

Heavy Metals in Pet Food

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Karen Pendergrass. "Heavy Metals in Pet Food". <https://heavymetalcertified.com/briefings/heavy-metals-in-pet-food>. Retrieved 2026-09-21.

THE CLAIM

TECHNICAL REPORT · CATEGORY 17 · AUGUST 2026

EU feed rules and human-food rules use different categories and measurement bases. HMTc adopts selected human-food benchmarks voluntarily; that choice requires transparent comparison and does not establish a veterinary safety threshold.

Abstract

Pet food is regulated within animal-food frameworks. Some numerical feed maxima exceed limits for selected human-food categories, but the comparison depends on the ingredient, chemical form and moisture basis. The studies reviewed here show varied occurrence of metals in commercial pet foods and laboratory prototypes. They support testing and attention to ingredient sources; they do not establish that every sampled food is unsafe or that a human-food concentration limit predicts safety for dogs and cats. HMTc uses selected human-food benchmarks as voluntary program criteria.

Two rulebooks for the same bowl

The EU feed directive's reviewed 28 November 2019 consolidation specifies complete-feed [lead](#) at 5 mg/kg and complete-pet-feed [cadmium](#) at 2 mg/kg, on a 12-percent-moisture basis. Total [arsenic](#) is generally 2 mg/kg, with a 10 mg/kg exception for specified marine-containing pet feeds and an inorganic-arsenic demonstration requirement. Compound feed for dogs and cats has a total-[mercury](#) maximum of 0.3 mg/kg. The directive also includes general health safeguards, investigation and a prohibition on diluting noncompliant feed ^[6]. A numerical ceiling is therefore not permission to market harmful food.

For comparison, the original EU human-food regulation sets cadmium at 0.05 mg/kg for listed livestock meat excluding offal, and 0.04 mg/kg for pulses excluding proteins ^[7]. These are selected category examples. They do not automatically govern compound pet food, prove a worldwide minimum or establish a universal feed-to-food ratio. Comparisons must align the food category and concentration basis before drawing conclusions.

In the United States, FDA describes requirements for safe animal food, sanitary production, absence of harmful substances and truthful labeling. Some state labeling rules use AAFCO models ^[8]. AAFCO model provisions, NRC recommendations and binding law have different roles. A 2018 study reported gaps in dog-

specific recommendations for several trace elements; that dated observation is not a current audit of every AAFCO or NRC publication ^[4].

What the literature finds in the bowl

A UK study tested 185 packages across eight game-meat and chicken dog-food products. For raw pheasant products, the weighted mean lead concentration after excluding samples known to contain whole shot was about 221 mg/kg dry weight. The reported 34-fold comparison was with pheasant sold for human consumption. Across three raw products, 63–100% of packages exceeded the study's applicable feed maximum; these were not human-meat legal exceedance rates ^[1]. The results support attention to game-meat ingredients without generalizing to every raw diet.

A Chinese survey tested 93 imported cat and dog foods for five total metals. [Chromium](#) and arsenic were detected in every sample; detection of the other metals varied. Cat-food lead and cadmium averages were higher among positive samples. Its hazard-index estimates used human reference values because pet-specific values were unavailable. The cited Chinese regulatory values are the authors' comparisons, not an independently verified current-law finding here ^[2].

A Lebanon/UAE survey analyzed 196 commercial products and reported mean cadmium of 0.251 mg/kg in cat food and 0.112 mg/kg in dog food. These product-group differences do not identify a causal ingredient. The paper's comparisons combine different reference thresholds; they do not alone establish violations of binding pet-feed law ^[3]. Neither survey measured illness caused by the sampled products.

A survey of 49 US dry dog foods estimated [aluminum](#), chromium and molybdenum intake above average human intake per 1,000 kcal. Average human intake is not a toxicity threshold, and the authors did not find evidence of potential chronic toxicity under their extrapolated comparisons ^[4]. In a separate formulation experiment, cadmium, lead, chromium and [nickel](#) were reported as not detected in all four self-produced extruded or baked dog-snack prototypes. That experiment was not a retail-treat survey, and nondetection does not mean absolute absence ^[5].

What a concentration can tell us

A food's concentration is one part of an exposure assessment. The amount eaten, animal body weight, feeding duration, chemical form and absorption also matter. A small animal does not necessarily receive a larger dose per kilogram merely because its body is smaller: the food intake must also be specified. The reviewed occurrence studies do not validate a universal claim that pets are more exposed than people, or that one concentration predicts harm in both species.

The case for a human-food benchmark

HMTc's pet-food standards adopt selected human-food contaminant values as voluntary criteria, with the source and product basis disclosed in the applicable standard. The program's published examples include dry-pet-food lead at 100 µg/kg and cadmium at 40 µg/kg. The EU feed values above provide legal context; their ratio to an HMTc value is not a demonstrated reduction in health risk.

Human-food law applies to the categories it names. Applying one of its values to pet food is a program choice, not a government finding that the resulting pet product is equivalent to human food or safe for every animal. Applicable feed law and product-specific veterinary considerations still matter.

The [Heavy Metal Index](#)^[2] provides a changing reference library and routes to source records ^[9]. This citation identifies its homepage as accessed on 16 September 2026. It does not identify a frozen pet-food baseline or independently validate HMTc. Occurrence findings in this briefing are attributed to the five individual studies above.

Frequently asked questions

▼ Is pet food regulated for heavy metals at all?

Yes. The reviewed EU feed directive contains category-specific maxima and general health safeguards ^[6]. FDA also describes general US animal-food safety requirements ^[8]. Exact obligations depend on jurisdiction, product and current instrument.

▼ What does a human-food benchmark mean here?

It means HMTc voluntarily selects a contaminant value from a specified human-food category. The comparison needs a stated product and moisture basis; it is not an assurance of human-food legal status or veterinary safety.

▼ Which findings support testing?

The cited studies identify highly contaminated raw-pheasant products, variation among commercial diets, and additional trace elements in dry foods. They also include nondetections and reassuring modeled comparisons. Those distinctions belong in the evidence ^{[1][2][3][4][5]}.

▼ Does a smaller body prove greater exposure?

No. Exposure per unit body weight depends on the amount and concentration consumed as well as body weight. Species-specific interpretation is necessary.

References

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