Toxic Metals; stool

MOSAIC DIAGNOSTICS
Formerly Great Plains Laboratory

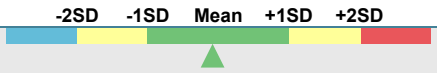
Order: 999999-9999
Test: X999999-9999-1
Client #: 999999
Doctors Data Inc
123 Main St.
St. Charles, IL 60174 USA

Patient: Sample Patient
Id: 999999
Age: 8 **DOB:** 01/01/2016
Sex: Male

Sample Collection	Date/Time
Date Collected	06/02/2024
Date Received	06/08/2024
Date Reported	06/17/2024

Toxic Metals	Result	Unit	Reference Interval
Antimony	0.154	mg/kg Dry Wt	< 0.050
Arsenic	0.10	mg/kg Dry Wt	< 0.20
Beryllium	0.010	mg/kg Dry Wt	< 0.011
Bismuth	0.013	mg/kg Dry Wt	< 0.100
Cadmium	0.28	mg/kg Dry Wt	< 0.50
Cesium	0.167	mg/kg Dry Wt	< 0.1
Copper	52	mg/kg Dry Wt	< 60
Gadolinium	0.014	mg/kg Dry Wt	< 0.03
Lead	0.94	mg/kg Dry Wt	< 0.30
Manganese	95.08	mg/kg Dry Wt	< 200
Mercury	0.031	mg/kg Dry Wt	< 0.050
Nickel	5.8	mg/kg Dry Wt	< 8.0
Platinum	<dl	mg/kg Dry Wt	< 0.003
Thallium	0.066	mg/kg Dry Wt	< 0.020
Tungsten	0.048	mg/kg Dry Wt	< 0.130
Uranium	0.088	mg/kg Dry Wt	< 0.100

Water Content	Result	Unit	Reference Interval
Water Content	72.0	%	66.3 – 78.8



- Analysis of elements in feces provides a means to assess oral exposure, and to a lesser extent endogenous detoxification of potentially toxic metals. For several toxic elements such as mercury, cadmium, lead, antimony and uranium, biliary excretion of metals into feces is a primary natural route of elimination from the body. Studies performed at Doctor's Data demonstrate that the fecal mercury content and number of amalgam surfaces are highly correlated. Therefore people with several amalgams in place will typically have higher concentrations of fecal mercury than people without amalgams.

  Results are reported as mg/kg dry weight of feces to eliminate the influence of variability in water content of fecal specimens.

  To provide guidance in interpretation of results, patient values are plotted graphically with respect to percentile distribution of the population base. Since this test reflects both oral exposure and biliary excretion of metals, overt clinical associations are not directly implied.

- **Antimony High**
  Fecal antimony (Sb) provides an indication of recent oral exposure to the element, and to a much lesser extent Sb that has been excreted from the body in bile. Sb is a nonessential element that is chemically similar to but less toxic than inorganic arsenic. Like arsenic, Sb is conjugated with glutathione and excreted in urine and feces.

Notes:
Methodology: ICP-MS

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Food and smoking are the most common sources of Sb. Antimony has been shown to leach from “squishy” plastic (PET bottles) into bottled water; the extent of Sb contamination is dependent on temperature (high) and time. Some Sb containing pharmaceuticals are used to treat the intestinal parasite Leishmania. Gunpowder (ammunition) often contains Sb. Other possible sources of exposure include textile industry (flame resistant material), metal alloys, paints, glass, ceramics, solder, bearing metals and semiconductors.

Early signs of extensive exposure to Sb include: fatigue, muscle weakness, myopathy, nausea, low back pain, headache, and metallic taste. Hair elements analysis may provide evidence of Sb exposure over the past 2-4 months.

- **Lead High**

  Fecal lead (Pb) provides an indication of recent oral exposure to the element, and to a much lesser extent Pb that has been excreted from the body in bile. Absorbed Pb is excreted primarily in urine (76%) and bile (16%). Lead remains the most common clinically problematic toxic metal despite long past termination of its use in gasoline and paint. However, high levels of Pb have been found in soil under older bridges and overpasses due to sand blasting and refurbishing.

  Most lead contamination occurs via oral ingestion of contaminated food or water, or by children mouthing or eating lead-containing objects such as imported children’s trinkets and toys. Municipal drinking water has become a significant source of Pb in certain parts of the country. Lead has been reported to be present in chocolate (the darker the higher), cocoa powders, and some chocolate flavored whey protein concentrates. In addition to some glazed pottery and lead crystal glass (drinking glasses/carafes), Pb may be present in dinnerware. Other sources of lead include: old lead paint (dust/chips), bullets and fishing tackle, batteries, computers, industrial smelting and alloying, ceramics, and artist paints and pigments (including certain tattoo inks).

  The extent of oral absorption of Pb depends upon stomach contents (empty stomach increases uptake), and upon essential element status and dietary intake. Deficiency of zinc, calcium or iron may increase lead uptake. Transdermal exposure is slight, except for high absorption of lead acetate that may be present in hair darkening dyes.

  Lead (Pb) has pathological, neurotoxic, nephrotoxic and carcinogenic effects that may be manifested with even chronic low-level exposure. Pb may also affect the body's ability to utilize the essential elements calcium, magnesium, and zinc. Sustained Pb exposures may have adverse effects on memory, cognitive function, nerve conduction, and metabolism of vitamin D. Infants and children are especially vulnerable to Pb-induced developmental disorders, and behavior problems are associated with lower levels of blood Pb than previously acknowledged; lower of IQ, hearing loss, and poor growth.

  The medical standard of care for assessment of lead exposure and toxicity is elevated blood lead. However blood lead may only reveal isolated exposures as the half-life of Pb in circulation is only about 1 month. Hair elemental analysis may provide information regarding Pb exposure over the past 2-4 months. Urine porphyrin analysis may reveal P-induced disruption of heme biosynthesis (physiological impact). Doctor’s Data offers a comprehensive drinking water test inclusive of lead.

- **Thallium High**

  Fecal thallium (Tl) provides an indication of Tl that has been excreted from the body in bile, and to a lesser extent recent oral exposure to the element. The biliary fecal route is the primary route of Tl excretion from the body, although about 35% is excreted in urine. Tl is rapidly and near completely absorbed when ingested, inhaled or brought into contact with skin. Thallium is a highly toxic heavy metal which is generally tasteless and odorless, and doesn’t have physiological functions in the body.

  Currently the most common sources of dietary Tl are contaminated vegetables, fish and shellfish; particularly those obtained in close proximity to drilling sites for natural gas and oil. Kale, spinach, cabbage and other Brassicaceae family vegetables appear to be most highly contaminated. The highest levels of urine Tl observed at Doctor’s Data have been associated with daily consumption of “green drinks” that were prepared at home from raw Brassicaceae vegetables. It should be noted that a statement of “organic” generally does not provide any assurance that the produce is not contaminated with Tl. Contaminated water has apparently been used to irrigate crops in certain agricultural areas in California. Other possible sources of Tl include tobacco, fly ash (coal), cement dust, some fertilizers, some artists’ paints, semiconductors, and hazardous waste sites and landfills (nearby drinking water/soil). Thallium is also a by-product from the smelting of copper, zinc and lead ores.

  Symptoms associated with significant exposure to Tl may include: fatigue, headaches, sleep disturbance, neuropathy, ataxia, depression, psychoses, and extreme loss of hair. Thallium follows potassium in the body and accumulates in tissues with high potassium content including skeletal/cardiac muscle, and central/peripheral nerves.

  Hair elemental analysis may be utilized to assess exposure to Tl over the past 2-4 months.

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