

Overview

Useful For

Determining antimony toxicity

Special Instructions

- [Trace Metals Analysis Specimen Collection and Transport](#)

Method Name

Inductively Coupled Plasma-Mass Spectrometry (ICP-MS)

NY State Available

Yes

Specimen

Specimen Type

Whole blood

Specimen Required

Patient Preparation: High concentrations of gadolinium and iodine are known to interfere with most metals tests. If either gadolinium- or iodine-containing contrast media has been administered, a specimen should not be collected for 96 hours.

Supplies: Greiner Bio-One Vacuette Tube 6 mL NH Trace Elements Sodium Heparin tube (T819)

Container/Tube: Greiner Bio-One Vacuette Tube 6 mL NH Trace Elements Sodium Heparin tube for blood is required.

Becton-Dickinson (BD) royal blue-top tubes are **not acceptable** for this testing.

Specimen Volume: 0.8 mL

Collection Instructions:

1. See [Trace Metals Analysis Specimen Collection and Transport](#) in Special Instructions for complete instructions.
2. Send specimen in original tube. **Do not aliquot.**

Reject Due To

Gross hemolysis OK

Gross lipemia OK

Gross icterus OK

Specimen Minimum Volume

0.25 mL

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole blood	Refrigerated (preferred)	7 days	

Clinical & Interpretive

Clinical Information

Antimony is a silvery white metal that is used in alloys for lead batteries, solder, sheet metal, bearings, castings, ammunition, and pewter. It is also used for pigments, abrasives, flame-proofing fabrics, and in medications (ie, sodium stibogluconate [Pentostam], which is used to treat cutaneous leishmaniasis).(1) Antimony typically enters the environment during mining, processing of ores, emissions from coal-burning power plants, and production of alloys. Exposure to antimony can occur through inhalation, ingestion, or dermal contact with soil, water, foods, or medications that contain it. In the workplace, exposure is usually via inhalation. OSHA has set a limit of 0.5 mg/m³ of antimony in workroom air to protect workers during an 8-hour work shift (40-hour workweek).(2) Absorption of antimony through the lungs may take days to weeks. Absorption of antimony from ingestion typically enters the blood within a few hours.(2) The amount and form of the antimony affects how much is absorbed. Once in the blood, antimony is distributed to the liver, lungs, intestines, and spleen. Elimination is primarily through the urine, occurring over several weeks. The half-life varies depending on the chemical form. Trivalent antimony is primarily bound to erythrocytes, while pentavalent antimony is primarily found in plasma, which makes whole blood the preferred specimen to analyze for acute intoxication. Whole blood concentrations in healthy subjects not exposed to antimony averaged 0.7 mcg/L and usually don't exceed 2 mcg/L.(3) In battery plant workers, median blood antimony concentrations of 2.6 mcg/L were found in metal casters and 10 mcg/L in metal formers.(4) The effects of acute or chronic antimony poisoning are similar to arsenic and include abdominal pain, dyspnea, nausea, vomiting, dermatitis, and visual disturbances.(1) Additionally, toxicity can include pneumoconiosis, and altered electrocardiograms.(2)

Reference Values

<3 ng/mL (unexposed)
3-10 ng/mL (exposed)

Interpretation

Normal blood concentrations are 0.7-2 ng/mL in the unexposed, and 2.6-10 ng/mL in exposed workers.(3)

Cautions

No significant cautionary statements

Clinical Reference

- [1. Baselt R: Disposition of Toxic Drugs and Chemicals in Man. 10th ed. Biomedical Publications; 2014](#)
- [2. Agency for Toxic Substances and Disease Registry: Toxicological profile for antimony and compounds. US Department of Health and Human Services; October 2019. Accessed May 18, 2020. Available at \[www.atsdr.cdc.gov/toxprofiles/tp23.pdf\]\(http://www.atsdr.cdc.gov/toxprofiles/tp23.pdf\)](#)
- [3. Gebel T, Claussen K, Dunkelberg H: Human biomonitoring of antimony. *Int Arch Occup Environ Health.* 1998;71\(3\):221-224](#)
- [4. Kentner M, Leinemann M, Schaller KH, et al: External and internal antimony exposure in starter battery production. *Int Arch Occup Environ Health.* 1995;67\(2\):119-123](#)
- [5. Rifai N, Horvath AR, Wittwer CT, eds: Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. 6th ed. Elsevier; 2018](#)

Performance**Method Description**

Antimony (Sb) in whole blood is analyzed by inductively coupled plasma mass spectrometry (ICP-MS) in standard mode using lutetium (Lu) as internal standard and a salt matrix calibration. In turn, calibration standards, blanks, and specimens are aspirated by a pneumatic high-pressure nebulizer driven by argon gas. The nebulized solutions suspended in the carrier argon gas stream are directed to and injected into a high temperature argon gas discharge (plasma). This discharge decomposes, atomizes, and ionizes the nebulized particles. All atoms, molecules, and ions formed in the discharge are extracted via a platinum orifice into a quadrupole mass spectrometer. Antimony ions are separated from the concomitants by the quadrupole mass spectrometer. Instrument detector signals from Sb ions are directly proportional to the bulk concentration in the sample.(Unpublished Mayo method)

PDF Report

No

Specimen Retention Time

14 days

Performing Laboratory Location

Rochester

Fees & Codes**Test Classification**

This test was developed, and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information

83018