Iceberg lettuce

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CORRESPONDENCE

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Abstract

Iceberg lettuce in the HMI library has 62 reported results for lead, cadmium, total arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Mn, Zn, V, Se, Ag, Au, Ba, Be, Mo, Sr, Th and Tl from 7 sources. WHO GEMS/Food submissions reported lead in iceberg lettuce as sold from 88 results in 1 reporting region, with subgroup medians below 5 µg/kg, mostly non-detects. In the US Total Diet Study, iceberg lettuce as sold had a median lead result below 4 µg/kg across 27 composites from 2017-2020.

1 | Iceberg lettuce overview

Across 2 other studies of ordinary farms and markets, reported lead means and medians on an as-sold or fresh-weight basis ranged from 2 µg/kg (Martin-Leon et al. 2023) to 410 µg/kg (Guerra et al. 2012).[3,4] For cadmium, 3 studies on an as-sold or fresh-weight basis reported means and medians from 4 µg/kg (Martin-Leon et al. 2023) to 34 µg/kg (Spungen et al. 2024).[4,6]

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

2 | What counts as iceberg lettuce

This page covers iceberg lettuce as sold (62 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 iceberg lettuce

No study in the library compared iceberg lettuce 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 reference for lead in iceberg lettuce as sold pools 46 subgroup units from 4 sampling families, with a median of below 4 µg/kg and a middle half spanning below 2.5 (lower quartile) and between 2 and 4 µg/kg (upper quartile).[1,2,4,6] for cadmium in iceberg lettuce as sold, the reference median was 22.5 µg/kg, with a middle half from 4 to 41 µg/kg across 46 units.[1,2,4] for total arsenic in iceberg lettuce as sold, the reference median was between 0.25 and 1.75 µg/kg, with a middle half from below 0.5 to between 0.5 and 3 µg/kg across 28 units.[2,4]

5 | Processing, cooking and preparation

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

6 | Mitigation for iceberg lettuce

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 iceberg lettuce for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 4 µg/kg (FDA Total Diet Study) to 3,000 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,2] Reporting limits for cadmium ranged from 1 µg/kg (WHO GEMS/Food) to 6.3 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 iceberg lettuce

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

10 | Exposure from iceberg lettuce

No source in the library converted iceberg lettuce 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 iceberg lettuce was decided on its content: 7 occurrence extracted, 7 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 | Iceberg lettuce FAQs

The library reports lead, cadmium, total arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Mn, Zn, V, Se, Ag, Au, Ba, Be, Mo, Sr, Th and Tl in iceberg lettuce, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in iceberg lettuce as sold from 88 results in 1 reporting region, with subgroup medians below 5 µg/kg, mostly non-detects.[1]

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
DATASET

[3] Heavy metals in vegetables and potential risk for human health
Guerra F, Trevizam AR, Muraoka T, Marcante NC, and Canniatti-Brazaca SG · Scientia Agricola 69(1):54-60 · 2012 · doi.org/10.1590/s0103-90162012000100008
PEER-REVIEWED

[4] Evaluation of essential, toxic and potentially toxic elements in leafy vegetables grown in the Canary Islands
Veronica Martin-Leon, Carmen Rubio, Angel Rodriguez-Hernandez, Manuel Zumbado, Andrea Acosta-Dacal, Luis Alberto Henriquez--Hernandez, et al. · Toxics · 2023 · doi.org/10.3390/toxics11050442
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[5] Effect of Climatic Conditions, and Agronomic Practices Used in Organic and Conventional Crop Production on Yield and Nutritional Composition Parameters in Potato, Cabbage, Lettuce and Onion; Results from the Long-Term NFSC-Trials
Leonidas Rempelos, Marcin Baranski, Enas Khalid Sufar, Jenny Gilroy, Peter Shotton, Halima Leifert, et al. · Agronomy · 2023 · doi.org/10.3390/agronomy13051225
PEER-REVIEWED

[6] 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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STATUS AND LICENCE

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COMPETING INTERESTS

The Heavy Metal Index reports what the peer-reviewed and regulatory literature supports. It is operated separately from any certification program, does not evaluate or endorse brands, and does not use certification thresholds as evidence for the statements made here.

DATA AVAILABILITY

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

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This revision 2026-10-22. The full dated record is maintained at https://heavymetalindex.com/ingredients/iceberg-lettuce.