Semi-skimmed milk

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CORRESPONDENCE

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Abstract

Semi-skimmed milk in the HMI library has 35 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, Ba, CrIII, CrVI and Tl from 3 sources. WHO GEMS/Food submissions reported lead in semi-skimmed milk as sold from 1 result in 1 reporting region, with subgroup medians below 90 µg/kg, mostly non-detects.

1 | Semi-skimmed milk overview

Higher results came from contaminated or exposed settings rather than ordinary supply. Semi-skimmed milk as sold from Raw had CrIII higher at 4.5 µg/kg, against 4.34 µg/kg for Hot plate in the same study.[3]

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

2 | What counts as semi-skimmed milk

This page covers semi-skimmed milk as sold (35 results).[1,2,3]

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 semi-skimmed milk

The evidence on how metals reach semi-skimmed milk comes from studies that compared exposed and ordinary settings. Semi-skimmed milk as sold from Raw had CrIII higher at 4.5 µg/kg, against 4.34 µg/kg for Hot plate in the same study.[3]

These are observational comparisons from single studies; the size of the difference depends on the site, metal and distance.

4 | Which forms and regions measured lower

In one study, CrIII across 9 groups of semi-skimmed milk ranged from 0.48 µg/kg (retail product 4) to 1.93 µg/kg (retail product 10 (row printed 'Raw')); the lowest is the lowest observed in that study, not an established sourcing preference.[3]

5 | Processing, cooking and preparation

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

6 | Mitigation for semi-skimmed milk

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

7 | Trade-offs and limits of controls

Avoiding exposed growing areas lowered the metal measured in the studies available, but no study measured the cost or supply effect of doing so.[3] 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 semi-skimmed milk for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 4 µg/kg (Baxter et al. 2015) to 90 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,2]

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

9 | Buying and verifying semi-skimmed milk

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

10 | Exposure from semi-skimmed milk

No source in the library converted semi-skimmed milk 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 semi-skimmed milk was decided on its content: 3 occurrence extracted, 3 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 | Semi-skimmed milk FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, antimony, Ba, CrIII, CrVI and Tl in semi-skimmed milk, most often lead, cadmium and total arsenic.[1,2,3] WHO GEMS/Food submissions reported lead in semi-skimmed milk as sold from 1 result in 1 reporting region, with subgroup medians below 90 µg/kg, mostly non-detects.[1]

In the studies available, semi-skimmed milk from contaminated or exposed settings carried more metal than semi-skimmed milk from the same study's control.[3] semi-skimmed milk as sold from Microwaved had CrIII higher at 4.43 µg/kg, against 4.34 µg/kg for Hot plate in the same study.[3]

In one study, CrIII across 9 groups of semi-skimmed milk ranged from 0.48 µg/kg (retail product 4) to 1.93 µg/kg (retail product 10 (row printed 'Raw')); the lowest is the lowest observed in that study, not an established sourcing preference.[3]

Inorganic arsenic, the more toxic form, was measured in 1 result from 1 source, far fewer than total arsenic.[2]

References

[1] GEMS/Food Contaminants database heavy-metal exports
World Health Organization · GEMS/Food Contamination Monitoring and Assessment Programme · 2026 · extranet.who.int
DATASET

[2] Total Diet Study of metals and other elements in food
Baxter M and Brereton N · Food and Environment Research Agency report for the UK Food Standards Agency, Fera report 15/06, project FS102081 · 2015 · www.food.gov.uk
GOVERNMENT

[3] Chromium speciation analysis in raw and cooked milk and meat samples by species-specific isotope dilution and HPLC-ICP-MS
Saraiva M, Chekri R, Guérin T, Sloth JJ, and Jitaru P · Food Additives & Contaminants Part A 38(2):304-314 · 2021 · doi.org/10.1080/19440049.2020.1859144
PEER-REVIEWED

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/semi-skimmed-milk#sources.

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