

Heavy metals in protein powder

Karen Pendergrass · ORCID 0000-0002-2348-7259 · 2026-08-24

Karen Pendergrass. "Heavy metals in protein powder". <https://heavymetalcertified.com/heavy-metals-in-protein-powder>. Retrieved 2026-10-21.

The short answer

Can protein powder contain heavy metals? Yes. Independent investigations have repeatedly flagged [lead](#), [cadmium](#), [arsenic](#), and other metals across protein and plant-based powder categories, with plant-based powders drawing more scrutiny than whey on the whole. A powder that contains a measurable amount of a metal is not automatically outside any limit: whether a result is a problem depends on how it compares to a published maximum for that specific product, and a test run without a stated limit to check it against produces a number, not a verdict. Heavy Metal Tested & Certified (HMTc) closes that gap for this category. The program publishes a numeric per-analyte limit for protein and collagen powders and certifies a product only when an accredited laboratory measures it at or below every value in that standard.

Why protein powders can carry heavy metals

Protein powder is a concentrate. Isolating protein from a raw ingredient, whether milk, peas, rice, or hemp, removes water, fiber, and fat and leaves the remaining solids more concentrated by weight, so whatever metals were present in the source crop or milk are concentrated along with the protein. This is one reason a serving of powder can carry more of a given metal than the whole food it came from, even when nothing was added during manufacturing.

Plant-based proteins carry a second source of exposure. Peas, rice, and other crops draw metals up from the soil they grow in, and how much ends up in the finished crop depends on the soil, the irrigation water, and the plant's own tendency to take up a given metal: rice is a well-documented case of a crop that draws arsenic from paddy soil more readily than most other grains. Cacao and leafy greens, common add-ins in flavored or "greens" blends, are separately associated with cadmium exposure, so a flavored blend can carry a different metal profile than the base isolate alone. Collagen powders, sourced from animal connective tissue, bone, or marine byproducts, carry an exposure pathway tied to the source animal itself.

The metals worth screening for go beyond the four most consumers have heard of. Lead, cadmium, arsenic, and [mercury](#) are the conventional "big four," with the longest regulatory history and the most public attention. A fuller accounting also includes [nickel](#), [tin](#), [aluminium](#), and [chromium](#): metals that processing equipment, fortification minerals, and packaging can introduce, and that most protein-powder testing still does not report. A panel that stops at four metals is silent on the other four.

How protein powder is tested

Testing protein powder for heavy metals follows the same process used across food and supplement testing generally. An accredited laboratory digests a sample into solution and measures each metal by inductively coupled plasma mass spectrometry (ICP-MS), the method sensitive enough to reach the low concentrations these limits are written at. A result is only as trustworthy as the laboratory producing it: accreditation to ISO/IEC 17025 signals that the numbers come from a controlled, externally assessed method rather than an in-house claim.

Basis matters as much as method. Protein powder is sold dry but usually consumed mixed into water, milk, or a smoothie, and a concentration measured in the powder as sold is not comparable to the same product after it has been diluted with liquid. A result and the limit it is checked against need to share a basis for the comparison to mean anything; comparing a diluted, as-mixed number against a powder-basis limit understates what is actually in the container. Every credible standard states which basis its limit applies to for this reason.

Two of the metals need to be reported by species, not only as a total, to be useful. Arsenic occurs in both inorganic and organic forms, and inorganic arsenic is the form of health concern, so a test reporting only total arsenic can obscure how much of that total is the more toxic species. Mercury works the same way, with methylmercury as the relevant fraction of total mercury. A protein-powder test reporting only combined numbers for “arsenic” and “mercury” gives up information a full panel is built to capture.

What a heavy-metal certification adds

A test result by itself is a measurement, not a verdict: a number for lead in a given powder says nothing about whether it is acceptable until it is checked against a published limit for that specific product. Heavy Metal Tested & Certified addresses that gap for protein and collagen powders with a published standard: a numeric limit for each metal, set for this subcategory specifically, before any product is tested against it. A brand or a shopper can read the exact figure a product will be measured against before a single sample reaches the laboratory.

The standard covers a ten-analyte panel: the eight priority metals (lead, cadmium, arsenic, mercury, nickel, tin, aluminium, chromium), with arsenic and mercury each further split into their more toxic species. A product carries the HMTc mark only when an accredited laboratory has measured it at or below every value in the standard, in the powder’s native as-sold basis. The full set of figures, and how each one was derived, is published on the standard itself rather than summarized here.

The mark is a statement about a measurement against a published number. It is not a claim that a product contains none of these metals at any detectable level, and it is not a general verdict on a product’s safety; it is a checkable claim that a specific test, on a specific panel, came in at or below a specific published threshold. The occurrence literature a standard like this draws from, what independent researchers have found across protein and plant-based powders generally, is compiled separately and openly at the [Heavy Metal Index](#)^[2], a public reference to the peer-reviewed literature on heavy metals in food. The certification reads from that reference; the reference does not endorse the certification, and the link runs one way, so the science can be checked independently of the program that applies it.

Common questions

▼ Do protein powders contain heavy metals?

Many can, in measurable amounts. Protein powder concentrates the solids from its source ingredient, whether whey, pea, rice, hemp, or collagen, and whatever metals were present in that source, from soil, water, or processing, are concentrated along with the protein. Independent investigations have repeatedly flagged heavy metals across the protein and plant-based powder category. Whether a given amount is a concern depends on how it compares to a published limit for that product, which is the step a certification performs.

▼ Which protein powders are highest in heavy metals?

By ingredient class rather than by brand: plant-based powders (pea, rice, hemp) tend to draw more scrutiny than whey, because plants take up metals from soil more readily than milk does, and rice is a well-documented case for arsenic uptake specifically. Flavored or "greens" blends that add cacao or leafy greens carry a separate cadmium exposure pathway tied to those ingredients rather than to the base protein isolate. Collagen powders carry an exposure pathway tied to the source animal and tissue. This is a pattern by ingredient class, not a ranking of specific products.

▼ How is protein powder tested for heavy metals?

An accredited laboratory digests a sample into solution and measures each metal by inductively coupled plasma mass spectrometry (ICP-MS), the same method used across food and supplement testing generally. A useful result states the laboratory, the method, its detection limits, and the basis the powder was measured in, as sold rather than as mixed with liquid, and separates inorganic arsenic and methylmercury from their totals rather than reporting a single combined number. Accreditation to ISO/IEC 17025 is the signal that a laboratory's numbers come from a controlled, externally assessed method.

▼ Is there a heavy-metal certification for protein powder?

Yes. Heavy Metal Tested & Certified publishes a numeric limit for each metal on protein and collagen powders specifically, before any product is tested against it, and certifies a product only when an accredited laboratory measures it, on a ten-analyte panel, at or below every value in that standard, in the powder's as-sold form.

[See the protein and collagen powder standard →](#)

▼ Does certification mean a protein powder is safe?

No. Certification is a statement that a specific test, on a specific panel, measured a product at or below a specific published limit; it is not a general verdict on whether a product is safe. Detecting a metal at some concentration is common across food categories generally, and whether a specific number matters depends entirely on the published limit it is checked against, which is why HMTc publishes its per-analyte limits before certifying anything.