING

Peroxidizable chemicals declared as waste are to remain in the active CITS inventory until they have been stabilized or transferred to a 90-day Accumulation Area.

NOTE: *Whenever feasible, alternative disposition is preferred to managing unneeded items as waste such as transferring ownership in accordance with the requirements of 41 CFR 101 42, Utilization and Disposal of Hazardous Materials and Certain Categories of Property For additional instructions associated with waste handling of chemicals, refer to HLMI-PRO-WM-50136 (ATS-LO-100-151), Laboratory Waste Generation and HLMI-PRO-WM-50145 (ATS-LO-110-129), Generation of Nonradioactive Waste and Recyclable Materials.*

Actionee	Step	Action
End User	1.	PERFORM the following actions for peroxidizable chemicals declared as waste and moved to a Satellite Accumulation Area (SAA): a. NOTIFY the laboratory CHO when any peroxidizable chemicals are moved to SAA because all peroxidizable chemicals containing measurable amounts of peroxides must be stabilized. b. MANAGE disposition according to procedure HLMI-PRO-LO-50150 (ATS-LO-150-062).
CHO		c. UPDATE the chemical storage location in the CITS database to the appropriate SAA location.

Actionee	Step	Action
CHO		d. TRACK the chemical in the CITS until it has been moved to a 90-day Accumulation Area for final disposal or stabilized for long term storage. e. WHEN the chemical has been moved to a 90-day Accumulation Area or stabilized for long term storage, THEN ENSURE the following: • The chemical final disposition status is marked as waste in CITS • The Solid Waste Inventory Tracking System waste container tracking database is updated to reflect the changes to coincide with CITS. ***NOTE:*** *222S Laboratory Disposition of Chemical Inventory Items Request (A-6008-690), may be used to make notifications to the Chemical Inventory POC, as necessary. Use of this form does not generate a record.* 2. NOTIFY the Chemical Inventory POC of each chemical disposition including container barcode, chemical name or description, disposition description (used, waste, etc.), and the disposition date when: • The chemical has been USED IN PROCESS • The chemical (excluding peroxidizable chemicals) has been declared as WASTE • The chemical has been COMBINED into another container • The chemical has been TRANSFERRED to another facility. 3. IF a laboratory standard or reagent has expired but is still usable, THEN CONTACT Standards Laboratory to assist you in the following: • To EXTEND the expiration date according to HLMI-PRO-LQ-50056 (LQ-150-004). • To UPDATE the expiration date in the CITS database. 4. IF the expiration date cannot be extended BUT is still usable for testing and training purposes, THEN PERFORM the following: a. MOVE the chemical to a storage location marked as for testing and training purposes. b. MARK the chemical container as for testing and training purposes only.

5.9 Chemical Inventory

Actionee	Step	Action
Chemical Management POC	1.	ENSURE a facility chemical inventory is completed at least annually in support of the Hanford Site efforts to prepare the following EPCRA reports: • Tier II Emergency and Hazardous Chemical Inventory report as required by 40 CFR 370. • Toxic Chemical Release Inventory report as required by 40 CFR 372. • At least once per year, chemical inventory will include full examination of the container and label for integrity and legibility, respectively.
Chemical Inventory POC/Chemical Management POC	2.	PERFORM a 222-S general chemical inventory.
	3.	IF any unexpected conditions (e.g., leaking, damaged or broken container, indications of crystal formation in a solution of a container labeled Peroxidizable Chemical or unidentifiable container) are found in chemical storage areas, THEN COMPLETE steps 3.a and 3.b: a. For a broken or leaking container, CONTACT the SOM, AND FOLLOW the applicable steps in Section 5.11. b. For all other unexpected conditions, FOLLOW the applicable steps in Section 5.11.
	4.	IF discrepancies, including but not limited to those listed below, are found during inventory activities, THEN NOTIFY Chemical Management POC: • Missing 222 S container /barcode label • Improper chemical storage segregation • Missing or illegible chemical container label • Inherently waste like item • Container integrity concern • General housekeeping concerns • Chemical(s) stored outside approved storage locations.
	5.	ENSURE the barcode readers and the computer systems are set up to collect inventory data from the barcode reader.
	6.	(From the main screen) OPEN the CITS program
	7.	COLLECT the chemical inventory by following the prompts on the barcode reader.
Chemical	8.	TRANSFER the chemical inventory data files to the computer.

Actionee	Step	Action
Management POC	9.	UPDATE the chemical inventory items in the CITS database.
	10.	After the inventory has been reconciled, SUBMIT to the Room Owners a list of missing chemicals and expired chemicals.
	11.	REQUEST Room Owners submit to Standards Laboratory, any outstanding chemical disposition notifications, including expired chemicals.
Room Owners	12.	PROVIDE back to the Chemical Management POC the status of all missing chemicals, including (but not limited to) FOUND, USED, WASTE, etc.

5.10 Chemical Use Review and Justification

Actionee	Step	Action
Chemical Management POC	1.	After 222-S general chemical inventory is completed, SUBMIT a copy of the current inventory of chemicals to each Room Owner, at least annually.
Room Owner	2.	Within 30 days of receipt of the inventory, COMPLETE the chemical use review and justification reports according to the instructions provided by the Chemical Management POC.
		a. IF more than 30 days is necessary to complete the chemical use review and justification report, THEN NOTIFY Chemical Management POC.

5.11 Identifying and Controlling Chemical Management Concerns

NOTES:

- *Problems or issues may be associated with new chemicals being received, existing chemical inventory, or both.*
- *his section applies to both laboratory use and general use chemicals.*

Actionee	Step	Action
End User	1.	If necessary, CONTACT your immediate manager for additional guidance and directions.
		a. IF it is a newly received product, THEN CONTACT a QA group representative as needed for additional guidance and directions.
	2.	IF the chemical product is a newly received product, THEN NOTIFY the Company Buyer/Material Coordinator if any of the following occurs:
		• If any products are missing

Actionee	Step	Action
End User		• If any products are not what was ordered • If any products are expired upon receipt • If there are any other vendor related problems.
	3.	REPORT any discrepancies to the Room Owner, responsible chemist, Work Planner, engineer, or laboratory management.
	4.	PLACE the container in an appropriate storage location segregated from chemicals approved for use a. CONTACT management or Room Owner if a storage location is NOT readily available.
	5.	IF the problem or issue is due to a known or suspected nonconformance, THEN CONTACT a QA group representative AND REFER to HLMI-PRO-ASYS-50764, *Control of Suspect/Counterfeit Items* or HMLI-PRO-ASYS-50760, *Nonconforming Item Reporting and Control*, for additional requirements.
	6.	DOCUMENT all problems or issues associated with chemical orders in accordance with the requirements of HLMI-PRO-ASYS-50763, *Issues Management*. a. SUBMIT issues that do not require corrective action (e.g., poor customer service) as Trend Only.
		NOTE: *Problems or issues with a chemical item will be resolved as appropriate. Actions may include one or more of the following steps as appropriate, but will not include all steps as some steps are mutually exclusive.*
	7.	IF material problem or issue cannot be resolved, THEN CONTACT the Chemical Management POC, immediate manager, or Room Owner for additional guidance and instructions including the possibility of: • Returning the material to the vendor • Checking with the Company Buyer/Material Coordinator to see if the material may be returned to the chemical vendor • Managing the material as waste in accordance with laboratory procedures HLMI-PRO-WM-50136 (ATS-LO-100-151) or HLMI-PRO-WM-50145 (ATS-LO-110-129) • Repackaging the chemical and accept as is • For laboratory use chemicals: Relabeling the chemical using procedure HLMI-PRO-LO-51229 (LO-120-001)

Actionee	Step	Action
End User		• For general use chemicals: Relabeling in accordance with the requirements of HLMI-PRO-SH-50572.

6.0 FORMS

222S Laboratory Approved Chemical Supplier Request (A-6005-519)

222-S Chemical Location Change (A-6005-485)

222S Complex Emergency Preparedness Hazard Assessment Evaluation Request (A-6008-709)

222S Laboratory Disposition of Chemical Inventory Items Request (A-6008-690)

222-S Standards Laboratory Order Form (A-6008-601)

Standards Laboratory Reagent/Standard Order Form (A-6008-600)

7.0 RECORD IDENTIFICATION

The Record Capture table identifies the records generated during the performance of this procedure.

Table 1. Records Capture

Record Name	Record Processed By
222 S Pre-Approved Chemical List	ERA-210356
Certificate of Analyses	
Laboratory Chemical Receipt Inspection Documentation • Standards Laboratory Reagent/Standard Order Form (A-6008-600) • Vendor Invoice • Material Request	
Chemical Use Review and Justification Forms	
Information submitted for preparation of EPCRA Reports	Chemical Inventory Tracking System (CITS)
Chemical inventory data	
Contractor certifications	MSDS Search

Documents are controlled in accordance with HLMI-PRO-IRM-50386, *Document Control*.

Completed records are managed in accordance with HLMI-PRO-IRM-50387, *Records Management*.

8.0 SOURCES

8.1 Requirements

10 CFR 851, “Worker Safety and Health Program”

29 CFR 1910, “Occupational Health and Safety Standards,” Subpart Z, “Toxic and Hazardous Substances”

29 CFR 1910.106, “Flammable Liquids”

29 CFR 1910.119, “Process Safety Management of Highly Hazardous Chemicals”

29 CFR 1910.1200, “Hazard Communication”

29 CFR 1910.1450, “Occupational Exposure to Hazardous Chemicals in Laboratories”

40 CFR 68, “Chemical Accident Prevention Provisions,” Subpart F, “Regulated Substances for Accidental Release Prevention”

40 CFR 68.130, “List of Substances”

40 CFR 302, “Designation, Reportable Quantities, and Notification”

40 CFR 302.4, “Hazardous Substances and Reportable Quantities”

40 CFR 355, “Emergency Planning and Notification”

40 CFR 370, “Hazardous Chemical Reporting Community Right to Know”

40 CFR 372, “Toxic Chemical Release Reporting Community Right to Know”

40 CFR 761, “Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions”

40 CFR 761.40, “Marking Requirements”

40 CFR 761.45, “Marking Formats”

41 CFR 102-40,” Utilization and Disposition of Personal Property with Special Handling Requirements”

DOE-0223, *Emergency Plan Implementing Procedures*, RLEP 3.27, “Hazard Surveys”

DOE O 151.1D, *Comprehensive Emergency Management System*

DOE O 420.1C, *Facility Safety*

DOE O 436.1, *Departmental Sustainability*, Attachment 1, “Contractor Requirements Document”

HLMI-PLN-SH-51116, *Integrated Safety Management System Description*

8.2 References

HLMI-GD-SH-50115 (ATS-GD-1055), *Common Definitions Associated with Chemical Hygiene and Chemical Management*

HLMI-PLN-SH-51037, *222-S Laboratory Complex Chemical Hygiene Plan*

HLMI-PRO-ASYS-50760, *Nonconforming Item Reporting and Control*

HLMI-PRO-ASYS-50763, *Issues Management*

HLMI-PRO-ASYS-50764, *Control of Suspect/Counterfeit Items*

HLMI-PRO-ASYS-51046 (ATS-310, Section 8.3), *Administration of the Approved Chemical Suppliers List and Approved Suppliers of Critical Consumables, Supplies, and Services List*

HLMI-PRO-CMT-50314, *Purchasing Card (P Card)*

HLMI-PRO-CMT-50318, *Procurement of Materials*

HLMI-PRO-FP-51050 (ATS-310, Section 9.8), *Control of Flammable Liquid Storage Cabinets*

HLMI-PRO-IRM-50386, *Document Control*

HLMI-PRO-IRM-50387, *Records Management*

HLMI-PRO-LO-50131 (ATS-LO-090-101), *222-S Laboratory Sample Receiving and Custodianship*

HLMI-PRO-LO-50150 (ATS-LO-150-062), *Management of Reactive and Time Sensitive Chemicals in the Laboratory*

HLMI-PRO-LO-51229 (LO-120-001), *Labeling of Standards and Reagents by Standards Laboratory Personnel*

HLMI-PRO-LQ-50056 (LQ-150-004), *Standards Laboratory Quality Affecting Operations*

HLMI-PRO-NS-50181 (ATS-LO-180-105), *Operation of the MBAs and Transfer of Nuclear Material*

HLMI-PRO-PMT-50344, *Material and Equipment Staging Area Control*

HLMI-PRO-OPS-51034 (ATS-310, Section 4.19), *Administrative Control of Gas Bottles at 222-S*

HLMI-PRO-RAD-50182 (ATS-LO-180-107), *222-S Laboratory Radiological Sample Inventory Control*

HLMI-PRO-RAD-50818, *Sealed Radioactive Source Accountability and Control*

HLMI-PRO-SH-50572, *Hazard Communication*

HLMI-PRO-SH-50576, *Laser Safety*

HLMI-PRO-SH-50578, *Industrial Hygiene Exposure Assessments*

HLMI-PLN-SH-51037 (ATS-310, Section 4.5), *222-S Laboratory Complex Chemical Hygiene Plan*

HLMI-PRO-WM-50136 (ATS-LO-100-151), *Laboratory Waste Generation*

HLMI-PRO-WM-50145 (ATS-LO-110-129), *Generation of Nonradioactive Waste and Recyclable Materials*

HLMI-STD-FP-50565, *Fire Marshal Permits, Combustible Controls, and Construction/Occupancy Requirements*

ISO 17034:2016, *General Requirement for the Competence of Reference Material Producers*

ISO/IEC 17025:2017, *General Requirements for the Competence of Testing and Calibration Laboratories*

NFPA 1, *Fire Code*

NFPA 45, *Standard on Fire Protection for Laboratories Using Chemicals*

NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response*

8.3 Bases

DOE G 151.1-2, *Technical Planning Basis*

DOE/RL-94-02, *Hanford Emergency Management Plan*

HLMI-ERP-EP-51053 (ERP-222S-009), *222-S Laboratory Fire/Spill/Release*

HLMI-PLN-ASYS-50091 (ATS-MP-1015), *222-S Laboratory Facility Quality Assurance Program Plan for Industrial Hygiene Analyses*

HLMI-PLN-ASYS-50093 (ATS-MP-1025), *Quality Assurance Program Plan for Vapor Sample Analysis*

HLMI-PLN-ASYS-50094 (ATS-MP-1032), *222-S Laboratory Quality Assurance Program Plan*

HLMI-PLN-ASYS-51063, *Quality Assurance Program Description*

HLMI-PLN-ASYS-51122, *Quality Implementation Plan and Graded Approach*

HLMI-PLN-SH-51119 (WHL-MP-1037), *Worker Safety and Health Program*

HLMI-PRO-ENV-50007, *Environmental Notification*

HLMI-PLN-ENV-51079, *Integrated Environmental Management System*

HLMI-PRO-ENV-51040 (ATS-310, Section 6.3), *222-S Laboratory Complex Polychlorinated Biphenyl Waste Management*

HLMI-PRO-ENV-51041 (ATS-310, Section 6.4), *222-S Laboratory Complex Waste Management Program*

HLMI-PRO-RAD-50813, *Radioactive Material Packaging and Labeling*

HLMI-STD-SH-50905, *Storing, Using, Handling, and Transporting Compressed and Liquefied Gases*

APPENDIX A - GUIDELINES FOR MANAGING CHEMICALS AND CHEMICAL PRODUCTS

Determining whether chemicals are subject to this procedure is based on a number of different requirements. There are cases where a chemical is subject to this procedure in some situations and exempt from the requirements of this procedure in other situations. Contact the Chemical Management POC if you have any questions about whether a chemical is subject to this procedure. The following examples are broken down into three categories:

- Chemicals subject to this procedure
- Chemicals exempt from this procedure
- Chemicals subject to this procedure in some situations but exempt in others.

Examples of products that are managed as chemicals in accordance with this procedure:

- All Aerosol products including office use supplies
- Compressed gas cylinders, including liquefied gases (Refer to HLMI-PRO-OPS-51034 (ATS-310, Section 4.19), *Administrative Control of Gas Bottles at 222-S,* for additional requirements)
- Absorbent materials such as Waterworks SP 40 or Imbiber Beads
- Chemicals in storage tanks such as the diesel tank for the diesel HVAC unit.
- Bulk quantities of materials such as Chemical Solutions International Non Organic Cleaner, Environmental Scientific, Inc., ESI 680NDL, or General Chemical's 50 pound bag of Sodium Nitrite
- Maintenance products such as Loctite Corporation's Removable Threadlocker 242 or Chevron Products Company's SRI Grease NLGI 2
- Household cleaning products used as laboratory reagents (bleach) or used to clean laboratory equipment (Spic and Span, or S.O.S. Steel Wool Soap Pads), such as hoods or sample carriers. Household cleaning products with a quantity less than 5 gallons used as janitorial products do not require management under this procedure
- Pesticides and herbicides, excluding insect repellents intended for human use
- Laboratory use chemicals, such as sodium nitrate, potassium cyanide, or hexane
- Laboratory standards, such as Inorganic Venture's DIO4 standard, Restek Corporation's Arochlor 1242 Mix, or Amersham Holdings' Mixed Gamma Standard
- 222-S Standards Laboratory prepared standards and reagents such as the TERLIQ standard, 14.6 M nitric acid solution, or the Pu-236 spike standard
- Chemicals brought to the facility by vendors and/or subcontractors for use to support various laboratory needs
- Recyclable chemicals, such as used oil.

Examples of products that do not require management as chemicals in accordance with this procedure:

- Special nuclear materials (SNMs). Refer to the procedure HLMI-PRO-NS-50181 (ATS-LO-180-105)
- Sealed radioactive sources. Refer to the procedure HLMI-PRO-RAD-50818
- Janitorial services are provided by Mission Service Alliance (MSA). Products used by the MSA Janitorial organization are managed in accordance with MSA procedures. Cleaning products acquired by the 222-S Complex to clean laboratory equipment, such as hoods or sample carriers, are NOT exempt from this procedure
- Personal products such as hand soap, shampoo, cosmetics, and medicines (excluding products used for emergency response such as calcium gluconate in KY Jelly, which is used to treat skin and eye exposures to hydrofluoric acid, or saline solutions, which are used in the portable eyewash stations)
- Secondary containers of chemical products packaged by groups other than the 222-S Standards Laboratory unless required by management
- Items that meet the OSHA definition for “Articles”. Articles are items that are formed to a specific shape or design and have an end use functions dependent on the design and that do not release or cause exposure to a hazardous chemical under normal conditions of handling and use. Examples include items such as sorbent tubes, light bulbs, thermometers, and lead shielding are articles and do not require tracking under this procedure. Management may request these items be evaluated by the Chemical Management point of contact and GHS–SDSs/MSDSs be received by the manufacturer or distributor
- Gasoline and/or diesel as long as the total aggregate quantity is less than 25 gallons
- Laboratory samples. Refer to HLMI-PRO-LO-50131 (ATS-LO-090-101) for handling laboratory samples
- Non aerosol office supplies such as markers, pens, stamp pads, printer toner, and white board cleaner.

Examples of products that under certain conditions may require management as chemicals in accordance with this procedure:

- Batteries (These listings are not all inclusive, contact the Chemical Management POC for additional guidance)
    - Batteries required to be managed as chemicals may include:
        - Lead Acid batteries containing either liquid or stabilized liquid (e.g., gel cell) unless they meet both consumer design and consumer use criteria. Examples include but are not limited to, battery powered equipment, uninterruptible power sources, emergency lighting
        - Batteries (including those designed for consumer use) where potential exposure to hazardous chemicals could exceed consumer use conditions (e.g., storage, equipment maintenance)

- Batteries not required to be managed as chemicals may include:
  - Batteries used or installed in consumer products (e.g., AA, D, 9 volt, cell batteries, consumer power tool battery packs)
  - Lead acid batteries installed in a consumer product such as a motor vehicle
  - Batteries that meet all the criteria for exemption as an Article (e.g., button batteries or other batteries whose casings will survive normal “handling” such as being dropped)

- Potable and Non-potable water. While there are no hazard related requirements for managing water as a chemical, water used for analytical purposes may be managed in accordance with this procedure for quality considerations
- First Aid chemical products. While there are no hazard related requirements for managing first aid products such as saline solutions, or ointments as chemicals, they may be managed in accordance with this procedure for quality considerations.

APPENDIX B - CHEMICAL APPROVAL AUTHORITY DESCRIPTION

The following table provides guidance on what each approval authority is reviewing with regard to the chemical(s) being requested. Each approval authority is responsible for ensuring the Material Request is complete and accurate with respect to their role. The Chemical Acquisition Approval Listing identifies the appropriate approval authority for each role. This list is a user aid that reflects assigned reviewers by roles and is not a record as the actual assignments are identified in EAM. Changes are made as requested when assigned roles change or as otherwise identified.

CHEMICAL APPROVAL AUTHORITY DESCRIPTION	
Approval Role	**Approval Requirements**
Chemical Management POC	The 222 S Chemical Management POC is required to determine if the chemicals being procured are not currently available for use, as listed in CITS, or if the chemical is new at the laboratory. This approval ensures all applicable approvals have been assigned, and the chemical's GHS–SDS/MSDS is listed in the MSDS System. This approval also identifies and notes all orders for laboratory chemicals that may require additional hazard labeling (i.e., reactive or time sensitive chemicals or particularly hazardous substances) and any COA or composition requirements are noted for each item. Orders requiring procurement justification have been justified prior to purchase (e.g., "REAGENT GRADE OR BETTER" chemicals, carcinogens (general use chemicals), particularly hazardous substances (laboratory use chemicals) and Emergency orders) are verified to be present and appropriate for the requested chemical.
Cost Account Manager	The Cost Account Manager will approve all purchases in accordance with the Determination of Required Approvals – Items (DRA – Items).
Emergency Preparedness	The laboratory Emergency Preparedness is required to be assigned for all chemical orders if the quantity purchase would exceed one half of a threshold quantity as specified in 40 CFR 68, if the quantity ordered has exceeded 50% of the limits as listed in Appendix C or if the request includes explosive materials. Emergency Preparedness approval is required for chemical orders that do not screen out against the Hazardous Material Screening criteria in DOE O 151.1D and require further consideration to determine if an Emergency Planning Hazard Assessment (EPHA) is necessary.
Engineer	Engineering approval is required for any other situations where QA approval is required (e.g., assignment of Enhanced Quality (QL-3) or the first-time order of an Industrial Hygiene reference material).

CHEMICAL APPROVAL AUTHORITY DESCRIPTION	
Approval Role	**Approval Requirements**
Environmental	Approval from the 222 S Environmental Professional or delegate is required for all new chemicals or if the quantity purchased would exceed one half of a reportable quantity as specified in 40 CFR 302.4, or 40 CFR 355. If the chemical is new to the laboratory, the 222 S Environmental Professional obtains a review by the 222 S Waste Services organization to determine if a disposition path exists for the chemical and as needed updates the Material Request (MR) with any special waste handling instructions or pre designation results for the chemical product, empty containers, and labeling. The Hanford Laboratory Management and Integration, LLC (HLMI) 222 S Environmental Professional verifies the provided waste codes and subcategories are included in the 222 S Part A Permit and that the use of the chemicals will not result in any air contaminant not previously emitted or cause an increase in the amount of any air contaminant emitted as specified by the Hanford Site Air Operating Permit. If the chemical has any special waste handling controls (acutely hazardous controls, labeling, etc.), there is no treatment path for the material, or there are significantly higher waste costs or controls, the MR comments field should be noted for each item.
Fire Engineer	Fire Protection Engineer approval is required for all chemicals that exceed the limits listed in Appendix C, including all explosive chemicals, all NEW chemicals, and as requested by Chemical Management POC. If the chemical is new to the laboratory complex, the Fire Protection Engineer aids the manager in determining if the chemical product could potentially introduce a new unanalyzed hazard or require special use, protection, or storage controls
Laboratory CHO	The laboratory CHO provides the initial Chemical Management review for all new laboratory use chemicals. If the chemical is new to the laboratory complex, the CHO provides additional direction for any special handling or storage controls needed for the chemical. This includes special controls that may be necessary for particularly hazardous substances (i.e., carcinogens, etc.), polychlorinated biphenyls (PCBs), or reactive/time sensitive chemicals, as they relate to chemical hygiene. If the chemical has any special handling or storage controls, the MR comments field should be noted for each item.

CHEMICAL APPROVAL AUTHORITY DESCRIPTION	
Approval Role	**Approval Requirements**
Manager	The employee's immediate manager is required to approve all chemicals that are being used by his/her organization. The immediate manager evaluates all new chemicals to determine if their use could result in a potential for exposure. The immediate manager works with the laboratory industrial hygienist and/or the laboratory CHO to determine if the chemical product may exceed any published exposure limits (TLV, PEL, etc.) or has any inhalation, dermal, or ingestion hazards that would require special handling or storage controls, including special controls that may be necessary for particularly hazardous substances (i.e., carcinogens, reproductive toxins, or highly toxic substances) or for reactive or time sensitive chemicals. The manager is also responsible for ensuring that the affected employees' EJTAs are updated for the chemicals being received. Managers are required to ensure the incoming chemicals have an appropriate storage location identified.
Project Analyst	The Project Analyst will approve all purchases in accordance with the Determination of Required Approvals – Items (DRA – Items).

CHEMICAL APPROVAL AUTHORITY DESCRIPTION	
Approval Role	**Approval Requirements**
QA Engineer (Quality Assurance)	The QA Engineer, (Quality Assurance) approval is assigned for all orders that are designated as Enhanced Quality Assurance (QL 3). The 222 S Laboratory Complex does not currently have any systems where Full Quality Assurance (QL 1 or QL 2) requirements would apply. The Quality Assurance approval is required for any request with a specifically stated QA clause. The Quality Assurance approver determines that the quality assurance clauses meet the quality assurance requirements for the laboratory project. For Laboratory Use chemicals only, Quality Assurance approval is required if any of the following conditions apply. Any chemical from a supplier not on the ACSL (End user must have submitted a request to QA to add the supplier to the ACSL) Any chemical that is not reagent grade or better. Any chemical that does not include a Certificate of Analysis as part of the request, unless that chemical is from a manufacturer on the ACSL, including acceptable conditions for acquisition as conditional acceptance on the ACSL Any reference material that does not include an NIST traceable Certificate of Analysis as part of the request The first time request of chemicals that will be used as reference material in an Industrial Hygiene procedure. Engineering approval is assigned if Quality Assurance approval is assigned.
Radiological Controls (RadCon)	RadCon approves the procurement or receipt of any radioactive materials (including standards) that may be brought to the laboratory. All dilutions of uranium or thorium containing products must be approved by RadCon.
Safety and Health/Industrial	The Safety and Health/Industrial approval is required for all chemicals that exceed the limits listed in Appendix C, including all explosive chemicals, all NEW chemicals, and as requested by Chemical Management POC. If the chemical is new to the laboratory complex, the Industrial Health approver aids the manager in determining if the chemical product could potentially exceed any published exposure limits (TLV, PEL, etc.) or if it has any inhalation, dermal, or ingestion hazards that would require special handling or storage controls, including special controls that may be necessary for particularly hazardous substances or carcinogens.

CHEMICAL APPROVAL AUTHORITY DESCRIPTION	
Approval Role	**Approval Requirements**
Waste Services	The Waste Group (HMC) approval is required for all NEW chemicals so that a review and waste designation can be done to ensure chemicals are disposed of in accordance with DOE and state regulations.

APPENDIX C - CHEMICAL QUANTITY LIMITS REQUIRING ADDITIONAL APPROVALS

Many of the following limits have been taken from the HLMI-STD-FP-50565, Attachment A, "Occupancy Permit Reporting Thresholds for Hazardous Materials," which uses information from NFPA 1. For the definition of each of the chemical classifications, refer to HLMI-GD-SH-50115 (ATS-GD-1055).

If the quantity of a chemical being purchased exceeds 50% of the quantities indicated below, laboratory industrial hygiene and engineering approvals must be assigned to the MR and fire protection approval must be obtained. Some of the chemicals listed below, such as highly toxic chemicals or occupational carcinogens, may already require approval in accordance with DOE O 151.1D.

Chemical Quantity Limits Requiring Additional Approvals	
Chemical Classification	**Quantities Requiring Approval**
Asphyxiant and Ideal Compressed Gases	6000 CFT
Cellulose Nitrate	No Limit Listed
Combustible Liquids	Stored Inside.....25 Gallons Stored Outside.....60 Gallons
Corrosive Substances	Gases.....200 CFT Liquids .....55 Gallons Solids .....500 Pounds
Cryogens	No Limit Listed
Explosives	Any Amount
Flammable Compressed Gas	200 CFT
Flammable Liquids	Stored Inside.....5 Gallons Stored Outside.....10 Gallons
Flammable Solids	100 Pounds (Except Magnesium)
Highly Toxic Gases, Liquids and Solids	Gases .....Any Amount Liquids .....1 Pint Solids.....1 Pound
Irritant Gases, Liquids and Solids	Gases.....200 CFT Liquids .....55 Gallons Solids .....500 Pounds
Liquefied Petroleum Gases	120 Gallons
Magnesium	10 pounds
Occupational Carcinogen	Gases.....200 CFT Liquids .....5 Gallons Solids .....40 Pounds

Chemical Quantity Limits Requiring Additional Approvals	
Chemical Classification	**Quantities Requiring Approval**
Organic Peroxides	Class 1 .....Any Amount Class 2 .....Any Amount Class 3 Liquids .....1 Gallon Solids .....10 pounds Class 4 Liquids .....2 Gallon Solids .....20 pounds
Other Health Hazards	Liquids .....55 Gallons Solids .....500 Pounds
Oxidizing Gases, Liquids and Solids	Class 4 .....Any Amount Class 3 Gases .....Any Amount Liquids .....1 Gallon Solids .....10 Pounds Class 2 Gases.....200 CFT Liquids .....10 Gallon Solids .....100 pounds Class 1 Gases.....200 CFT Liquids .....55 Gallon Solids .....500 pounds
Pyrophoric Gases, Liquids, or Solids	Any Amount
Sensitizer Gases, Liquids, and Solids	Gases.....200 CFT Liquids .....55 Gallons Solids .....500 Pounds
Toxic Gases, Liquids and Solids	Gases.....200 CFT Liquids .....10 gallons Solids .....100 Pounds

Chemical Quantity Limits Requiring Additional Approvals	
Chemical Classification	**Quantities Requiring Approval**
Unstable Gases, Liquids or Solids	Class 4 .....Any Amount Class 3 Gases .....Any Amount Liquids .....1 Pint Solids .....1 Pound Class 2 Gases.....200 CFT Liquids .....5 gallons Solids .....40 Pounds Class 1 Gases.....200 CFT Liquids .....10 Gallons Solids .....40 Pounds
Water Reactive Liquids and Solids	Class 3 .....Any Amount Class 2 Liquid .....5 Gallons Solids .....40 Pounds Class 1 Liquid .....10 gallons Solid .....100 Pounds

APPENDIX D - HAZARDOUS MATERIAL SCREENING GUIDE

Hazardous Material Screening Information
1. Is the material commonly available to and used by the general public, provided that the formulation and concentration is the same as for products that are distributed without significant restrictions to the public?
2. Has the material been assigned a NFPA health hazard category rating (or a comparable locally assigned hazard rating) of 0, 1, or 2?
• If NFPA Health Hazard Rating is 3, is it based solely on cryogenic properties and the resulting frostbite hazard?
• If NFPA Health Hazard Rating is 3, are the individual containers no more than 5 gallons or 40 lbs. or the total aggregate quantity of the material no more than 25 gallons or 200 lbs.?
• If NFPA Health Hazard Rating is 4, are the individual containers no more than 1 lb. or the total aggregate quantity of the material no more than 5 lbs.?
3. Is the material non-dispersible due to physical form or other factors such as those listed below? (Materials that are gases at normal temperatures are considered dispersible.)
• If the material is a solid at normal temperatures, it does not contain or include a significant fraction of small particles with the consistency of flour nor is it identified as a powder on the label. Additionally, there is no identified plausible release mechanism by which a significant fraction of the material can be rendered airborne.
• If the material is a liquid at normal temperatures, it exhibits a vapor pressure (or partial pressure of hazardous material) of less than 1 mm Hg at about 25 degrees Celsius.

Additional Considerations for EPHA Review

The fact that a substance is flammable, combustible, or explosive is not by itself sufficient cause to analyze it in an EPHA. However, a substance should be considered a potential release initiator or promoter if it is combustible or capable of a violent chemical reaction that could cause or enhance the release of other hazardous materials with the ability to cause severe injury or death beyond the immediate vicinity of the release.

If a substance meets one of the following tests, its flammable or explosive properties should be noted for possible consideration in the EPHA as a factor potentially influencing the release of existing toxic materials:

- The substance is flammable or explosive and capable of a violent/energetic reaction (e.g., boiling liquid expanding vapor explosion, deflagration, explosion, etc.); or
- The energy available in the substance could cause significant damage to facilities/equipment and disperse other substances stored or used in close proximity to it; or
- Conditions exist that could lead to detonation or ignition of this material (ignition source).

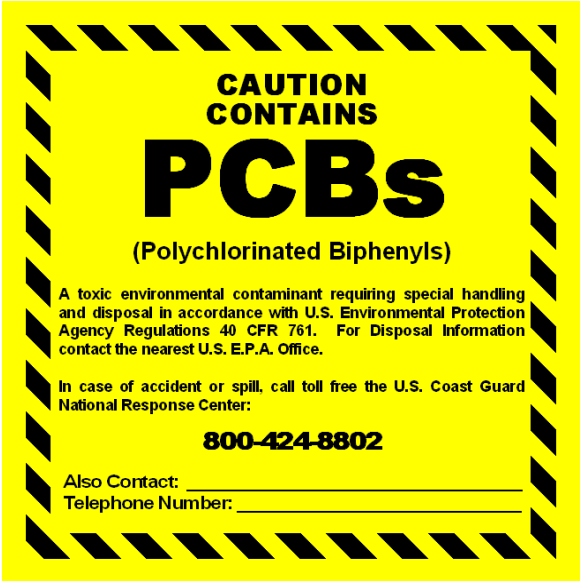
The fact that a chemical reacts with other substances is not by itself sufficient cause to analyze it in an EPHA. If an energetic reaction involving substance A could cause the release of hazardous material B, then the reaction should be considered a potential initiator during the analysis of substance B. If an identified reaction creates a byproduct that is an acute inhalation hazard and if the quantity created could be a significant hazard beyond the immediate vicinity of the event, then the reaction and its by product should be considered for analysis in the EPHA.

If a substance meets one of the following tests, its chemically reactive properties should be noted for possible consideration in the EPHA as the source of a toxic reaction product:

- The substance will react with other chemicals or materials used or stored in the same location resulting in the release of an acute toxic inhalation hazard, (e.g., chlorine); or
- The reaction could be sufficiently energetic to cause significant damage to facilities/equipment and disperse other toxic substances stored or used in close proximity to it; or
- The reaction products are toxic and pose an acute airborne hazard

APPENDIX E - EXAMPLES OF PCB MARKS FOR POSTING AND LABELING

Figure E-1. Large PCB Mark (ML)



Use the large PCB Mark or ML Mark to identify storage area for chemical products that have ≥ 50 ppm polychlorinated biphenyls (PCBs). The ML Mark size shall be at least 6 inches on each side, but may be reduced in size proportionately down to a minimum of 2 inches on each side. As container size and existing labeling permit, the large PCB Mark (ML) should also be used for containers of chemical products with > 50 ppm PCBs.

Figure E-2. Small PCB Mark (MS)

When container size will not accommodate an ML, use the small PCB Mark (MS) to identify containers that have ≥ 50 ppm PCBs. The MS shall be a rectangle 1 inch by 2 inches, but may be reduced in size proportionately down to a minimum of 1 by 2 cm.

Refer 40 CFR 761.40, “Marking Requirements” and 40 CFR 761.45, “Marking Formats” for additional requirements related to marking PCB containers, items, or storage areas.

APPENDIX F - CHEMICAL CATALOG ID REQUEST GUIDE

All materials on an MR must have a Catalog Identification CID. If the desired chemical does not have an appropriate CID, a CID Request must be submitted using the electronic form on the HLMI Procurement webpage. This guide is intended to assist the End User in providing the necessary information to accurately identify the needed chemical.

Chemical Catalog ID Request Guide	
Field on Request Form	**Guidance**
Category	**Chemicals/Lab Supplies[1,2]**

Description	• Chemical Class Examples
	  ○ Laboratory Use: mixture type or pure chemical name
	  ○ General Use: paint, adhesive, solvent, lubricant, fuel, sealant, foam insulation
	• Product name (including as applicable: brand name, grade, tint base, finish, color, etc.)
	• Concentration and/or purity grade (pure chemicals are assumed to be 100% unless otherwise noted, lab use chemicals typically list a purity grade and a concentration)
	• Physical state (as applicable – needed if product comes in more than one form such as products sold as both a pourable liquid and an aerosol or gases sold in both compressed and liquefied forms.)
	• Custom tint (as applicable)
	• Container size (include material type (glass, Teflon™) if more than one available)
	• Examples (use the letter “u” as the prefix for micro)
	• Paint, AK2-3, Amerlock 2/400 White Resin, 1 Gallon
	• Paint, Pure Performance interior latex eggshell, pastel base, tint: K9-180 Vinyl Cream, 1 Gallon
	• Paint, Krylon Industrial Quik-Mark Water-based inverted marking paint fluorescent orange, 17 oz aerosol
	• Adhesive, Armaflex 520 Adhesive, 1 QT
	• Paint, Daly’s Wood Stain, interior/exterior 110 Golden Oak, 1 PT
	• Nitric acid, ACS Grade, 2.5 L, glass bottle
	• Standard, organic, appendix IX mix 2, 1000 ug/ml in methylene chloride, 1 ml ampule
	• Standard, cerium single analyte, custom grade, 1000 ug/ml in 7% nitric acid, 125 ml
	• Nitrogen, compressed gas, Ultra High Purity (minimum purity 99.999%), cylinder size K (~220 CF), Batch Certificate of Analysis required
	• Nitrogen, refrigerated liquid, Industrial Grade (minimum purity 99.97%), Dewar size 5412 cubic feet
	• Solution, Buffer, pH, pH10.00, 4 Liter, plastic.

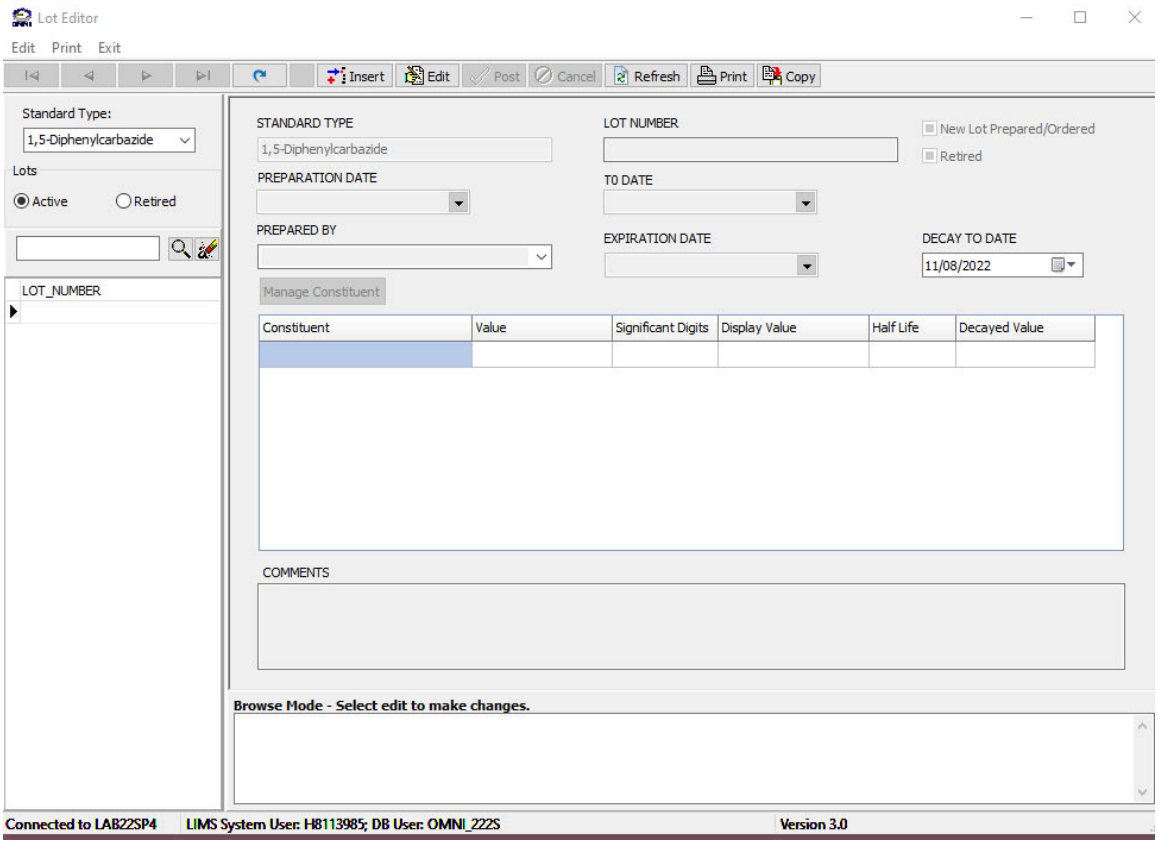
Unit of Measure	Either EACH or same unit as container size listed in Description

Chemical Catalog ID Request Guide	
Field on Request Form	**Guidance**
Quality Level	QL-0 for nearly everything QL-3 only for items as directed by the project or QA The labs do not currently have systems requiring QL-2 or QL-1.
Procurement Quality Clauses	Only applicable for QL-3. – As needed, consult QA to determine appropriate clauses.
Safety Class	Select GS (The labs have no Safety Significant (SS) Systems.)
Storage Level	Use HLMI-PRO-PMT-50344, *Material and Equipment Staging Area Control*, Attachment G to determine needed storage level.
Shelf Life (if applicable)	General Use Chemicals – if available, a product data sheet may identify a minimum shelf life. Select yes or no.
Applicable Shelf life	General Use Chemicals – if yes is marked above, enter shelf-life as either years or months.
Manufacturer (Not Supplier or Vendor name)	This will almost always be the same as the manufacturer listed on the Safety Data Sheet.
Manufacturer Part/Model # (Not Supplier or Vendor Part/Model #)	• Laboratory use chemicals MUST list a part number. • General use chemicals should list a part number whenever possible (there are a few specialty chemical manufacturers who don't use part numbers to identify their products, or the part number is integral to the product name). • If the catalog is published by the manufacturer, the catalog entry is often the same as the part number. Supplier/Vendor catalogs (paper or online) entries may or may not list a manufacturer part number as well as their catalog ID. SDS and manufacturer Product Data Sheets may also list part numbers.
Property Tagging	Chemicals are consumables and are "Group 1" property.
Required Approvals	This is for creation of the CID only and not the same as approvals on the MR. Select NO to both questions for QL-0 (applies to nearly all chemicals) QL-3 only used for chemicals when specifically directed by project management or analytical customer.
Additional Info	For new analytical standards use the section titled "**Please provide any additional Info below**:" and state: "per our new process, this standard must be reviewed a QAE". Examples include but are not limited to: • Batch COA Required • Preferred vendor and vendor part # in the description, such as Grainger, P/N 1FCC4 (when no manufacturer part # can be found).
1. Paint can include stains, finishes and epoxy coatings such as Amerlock *2. Adhesives can include glues, adhesive cements and epoxy cements such as JB Weld.*	

Someone in your organization familiar with EAM, the Chemical Management POC or a Material Coordinator may also be able to provide assistance.

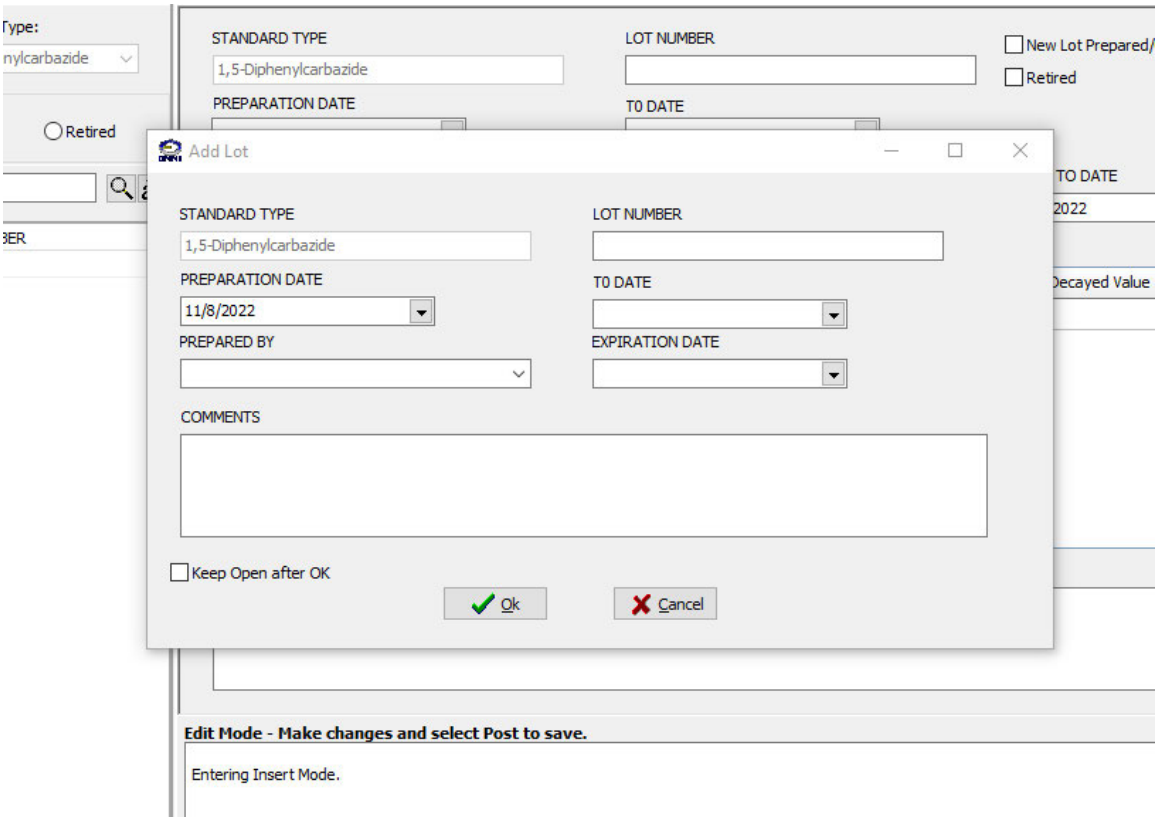
APPENDIX G - OMNI INSTRUCTIONS FOR ENTERING STANDARD LOT INFORMATION

1. From the Maintenance menu, SELECT “Analytical” then “Lot Editor.” A new window will open up.



2. SELECT the Standard Type (Standard Name) of the desired standard.

3. SELECT “Insert “from the menu. A new window will open.



- **Lot Number:** Use the Mfg lot number unless each individual bottle will get a new expiration date when opened.
- **Preparation Date:** The date received or prepped by Standards Lab.
- **T0 Date:** Reference date from Certificate of Calibration for radioactive standards or preparation date if made in-house
- **Prepared By:** Name of Chemical Technologist who prepared standard or received it.
- **Expiration Date:** If expiration date is not stated on the COA, then designate a general expiration date from HLMI-PRO-SH-50151. If standard is prepared by Standards Lab, then use expiration date in procedure.
- **Comments:** Provide SL# if using Mfg lot numbers for lot.

4. CLICK “OK” AND CHECK that the lot shows up on the left side and all information is correct.

All Standards prepared and purchased for Inorganic group need to be entered into OMNI.

Table G-1. Standards/Tracers that Need to be Entered in OMNI for Radiochemistry (Listed in Alphabetical Order)

• 000ppm Samarium-inorganic ventures • Aspike • Americium-243 Tracer • Bspike • Carbon-14 • ENVCRB • H_3 • Iodine-129 STD • Iodine Carrier • ITANK • Low-level H_3	• Nickel-63 • Nickel Carrier • Plutonium-236 Tracer • Plutonium-241 Standard • Selenium Carrier • Samarium-151 • Strontium Carrier • Technetium-99 SP • Thorium-229 • TNKFUS

Table G-2. Standards/Tracers that Need to be Entered in OMNI for Radiochemistry (Listed by Method)

Method	Spike	Tracer/Carrier	Standard
Alpha	Aspike	N/A	ENVCRB
Americium	N/A	Americium-243 Tracer	TNKFUS
Beta	Bspike	N/A	ENVCRB
Carbon	CAR-14	N/A	Carbon-14
GEA	N/A	N/A	TNKFUS
Iodine	N/A	Iodine Carrier	Iodine-129 STD(0.4)/ ITANK(0.004)
Nickel	N/A	Nickel Carrier	Nickel-63
Plutonium	N/A	Pu-236 Tracer	TNKFUS
Plutonium-241	N/A	Pu-236 Tracer	Plutonium-241 Standard
Samarium	N/A	1000 ppm Samarium - inorganic venture	Samarium-151
Selenium	N/A	Selenium Carrier	N/A
Strontium	N/A	Strontium Carrier	TNKFUS
Technetium	N/A	Technetium-99 SP	TNKFUS
Thorium	N/A	Thorium-229	TNKFUS
Tritium	H_3/low-level H_3	N/A	H_3(0.003)/low-level H_3(0.00004)

The values given for the iodine and tritium standards are just examples to show roughly the difference between the two types. The actual values can differ.

APPENDIX H - GLOSSARY

Term	Definition
General Use Chemical	A chemical whose use is outside the criteria for management as a laboratory use chemical and is subject to the OSHA Hazard Communication Standard (29 CFR 1910.1200). This includes chemicals for use in operational and maintenance activities.
Globally Harmonized System (GHS)	The United Nations Globally Harmonized System of Classification and Labeling of Chemicals.
Laboratory Use Chemical	A chemical whose use is subject to the OSHA Occupational Exposure to Hazardous Chemicals in Laboratories Standard (29 CFR 1910.1450). These are chemicals used by scientific staff in the course of their normal duties including but not limited to chemicals used in the performance of analytical and test methods.
New Chemical	A chemical identified in the CITS database as NOT being present or purchased in the last three years at the 222-S Laboratory Complex. This includes the selection of a new manufacturer or a new product number for an existing chemical or a change in concentration of an existing chemical
Reagent Grade Chemical	A chemical substance of sufficient purity for use in chemical analysis or testing. A batch COA or equivalent is available ensuring the defined purity criteria are met. Examples of chemicals that meet these criteria include but are not be limited to: • Certified reagent grade or research grade by the supplier • Certified to meet the specifications of the American Chemical Society (commonly called ACS grade) • Certified to meet Ultra High Purity or UHP specifications for gases or liquefied gases • Traceable to a national or international standard such as NIST • Many suppliers assign brand specific terms to identify reagent grade chemicals. Quality Assurance representatives can provide assistance in determining if a declared level of purity meets the criteria for reagent grade.