

What heavy metal testing is

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Karen Pendergrass. "What heavy metal testing is". <https://heavymetalcertified.com/heavy-metal-testing>. Retrieved 2026-10-21.

The short answer

Heavy metal testing is the laboratory measurement of how much of certain toxic metals a product contains. A full panel covers eight priority metals: [lead](#), [cadmium](#), [arsenic](#), and [mercury](#), the four that conventional screens address, plus [nickel](#), [tin](#), [aluminium](#), and [chromium](#), the four that most food and supplement testing still leaves out. An accredited laboratory reports each metal as a concentration, and that number only carries meaning once it is read against a published limit for that kind of product. Testing produces the number; a certification decides whether the number passes a stated threshold and lets a reader check the claim rather than trust it.

What heavy metal testing measures

The metals matter because they are toxic at low doses, they accumulate, and food and consumer products pick them up from soil, water, processing equipment, and packaging rather than from any single deliberate step. Different metals travel through different foods: arsenic concentrates in rice and some seafood, cadmium in leafy greens and cacao, lead across many crops and spices, mercury in predatory fish. A test that reports only the big four is silent on nickel, tin, aluminium, and chromium, which are the metals governments have most recently begun to regulate.

Two distinctions decide whether a result is usable. The first is species. Arsenic and mercury each have a more toxic form: inorganic arsenic within total arsenic, and methylmercury within total mercury. A test that reports only the total can overstate or understate the health-relevant fraction, so a serious panel separates them. The second is basis: a concentration is only interpretable alongside the form it was measured in. A powder measured as sold is not comparable to the same product measured after it is reconstituted with water, and the limit a result is checked against has to be stated in the same basis.

How a test is run

A laboratory prepares a sample by digesting it into solution, then measures each metal by inductively coupled plasma mass spectrometry (ICP-MS), the method that reaches the low concentrations these limits are written at. Every method has a detection limit and a quantitation limit, the points below which the instrument can confirm a metal is present and can report a reliable number. A credible result names the laboratory, the method, the detection limits, and the basis, so the measurement can be repeated and audited. Accreditation to ISO/IEC 17025 is what signals that a laboratory's numbers are produced under a controlled, externally assessed method rather than asserted.

What a result means

A test result is a measurement, not a verdict. On its own, a concentration says nothing about whether a product passes anything, because “pass” is defined by a limit, and limits differ by product and by metal. The same lead number can sit below the limit for one category and above it for another. This is why testing and standard-setting are separate steps: a number becomes a claim only when it is compared to a published threshold for that subcategory, in the product’s native basis. Reading the limit before testing is what lets a brand know, in advance, the exact number its result will be held to.

From a test to a certification

Heavy Metal Tested & Certified is the layer that turns a test into a checkable claim. The program publishes a numeric limit for each metal, per product subcategory, before anything is certified against it. Each limit defaults to the strictest maximum a credible government regulator sets for that product and metal, and for the four most toxic metals and the metals no government regulates, it can be set tighter. A product carries the mark only when an accredited laboratory has measured it, on a ten-analyte panel, at or below every value in the standard for its subcategory, in the form it is actually sold in. The mark is a statement about a measurement against a published number, not a promise that a product is safe.

The evidence the limits are applied to is compiled separately and openly at the [Heavy Metal Index](#)², a public reference to the published literature on heavy metals in food. The certification reads from that reference; the reference does not endorse the certification. That separation is deliberate: it lets anyone trace a limit back to its sources without the science depending on the program that uses it.

Heavy metals by product

Category guides explain where the metals come from in a specific product and how a limit is set for it: [baby food](#), [protein powder](#), [supplements](#), [dark chocolate](#), and [rice](#).

Common questions

▼ How are heavy metals in food and supplements tested?

An accredited laboratory digests a sample into solution and measures each metal by inductively coupled plasma mass spectrometry (ICP-MS), the method sensitive enough for the low concentrations at which limits are written. A usable result names the laboratory, the method, its detection and quantitation limits, and the basis the product was measured in, so it can be repeated and audited. Accreditation to ISO/IEC 17025 is the signal that the numbers come from a controlled, externally assessed method.

▼ Which heavy metals should a full test cover?

A full panel covers eight priority metals: lead, cadmium, arsenic, and mercury, the conventional big four, plus nickel, tin, aluminium, and chromium, which most food and supplement screens leave out. Arsenic and mercury are each measured for their more toxic form as well, inorganic arsenic and methylmercury, giving a ten-analyte panel. A four-metal screen is silent on the four metals governments have most recently begun to regulate.

▼ Does a heavy metal test mean a product is safe?

No. A test reports a concentration; it does not decide whether that concentration passes anything. Whether a number is acceptable depends on a published limit for that kind of product, and limits differ by product and by metal. A result becomes a claim only when it is compared to a stated threshold, which is the step a certification performs.

▼ What is the difference between heavy metal testing and heavy metal certification?

Testing is the measurement; certification is the judgment against a published limit. Heavy Metal Tested & Certified publishes a numeric limit for each metal per product subcategory, then certifies a product only when an accredited laboratory has measured it at or below every value in that standard, on a ten-analyte panel, in the form it is sold in. Publishing the limit first means a brand can read the exact number before it tests.

How certification works for brands →

▼ Why does the basis a result is measured in matter?

A concentration is only interpretable alongside the form it was measured in. A powder measured as sold is not comparable to the same product after it is reconstituted with water, so a result and the limit it is checked against have to be stated in the same basis. Every published standard states its limit in the product's native basis for exactly this reason.