Peanut butter

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CORRESPONDENCE

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Abstract

Peanut butter in the HMI library has 211 reported results for lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, V, AsIII, AsV, Ba, Mo, sum_of_species and Tl from 14 sources. WHO GEMS/Food submissions reported lead in peanut butter as sold from 169 results in 3 reporting regions, with subgroup medians from 6 to 11 µg/kg. In the US Total Diet Study, peanut butter as sold had a median lead result of 5.6 µg/kg across 3 composites from 2018-2020.

1 | Peanut butter overview

Spungen et al. 2024 reported lead at 5.6 µg/kg (mean) in peanut butter as sold from all samples.[3] Across 4 other studies of ordinary farms and markets, reported cadmium means and medians with the basis not stated ranged from 19 µg/kg (Zealand 2019) to 150 µg/kg (Centre for Food Safety (Hong Kong) 2013).[4,7]

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

2 | What counts as peanut butter

This page covers peanut butter in 3 forms kept separate in every comparison: peanut butter as sold (195 results), peanut butter powder or ground (12 results) cooked and peanut butter (4 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 peanut butter

No study in the library compared peanut butter 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 peanut butter as sold pools 28 subgroup units from 2 sampling families, with a median of between 5.2 and 6.1 µg/kg and a middle half spanning below 5.6 (lower quartile) and between 6.1 and 20 µg/kg (upper quartile).[1,2] for cadmium in peanut butter as sold, the reference median was 53.6 µg/kg, with a middle half from 42 to 60 µg/kg across 45 units.[1,2] for total arsenic in peanut butter as sold, the reference median was 6.9 µg/kg, with a middle half from between 3.21 and 5.9 to 9.9 µg/kg across 11 units.[1,2,8]

Among GEMS/Food reporting regions, peanut butter as sold had the lowest lead subgroup median in PAHO (6 µg/kg) and the highest in PAHO (11 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in PAHO (14.2 µg/kg) and the highest in WPRO (119 µg/kg).[1]

Targeted peanut butter as sold samples in WPRO had cadmium lower at 19 µg/kg, against 119 µg/kg for WPRO in the same study.[1]

In one study, total arsenic across 18 groups of peanut butter ranged from 6.1 µg/kg (Chunky peanut butter (USA)) to 40.8 µg/kg (Natural Creamy peanut butter Spread Contains 90% peanuts (USA)); the lowest is the lowest observed in that study, not an established sourcing preference.[9]

5 | Processing, cooking and preparation

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

6 | Mitigation for peanut butter

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 peanut butter for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1 µg/kg (WHO GEMS/Food) to 90 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 (FDA Total Diet Study) to 12 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,2] Reporting limits for total arsenic ranged from 0.4 µg/kg (Hovanec 2004) to 200 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,8]

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

9 | Buying and verifying peanut butter

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

10 | Exposure from peanut butter

No source in the library converted peanut butter 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 peanut butter 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 | Peanut butter FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, total mercury, nickel, chromium, aluminum, tin, antimony, uranium, V, AsIII, AsV, Ba, Mo, sum_of_species and Tl in peanut butter, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in peanut butter as sold from 169 results in 3 reporting regions, with subgroup medians from 6 to 11 µg/kg.[1]

Among GEMS/Food reporting regions, peanut butter as sold had the lowest lead subgroup median in PAHO (6 µg/kg) and the highest in PAHO (11 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in PAHO (14.2 µg/kg) and the highest in WPRO (119 µg/kg).[1]

Inorganic arsenic, the more toxic form, was measured in 34 results from 4 sources, far fewer than total arsenic.[1,5,10,9] Across 2 other studies of ordinary farms and markets, reported inorganic arsenic means and medians with the basis not stated ranged from 3.4 µg/kg (U.S. Food and Drug Administration 2016) to 5 µg/kg (Centre for Food Safety FEHD HKSAR 2012).[10,9]

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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/peanut-butter#sources.

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