

Fur Mineral Analysis



Fur is the only substance suitable for studying a long period of exposure to pollutants or dietary deficiencies in dogs and cats. Pollutants circulating in the blood through ingestion or inhalation are automatically captured by the follicle of the fur when it grows and stays intact. By analyzing fur, we can assess any prolonged exposures to potentially harmful minerals and metals and identify any shortcomings your pet's diet may have.

Fur Mineral Analysis (sometimes called Hair Tissue Mineral Analysis or HTMA) most often indicates slow, ongoing problems, not acute or short-lived issues. For this reason, abnormal results aren't typically seen as critical emergencies. However, further investigation, bloodwork, or diagnostics may be suggested following a fur mineral analysis.

What Pets Should Be Tested?

- Pets that are sick and have undiagnosed symptoms
- As part of general wellness screening
- Pets living in industrial/manufacturing area
- Pets living around commercial farming
- Pets exposed to chemically treated areas (lawns, landscaping, public areas)
- Pets that eat inorganic objects (toys, remotes, items with batteries, food packaging, etc.)
- Pets on a high-fish diet

All that's needed is a small fur sample—no cleaning or bathing is required before collecting the sample.



The Veterinary Wellness Center

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What Minerals and Metals Does this Test for?

We screen for 29 elements, including 15 nutritional metals, ten environmental metals, and four toxic metals.

NUTRITIONAL ELEMENTS

- **Calcium:** Calcium is often nutritionally derived from enriched products such as canned and bagged pet food or dairy items. Calcium is an essential nutrient.
- **Cobalt:** Cobalt is a dietary mineral essential for cell reproduction, growth, and vital organs. Lack of cobalamin can lead to GI and even neurological issues. Good dietary sources of cobalt include organ meats, beef, and eggs.
- **Chromium:** Chromium is an essential dietary mineral. It can be found in yeast, wheat, apples, and green peppers. A deficiency of chromium can cause insulin resistance and diabetes.
- **Copper:** Excess copper in fur suggests environmental exposure or consumption of items such as pennies, copper wiring, jewelry, or other copper-containing metals. Excessive amounts of copper may become toxic over time.
- **Iron:** Iron in fur suggests the digestion of iron-rich foods or consuming certain items such as prenatal vitamins, fertilizer, oxygen absorbers, and hand warmers. Iron deficiency may be an indication of nutrient deficiencies or underlying conditions.
- **Potassium:** Potassium is an essential dietary mineral. Most pet foods and supplements contain potassium iodine, while other potassium-packed foods include salmon, avocado, bananas, sweet potatoes, and spinach.
- **Magnesium:** Magnesium is an essential dietary mineral. It can be found in whole grains, soybeans, nuts, spinach, and fish. Magnesium deficiency is easy to correct and should be evaluated periodically in blood and fur.
- **Manganese:** Manganese is dietary derived and can be absorbed by digesting items with a high concentration of manganese. Whole grains, eggs, nuts, and leafy vegetables contain a good amount of manganese.
- **Sodium:** Sodium in fur reflects dietary consumption of items with high salt levels, such as meat, poultry, fish, ocean water, and table salt.
- **Phosphorous:** Phosphorus in fur reflects both environmental exposure and nutritional consumption. Items such as baking powder, fertilizer, and protein-rich foods contain phosphorus. Phosphorus can be toxic if ingested in large amounts.
- **Selenium:** Selenium is an essential element. Selenium can be found in Brazil nuts, fish, game, and poultry. Too much consumption of selenium could become toxic.
- **Silicon:** Silicon is a micromineral found in small quantities in food. Sources include whole grains, nuts, beans, rice, and other plants. Excess silicon in fur may reflect environmental exposure, such as in electrical products.

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NUTRITIONAL ELEMENTS (CONT.)

- **Strontium:** Early studies have shown that dogs who eat high levels of sardines or sardine oil supplements have high levels of strontium. Strontium acts in the same way that calcium does in the body and deposits within the bone.
- **Vanadium:** Vanadium is involved in cellular metabolism, and deficiencies should be avoided. Sources of vanadium include beans, corn, mushrooms, vegetable oils, root vegetables, shellfish, and whole grains.
- **Zinc:** Zinc found in fur is due to the consumption of items such as nuts, bolts, pennies, jewelry, nasal sprays, and many other household items that contain zinc. Ingesting too much zinc can have high toxicity.

ENVIRONMENTAL ELEMENTS

- **Silver:** Silver in fur reflects environmental exposure or consumption of certain items such as jewelry, contaminated seafood, and metals/chemicals containing silver.
- **Aluminum:** Aluminum in fur comes from environmental exposure to processed cheese, dairy products, aluminum cookware, or foil. Consumption of canned foods and vaccines can also cause aluminum in the fur.
- **Gold:** Gold in fur is generally due to the consumption of items such as jewelry. Gold is chemically inert and will not break down during digestion. Gold typically passes through the GI tract, assuming it isn't bulky and causes blockage.
- **Boron:** Boron exposure is typically environmentally based through fruit, vegetables, water, air, and consumer products (fertilizer), generally in industrial areas or areas with significant use of pesticides, chemicals, or pharmaceuticals.
- **Tin:** Tin in fur usually comes from digesting items that contain tin, such as cans, foil, cupcake wrappers, etc. Tin is relatively low in toxicity.
- **Barium:** Barium in fur is typically from exposure or ingestion of plants exposed to Barium. Barium is also commonly used as a contrast agent to allow vets to look at the gastrointestinal tract, as it appears bright white on radiographs.
- **Beryllium:** Beryllium-induced lung disease, also known as berylliosis, has been shown in dogs after exposure to beryllium oxide, usually through burning fossil fuels. Ulcers have also been seen in dogs that ingest beryllium in their diet.
- **Lithium:** Lithium in fur reflects environmental exposure or consumption of lithium-rich brines and minerals or consumption of household items containing lithium batteries, such as remote controls, watches, and toys.
- **Molybdenum:** Molybdenum found in fur can be caused by environmental exposure. Sources include combusted fossil fuels or consumption of water or food exposed to small amounts of molybdenum.
- **Nickel:** Nickel can be introduced to your pet's environment or diet from sources that include dog collars, water bowls, food cans, metal walkways, and fences. Foods that are high in nickel include shellfish, chickpeas, and oatmeal.

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TOXIC ELEMENTS

- **Arsenic:** The most significant source of arsenic in pets is rice or contaminated drinking water. High levels of inorganic arsenic exposure can cause irritation to the stomach and intestines, decreased production of red and white blood cells, and lung irritation. Studies show that significant amounts of inorganic arsenic may intensify the chances of cancer development.
- **Cadmium:** Uptake of cadmium mainly occurs through food. Food rich in cadmium significantly increases the cadmium concentration in the body. These foods include liver, mushrooms, shellfish, mussels, and dried seaweed. Dogs subjected to second-hand smoke have also been found to have high cadmium levels.
- **Mercury:** Mercury enters the environment due to the normal breakdown of minerals in rocks and soil through exposure to wind and water. Mercury source risks for dogs include fish-based diets, omega oils made with fish, vaccinations, some prescription medications, and environmental contamination.
- **Lead:** Lead is usually introduced into the dog through soil contamination, toys, paint, gasoline exhaust, food packaging, and glazing on ceramic food and water dishes.

Comprehensive Results and Recommendations

Our analysis utilizes Triple Quadrupole Inductively Coupled Plasma Mass Spectrometry (ICP-MS). ICP-MS is the gold standard for measuring elements at trace levels in biological fluids because of its high sensitivity, degree of selectivity, and precision. With the information on your pet's report, we can determine if your pet has too much (or not enough) of any of these metals in their system and can then create a customized detoxification or supplementation protocol as warranted.

If you have any questions or would like to have your pet's fur analyzed, contact us at (603) 519-4160.

Source:

VDI Labs. "Mineral and Toxic Metal Fur Analysis."
<https://vdilab.com/mineralanalysis/>



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