# 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 Central Laboratory. It describes labeling and documentation of purchased standard and reagent containers, labeling and documentation of prepared standards and reagents containers, and expiration dates of standards and reagents. Any explicit instructions about reagent or standard preparation that appear in the specific SOP for the method shall take precedence over these instructions.

## 2. LABELING AND DOCUMENTATION OF PURCHASED STANDARD AND REAGENT CONTAINERS

2.1 Original boxes or packaging that standards and reagents were shipped to the laboratory in must have the date received written on the outside of the box or package. When 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 standard prep tracker will generate a serial number which is used as the unique identifier for the purchased standard or reagent. Print a label from standard prep tracker using a SATO label printer and place the label on the container. The label should include the following:

a) Unique ID number

b) Name of Standard/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) should be stored on: \\FLDEP1\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 prep tracker in the same manner as purchased reagents and standards (see 2.2). The standard prep tracker will generate a serial number which is used as the unique identifier for the prepared standard or reagent. Print a label from standard prep tracker using a


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SATO label printer and place the label on the container. The label should include the following:

a) Unique ID number

b) Name of Standard/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, it is not required.

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 for a prepared reagent solution 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 prep 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.

**Note:** If there is no expiration date supplied by the manufacturer for a purchased standard or reagent or no holding time stated in the method or SOP, enter "1/1/9999" in the standard prep tracker's entry field for the expiration date. In this case, the module will print "None" on the label.

## 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 Laboratory Health and Safety Plan 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


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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.

| 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 MSDS 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 can be dumped into the sink if the acid concentration is less than 2% or diluted by 50 or greater.

## 7. REFERENCES

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

7.2 SOP HG-013, Mercury Waste Disposal

7.3 City of Tallahassee Industrial Pretreatment Sewer Use Manual. http://www.talgov.com/Uploads/Public/Documents/you/learn/library/documents/sewer_use_manual.pdf.

7.4 TNI standard, Vol. 1, Module 2, 2009

## 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.


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