Rice noodles

Karen Pendergrass · Heavy Metal Index, Institute of Contaminant Standards

HEAVY METAL INDEX · INGREDIENT PROFILE October 2026
DOI 10.83376/hmi.ingredient.rice-noodles

CITE AS

Pendergrass, K. (2026). Rice noodles. Heavy Metal Index. https://doi.org/10.83376/hmi.ingredient.rice-noodles

CORRESPONDENCE

Corrections are logged publicly on the article page, each with its date, the affected value, and the source that resolved it.

KEYWORDS

heavy metals, food safety, dietary exposure

PUBLICATION HISTORY

This revision 2026-10-22.

Abstract

Rice noodles in the HMI library has 174 reported results for lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, total mercury, methylmercury, nickel, chromium, aluminum, tin, antimony, uranium, V, Se, AsIII and AsV from 14 sources. WHO GEMS/Food submissions reported lead in rice noodles as sold from 41 results in 3 reporting regions, with subgroup medians from 3 to 7.85 µg/kg. In the US Total Diet Study, cooked rice noodles had a median lead result below 4 µg/kg across 3 composites from 2018-2020.

1 | Rice noodles overview

Centre for Food Safety (Hong Kong) 2013 reported lead at 4 µg/kg (mean) and cadmium at 20 µg/kg (mean) in rice noodles as sold from all samples.[4] Rajkowska-Myśliwiec et al. 2024 reported total arsenic at 151 µg/kg (mean ± 37.6 SD) in rice noodles as sold from all samples, 6 manufacturers x 5 packages.[6]

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

2 | What counts as rice noodles

This page covers rice noodles in 3 forms kept separate in every comparison: rice noodles as sold (153 results), rice noodles peel or outer layer (12 results) cooked and rice noodles (9 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 rice noodles

No study in the library compared rice noodles 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 cooked reference for lead in rice noodles pools 4 subgroup units from 2 sampling families, with a median of below 4 µg/kg and a middle half spanning below 4 (lower quartile) and below 4 µg/kg (upper quartile).[2,5] for lead in rice noodles as sold, the reference median was between 2.8 and 14 µg/kg, with a middle half from below 3.57 to between 9 and 23.5 µg/kg across 15 units.[1] for cadmium in rice noodles as sold, the reference median was 16.5 µg/kg, with a middle half from 12 to between 21.4 and 21.5 µg/kg across 14 units.[1]

Among GEMS/Food reporting regions, rice noodles as sold had the lowest lead subgroup median in WPRO (3 µg/kg) and the highest in PAHO (7.85 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in EURO (15 µg/kg) and the highest in WPRO (21.5 µg/kg).[1] For total arsenic, the lowest regional median was in EURO (68 µg/kg) and the highest in EURO (132 µg/kg).[1]

Targeted rice noodles as sold samples in EURO had inorganic arsenic higher at 133 µg/kg, against 79 µg/kg for EURO in the same study.[1]

5 | Processing, cooking and preparation

Processed or prepared forms were compared only with unprocessed rice noodles in the same study and group. Rice noodles peel or outer layer (pasta) had total arsenic higher at 240 µg/kg, against 160 µg/kg for the unprocessed form in the same group (rice noodles as sold).[7]

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

6 | Mitigation for rice noodles

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

Karimi and Goli (2021) found that simultaneous soaking and cooking of rice grain with potassium tartrate (200 ppm) reduced lead by 99.43% and cadmium by 95.13% compared to untreated controls in a laboratory experiment with six Iranian market rice varieties (Table 3). Potassium citrate at the same concentration produced comparable reductions (lead 98.96%, cadmium 92.77%). Sensory evaluation showed no significant difference between treated and untreated rice. Evidence from rice grain (soaking and cooking with chelating agents), not measured in rice noodles.[12]

Carey et al. (2015) tested three cooking approaches for removing inorganic arsenic (iAs) from rice: high water-to-rice ratios under reflux, a Soxhlet recycled-condensation system, and an off-the-shelf coffee percolator. At a 12:1 water:rice ratio, 57 ± 5% of iAs was removed across 12 samples (6 wholegrain, 6 polished). The coffee percolator removed 49 ± 7% on average and up to 85% in the best individual sample. Dimethylarsinic acid (DMA) was not significantly reduced by any cooking method. Evidence from rice grain (cooking with excess or percolating water), not measured in rice noodles.[13]

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 rice noodles for metals

Results depend on the method and its reporting limit. Reporting limits for lead ranged from 1 µg/kg (WHO GEMS/Food) to 120 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 41 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 0.3 µg/kg (Rajkowska-Myśliwiec et al. 2024) to 200 µg/kg (WHO GEMS/Food), so a non-detect from a less sensitive method says much less.[1,6]

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

9 | Buying and verifying rice noodles

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

10 | Exposure from rice noodles

No source in the library converted rice noodles 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 rice noodles 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 | Rice noodles FAQs

The library reports lead, cadmium, total arsenic, inorganic arsenic, dimethylarsinic acid, monomethylarsonic acid, total mercury, methylmercury, nickel, chromium, aluminum, tin, antimony, uranium, V, Se, AsIII and AsV in rice noodles, most often lead, cadmium and total arsenic.[1,2,3,4] WHO GEMS/Food submissions reported lead in rice noodles as sold from 41 results in 3 reporting regions, with subgroup medians from 3 to 7.85 µg/kg.[1]

Among GEMS/Food reporting regions, rice noodles as sold had the lowest lead subgroup median in WPRO (3 µg/kg) and the highest in PAHO (7.85 µg/kg); reporting regions are markets, not growing areas.[1] For cadmium, the lowest regional median was in EURO (15 µg/kg) and the highest in WPRO (21.5 µg/kg).[1]

Only comparisons between forms in the same study are available, not before-and-after measurements of the same rice noodles.[7] rice noodles peel or outer layer (pasta) had total arsenic higher at 240 µg/kg, against 160 µg/kg for the unprocessed form in the same group (rice noodles as sold).[7]

Inorganic arsenic, the more toxic form, was measured in 43 results from 6 sources, far fewer than total arsenic.[1,7,8,9,10,11] Across 4 other studies of ordinary farms and markets, reported inorganic arsenic means and medians with the basis not stated ranged from 9 µg/kg (Centre for Food Safety FEHD HKSAR 2012) to 76 µg/kg (EFSA 2021).[8,9]

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STATUS AND LICENCE

Editorially reviewed in-house; no external peer review has been completed on this ingredient profile. Published as an institutional technical report with its review state tracked on the article page. Released under CC BY 4.0.

DATA AVAILABILITY

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

COMPETING INTERESTS

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PUBLICATION HISTORY

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