METALS STANDARD AND REAGENT PREPARATION PROCEDURE

1. SCOPE AND APPLICATION

This procedure is followed when preparing standards and reagents used in the Metals Chemistry Group at the Florida Department of Environmental Protection, Division of Environmental Assessment and Restoration Laboratory. It describes labeling and documentation of purchased standard and reagent containers, labeling and documentation of prepared standard and reagent containers, and expiration dates of standards and reagents. Any explicit instructions about reagent or standard preparation that appear in the specific SOP for the inquired method shall take precedence over these instructions.

2. LABELING AND DOCUMENTATION OF PURCHASED STANDARD AND REAGENT CONTAINERS

2.1 The date received must be written on the outside of the original shipping box or package of the standard or reagent. Once the box is opened in the laboratory, the received date must be transferred to the bottle.

2.2 All pertinent information about a purchased standard or reagent is documented by logging it into the Standard Preparation Tracker in the Laboratory Information Management System (LIMS). The software will generate a serial ID number, which is used as the unique identifier for the purchased standard or reagent. Print a label from the Standard Preparation Tracker using a SATO label printer and place it on the container. The label should include the following:

a) Unique Serial ID Number

b) Name of Standard or Reagent (with concentration if appropriate)

c) Expiration Date (see Section 4)

d) Date Received

2.3 Certificates of Analysis:

2.3.1 The manufacturer's certificate of analysis for purchased standards and reagents should be retained physically and/or electronically.

2.3.2 An electronic copy of the manufacturer's certificate of analysis (if available) shall be stored at: \\floridadep\data\DEAR\Labs\Lab5\Chemistry\InorganicPrep\Certificates of Analysis for Reagents and Standards.

3. LABELING AND DOCUMENTATION OF PREPARED STANDARDS AND REAGENTS

3.1 Prepared standards and reagents are entered into the Standard Preparation Tracker in the same manner as purchased reagents and standards (see Section 2.2). The software will generate a serial number which is used as the unique identifier for the prepared standard or reagent. Print a label using a SATO label printer and place it on the container. The label should include the following:

a) Unique Serial ID Number

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b) Name of Standard or Reagent (with concentration if appropriate)

c) Expiration Date (see Section 4)

d) Date Prepared

3.2 If a new bottle of reagent is opened and used with a previously opened reagent, the prepared solution must carry the expiration date of the oldest reagent used.

4. EXPIRATION DATES

4.1 Expiration Dates for Purchased Reagents - Use the expiration date provided by the manufacturer. If no expiration date is provided, liquid reagents will be assigned a 5-year expiration date and solid chemicals will be assigned a 10-year expiration date.

4.2 Expiration Dates for Prepared Reagents - Expiration dates for prepared reagents may vary depending on the reagent. See the specific SOP for the expiration date of the inquired prepared reagent; or, if the expiration date is not listed in the specific SOP, use the expiration date provided by the manufacturer.

4.3 Expiration Dates for Purchased Standards - Use the expiration date provided by the manufacturer.

4.4 Expiration Dates for Prepared Standards - The Standard Preparation Tracker module in LIMS will automatically calculate the expiration date for a single element standard or a multi-element standard based on the expiration date of the parent standard(s). In cases where an intermediate or working standard is prepared from a solid material, the expiration date will be assigned according to the specific SOP in which the preparation is detailed.

5. REAGENT AND STANDARD PREPARATION INSTRUCTIONS

Prepare reagents and standards according to the instructions given in the preparation or analysis SOPs.

6. WASTE MANAGEMENT

Note: *Review the DEP Health and Safety Manual located on the Division of Environmental Assessment and Restoration intranet site.*

6.1 Standards - Expired or discarded standards must be placed in a hazardous waste container if the concentration of any metal is above the City of Tallahassee sewer discharge limits. The sewer discharge limits for metals are posted on the City of Tallahassee website, talgov.com. Posted signs listing these concentrations are also located throughout the laboratory.

City of Tallahassee Sewer Discharge Limits for Metals: samples, digestates, and standards with metal concentrations above the limits below must be discarded in a hazardous waste container.

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Metal	Limit	Units
Arsenic	132	µg/L
Cadmium	79	µg/L
Chromium	2898	µg/L
Selenium	353	µg/L
Lead	540	µg/L
Mercury	38	µg/L
Nickel	1428	µg/L
Silver	3190	µg/L
Copper	852	µg/L
Molybdenum	105	µg/L
Zinc	2730	µg/L

6.2 Reagents - Refer to the SDS for information about chemicals being used. Also, refer to the specific SOPs for handling and disposing of expired or discarded reagents.

6.3 All non-hazardous wastewater may be discarded into the sink if the acid concentration is less than 2% or diluted by 50 or greater.

7. REFERENCES

7.1 DEP Health and Safety Manual, located on the Division of Environmental Assessment and Restoration intranet site.

7.2 DEP SOP HG-013 Mercury Waste Disposal

7.3 City of Tallahassee Industrial Pretreatment Sewer Use Manual, located on the City of Tallahassee website, talgov.com.

7.4 TNI Standard, EL-V1-2016-Rev.2.1

Appendix of Significant Changes

04/20/2015 SOP edited for simplicity and to add unique identifier for reagents requirement. The Sewer Discharge limits in Section 8.1 were updated.

04/26/2024 Section 2.3.2 edited to update network location of certificates of analysis. Section 4.1 edited to update expiration dates for liquid and solid reagents.

03/18/2026 Updated network path location for Certificates of Analysis in Section 2.3.2. Minor formatting changes throughout the document. Updated the proper name of the DEP Health and Safety Manual.

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