Sunflower Seeds

Karen Pendergrass · Heavy Metal Index, Institute of Contaminant Standards

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Abstract

Sunflower seeds in the HMI library has 167 reported results for lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, uranium, Co, Cu, Fe, Mn, Zn and B from 13 sources. WHO GEMS/Food submissions reported lead in sunflower seeds as sold from 582 results in 4 reporting regions, with subgroup medians below 91 µg/kg, mostly non-detects. In the US Total Diet Study, cooked sunflower seeds had a median lead result below 5 µg/kg across 3 composites from 2018-2020.

1 | Sunflower seeds overview

Shar et al. 2026 reported lead at 49 µg/kg (mean ± 9 SD) in sunflower seeds as sold from mean of the six site means (S1-S6).[4] Across 2 other studies of ordinary farms and markets, reported cadmium means and medians on an as-sold or fresh-weight basis ranged from 265 µg/kg (Fechner et al. 2022) to 333 µg/kg (Spungen et al. 2024).[7,8]

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

2 | What counts as sunflower seeds

This page covers sunflower seeds in 3 forms kept separate in every comparison: sunflower seeds as sold (95 results), sunflower seeds oil (62 results) cooked and sunflower seeds (10 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 sunflower seeds

No study in the library compared sunflower seeds 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 sunflower seeds as sold pools 47 subgroup units from 2 sampling families, with a median of 10 µg/kg and a middle half spanning below 10 (lower quartile) and between 10 and 21 µg/kg (upper quartile).[1,3] cooked for lead in sunflower seeds, the reference median was below 5 µg/kg, with a middle half from below 5 to below 5 µg/kg across 4 units.[2,8] for lead in sunflower seeds oil, the reference median was below 10 µg/kg, with a middle half from below 2.5 to below 90 µg/kg across 10 units.[1]

Among GEMS/Food reporting regions, sunflower seeds as sold had the lowest cadmium subgroup median in EMRO (25.5 µg/kg) and the highest in PAHO (394 µg/kg); reporting regions are markets, not growing areas.[1] For total arsenic, the lowest regional median was in EURO (15.7 µg/kg) and the highest in EURO (18.8 µg/kg).[1]

Targeted sunflower seeds as sold samples in EURO had cadmium lower at 69.5 µg/kg, against 100 µg/kg for EURO in the same study.[1]

In one study, lead across 7 groups of sunflower seeds ranged from 38 µg/kg (sunflower seeds, Tando Allahyar (S3)) to 63 µg/kg (sunflower seeds, Tando Jam (S4)); the lowest is the lowest observed in that study, not an established sourcing preference.[4]

5 | Processing, cooking and preparation

Processed or prepared forms were compared only with unprocessed sunflower seeds in the same study and group. Sunflower seeds oil (GEMS/Food contaminants database) had cadmium lower at 3.2 µg/kg, against 219 µg/kg for the unprocessed form in the same group (sunflower seeds as sold).[9] In another study, sunflower seeds oil (EURO) had aluminum lower at 678 µg/kg, against 9,790 µg/kg for the unprocessed form in the same group (sunflower seeds as sold).[1]

Forms differ in water content, so a per-kilogram difference is not by itself a measured removal or gain of metal.

6 | Mitigation for sunflower seeds

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 sunflower seeds for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 2.5 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 0.5 µg/kg (WHO GEMS/Food) to 42 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 4 µg/kg

(FDA Total Diet Study) to 4,000 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 sunflower seeds

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

10 | Exposure from sunflower seeds

No source in the library converted sunflower seeds 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 sunflower seeds was decided on its content: 13 occurrence extracted, 13 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 | Sunflower seeds FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, total mercury, nickel, chromium, aluminum, tin, uranium, Co, Cu, Fe, Mn, Zn and B in sunflower seeds, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in sunflower seeds as sold from 582 results in 4 reporting regions, with subgroup medians below 91 µg/kg, mostly non-detects.[1]

Among GEMS/Food reporting regions, sunflower seeds as sold had the lowest cadmium subgroup median in EMRO (25.5 µg/kg) and the highest in PAHO (394 µg/kg); reporting regions are markets, not growing areas.[1] For total arsenic, the lowest regional median was in EURO (15.7 µg/kg) and the highest in EURO (18.8 µg/kg).[1]

Only comparisons between forms in the same study are available, not before-and-after measurements of the same sunflower seeds.[9] sunflower seeds oil (GEMS/Food contaminants database) had cadmium lower at 3.2 µg/kg, against 219 µg/kg for the unprocessed form in the same group (sunflower seeds as sold).[9]

Inorganic arsenic, the more toxic form, was measured in 4 results from 2 sources, far fewer than total arsenic.[1,10] European Food Safety Authority (EFSA) 2014 reported inorganic arsenic at 25.1 µg/kg (mean) in sunflower seeds as sold from European dietary-survey occurrence data.[10]

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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/sunflower-seeds#sources.

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