Vegetable soup

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Abstract

Vegetable soup in the HMI library has 61 reported results for lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, total mercury, methylmercury, nickel, chromium, aluminum, tin and uranium from 9 sources. WHO GEMS/Food submissions reported lead in vegetable soup as sold from 444 results in 3 reporting regions, with subgroup medians from 4.1 to 50 µg/kg. In the US Total Diet Study, canned vegetable soup had a median lead result below 4 µg/kg across 3 composites from 2018-2020.

1 | Vegetable soup overview

EFSA Panel on Contaminants in the Food Chain (CONTAM) 2010 reported lead at 0 µg/kg (median) in vegetable soup as sold from Vegetables.[3] Across 2 other studies of ordinary farms and markets, reported cadmium means and medians with the basis not stated ranged from 6.5 µg/kg (Joint FAO/WHO Expert Committee on Food Additives 2022) to 10.2 µg/kg (European Food Safety Authority 2012).[5,6]

For a buyer the practical points are the form bought, the basis a result is reported on, where the vegetable soup came from and the laboratory's reporting limit. Testing finds contamination but does not remove it.

2 | What counts as vegetable soup

This page covers vegetable soup in 2 forms kept separate in every comparison: vegetable soup as sold (52 results) canned and vegetable soup (9 results).[1,2,3,4,5,6]

Results stay on the basis each source reports: as sold or fresh weight, dry weight, or unstated. Dry-weight, as-sold and unstated results are never pooled, and no moisture conversion is applied.

3 | How metals reach vegetable soup

No study in the library compared vegetable soup from contaminated and ordinary settings, so the routes by which metals reach it are not measured here.

4 | Which forms and regions measured lower

The HMI canned reference for lead in vegetable soup pools 4 subgroup units from 2 sampling families, with a median of below 4 µg/kg and a middle half spanning below 4 (lower quartile) and below 4 µg/kg (upper quartile).[2,4] for lead in vegetable soup as sold, the reference median was below 7 µg/kg, with a middle half from below 7 to between 5.3 and 23.4 µg/kg across 46 units.[1] for cadmium in vegetable soup as sold, the reference median was between 4.11 and 5 µg/kg, with a middle half from between 2.72 and 3.46 to between 5.55 and 6.25 µg/kg across 56 units.[1]

Among GEMS/Food reporting regions, vegetable soup as sold had the lowest lead subgroup median in WPRO (4.1 µg/kg) and the highest in EURO (50 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in PAHO (3.34 µg/kg) and the highest in EURO (8.27 µg/kg).[1]

5 | Processing, cooking and preparation

No processing study for metals in this food is in the library yet.

6 | Mitigation for vegetable soup

Lot testing against the applicable limit is the check that can be verified.

7 | Trade-offs and limits of controls

Metals do not move together, so a lot that passes a lead limit says little about cadmium, arsenic or nickel unless those are tested as well.

8 | Testing vegetable soup for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1 µg/kg (WHO GEMS/Food) to 3,000 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1] Reporting limits for cadmium ranged from 0.15 µg/kg (WHO GEMS/Food) to 10 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1] Reporting limits for total arsenic ranged from 2 µg/kg (WHO GEMS/Food) to 500 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1]

A useful lot result names the form, the basis and a quantification limit well below the limit that applies.

9 | Buying and verifying vegetable soup

No maximum level for metals in vegetable soup was verified from primary text for this page; buyers should confirm the limit that applies in the destination market.

10 | Exposure from vegetable soup

No source in the library converted vegetable soup concentrations into a verified estimate of intake for a defined population. Concentrations describe the food, not individual risk.

11 | Evidence review and remaining gaps

Every source record that names vegetable soup was decided on its content: 9 occurrence extracted, 9 records in all. The occurrence table renders every extracted result; held values remain visible with their reason.

References identify the sources used in these answers. The Sources index preserves additional discovery links; inclusion there does not mean a source has been reviewed for this assessment. Corrections, completed searches, new direct evidence and changes in requirements should reopen the relevant answer.

12 | Vegetable soup FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, total mercury, methylmercury, nickel, chromium, aluminum, tin and uranium in vegetable soup, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in vegetable soup as sold from 444 results in 3 reporting regions, with subgroup medians from 4.1 to 50 µg/kg.[1]

Among GEMS/Food reporting regions, vegetable soup as sold had the lowest lead subgroup median in WPRO (4.1 µg/kg) and the highest in EURO (50 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in PAHO (3.34 µg/kg) and the highest in EURO (8.27 µg/kg).[1]

Inorganic arsenic, the more toxic form, was measured in 3 results from 2 sources, far fewer than total arsenic.[1,7] European Food Safety Authority (EFSA) 2014 reported inorganic arsenic at 8.9 µg/kg (mean) in vegetable soup as sold from European dietary-survey occurrence data.[7]

References

[1] GEMS/Food Contaminants database heavy-metal exports
World Health Organization · GEMS/Food Contamination Monitoring and Assessment Programme · 2026 · extranet.who.int
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[2] FY2018-FY2020 TDS Elements Analytical Results
U.S. Food and Drug Administration · FDA Total Diet Study · 2022 · www.fda.gov
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[3] Scientific Opinion on Lead in Food
EFSA Panel on Contaminants in the Food Chain (CONTAM) · EFSA Journal 2010;8(4):1570 · 2010 · doi.org/10.2903/j.efsa.2010.1570
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[4] Infants' and young children's dietary exposures to lead and cadmium: FDA total diet study 2018-2020
Spungen JH and et al. · Food Additives & Contaminants: Part A · 2024 · doi.org/10.1080/19440049.2024.2396910
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[5] Cadmium dietary exposure in the European population
European Food Safety Authority · EFSA Journal 2012;10(1):2551 · 2012 · doi.org/10.2903/j.efsa.2012.2551
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[6] Cadmium: dietary exposure assessment
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STATUS AND LICENCE

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COMPETING INTERESTS

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DATA AVAILABILITY

Every source behind this ingredient profile is listed with its own source record at https://heavymetalindex.com/ingredients/vegetable-soup#sources.

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