Potato chips

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Abstract

Potato chips in the HMI library has 511 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Mn, Zn, V, Ag, Ba, Ca, Mg, Si and Sr from 14 sources. WHO GEMS/Food submissions reported lead in potato chips as sold from 46 results in 2 reporting regions, with a subgroup median of 6.5 µg/kg. In the US Total Diet Study, potato chips as sold had a median lead result below 4 µg/kg across 3 composites from 2018-2020.

1 | Potato chips overview

Across 3 other studies of ordinary farms and markets, reported lead means and medians on an as-sold or fresh-weight basis ranged from 3.5 µg/kg (Spungen et al. 2024) to 130 µg/kg (Tahboub et al. 2025).[4,5] For cadmium, 2 studies on an as-sold or fresh-weight basis reported means and medians from 65 µg/kg (Tahboub et al. 2025) to 130 µg/kg (Spungen et al. 2024).[4,5]

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

2 | What counts as potato chips

This page covers potato chips as sold (511 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 potato chips

No study in the library compared potato chips 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 potato chips as sold pools 11 subgroup units from 2 sampling families, with a median of below 4 µg/kg and a middle half spanning below 4 (lower quartile) and between 2 and 9.2 µg/kg (upper quartile).[1,2] for lead in potato chips as sold, the reference median was below 133 µg/kg, with a middle half from below 133 to below 133 µg/kg across 16 units.[6] for cadmium in potato chips as sold, the reference median was 79 µg/kg, with a middle half from below 5.1 to 100 µg/kg across 27 units.[1,2,3]

Among GEMS/Food reporting regions, potato chips as sold had the lowest cadmium subgroup median in PAHO (74.5 µg/kg) and the highest in WPRO (120 µg/kg); reporting regions are markets, not growing areas.[1]

Targeted potato chips as sold samples in WPRO had cadmium lower at 110 µg/kg, against 120 µg/kg for WPRO in the same study.[1]

In one study, lead across 16 groups of potato chips ranged from 1,540 µg/kg (potato chips product K, smoky barbecue flavor, Jordanian market) to 15,500 µg/kg (potato chips product B, Jordanian market); the lowest is the lowest observed in that study, not an established sourcing preference.[6]

5 | Processing, cooking and preparation

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

6 | Mitigation for potato chips

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 potato chips for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 2 µg/kg (WHO GEMS/Food) to 4,000 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1] Reporting limits for cadmium ranged from 1 µg/kg (WHO GEMS/Food) to 7 µg/kg (Jaradat et al. 2014), so a non-detect from a less sensitive method says much less.[1,6] Reporting limits for total arsenic ranged from 2 µg/kg (WHO GEMS/Food) to 5.4 µg/kg (Elsheikh et al. 2020), so a non-detect from a less sensitive method says much less.[1,3]

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

9 | Buying and verifying potato chips

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

10 | Exposure from potato chips

No source in the library converted potato chips 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 potato chips was decided on its content: 14 occurrence extracted, 14 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 | Potato chips FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, Co, Cu, Fe, Mn, Zn, V, Ag, Ba, Ca, Mg, Si and Sr in potato chips, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in potato chips as sold from 46 results in 2 reporting regions, with a subgroup median of 6.5 µg/kg.[1]

Among GEMS/Food reporting regions, potato chips as sold had the lowest cadmium subgroup median in PAHO (74.5 µg/kg) and the highest in WPRO (120 µg/kg); reporting regions are markets, not growing areas.[1]

Inorganic arsenic, the more toxic form, was measured in 2 results from 2 sources, far fewer than total arsenic.[1,7] Centre for Food Safety FEHD HKSAR 2012 reported inorganic arsenic at 8 µg/kg (mean) in potato chips as sold from all samples (4 sampling occasions, composites).[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] Evaluation of Some Toxic and Essential Trace Elements in Children Foods and Infant Formulae by Using ICP-OES
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PEER-REVIEWED

[4] Infants' and young children's dietary exposures to lead and cadmium: FDA total diet study 2018-2020
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Tahboub YR, Massadeh AM, and Al-Omari KM · Jordan Journal of Chemistry 2025, 20 (Special Issue): 51-60 · 2025 · doi.org/10.47014/20.s.5
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Jaradat QM and Tarawneh A · Jordan Journal of Chemistry Vol. 9 No. 2, 2014, pp. 69-80 · 2014 · doi.org/10.12816/0026471
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Centre for Food Safety FEHD HKSAR · Centre for Food Safety, Food and Environmental Hygiene Department, Government of the Hong Kong Special Administrative Region · 2012 · www.cfs.gov.hk
GOVERNMENT

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/potato-chips#sources.

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