Hazardous Waste Management Program

Public Health
Seattle & King County

Cookware that released lead above the FDA's recommended daily intake levels

We used two types of analysis to understand the risks posed by lead in cookware.

XRF analysis
We screened cookware using an X-ray Fluorescence (XRF) analyzer to find out how much total lead was in these products. These results are presented in parts per million (ppm) of lead.

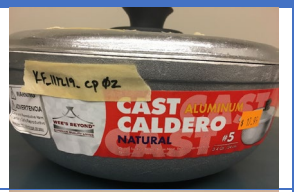
Leachate tests
We conducted leachate tests to mimic cooking and then storage of acidic foods in cookware. We added a dilute acid solution equivalent to household vinegar (4% acetic acid) to the cookpots and simmered for 15 minutes. We then took a sample for lead analysis. The cookpots were then allowed to sit at room temperature for 24 hours, when we took another sample.

The lead doses per serving (Pb dose/serving) in the samples taken after 15 minutes and 24 hours were calculated by assuming that someone would consume 250 milliliters (mL) of liquid per day (about one cup). The estimated lead dose is presented in micrograms of lead per 250 milliliters of liquid (ug/250 mL).

The estimated daily lead dose was compared to the Food and Drug Administration's Interim Reference Level (IRL) for children (2.2 ug/day) and people who might become pregnant (8.8 ug/day).

In the table below, estimated doses with one asterisk (*) exceeded the IRL for children (2.2 ug/day), but not for people who might become pregnant (8.8 ug/day). Doses with two asterisks (**) exceeded the IRLs for both children and people who might become pregnant.

Please see the end of the table for additional notes and references.

Description (material)	Country of Origin	Purchase Details	XRF, ppm Median (Range)	Pb dose/serving 15 min (ug/250 mL)	Pb dose/serving 24 h (ug/250 mL)	Photo
Wee's Beyond Caldero (Aluminum)	Colombia	Purchased Locally 11/08/2019	96 (0 – 225)	6.80*	52.5**	
Chef Valley Caldero (Aluminum)	China	Purchased Locally 11/08/2019	12 (0 – 26)	0.185	2.46*	

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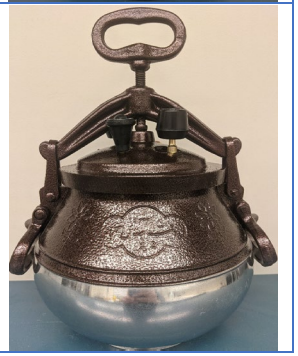
Unknown Brand Steamer (Aluminum)	Taiwan	Purchased Locally 11/08/2019	24 (10 – 47)	53.5**	56.5**	
Alpine Cuisine Steamer (Aluminum)	China	Purchased Locally 11/08/2019	28 (0 – 44)	0.200	3.45*	
Chue Chin Hua Steamer (Aluminum)	Thailand	Purchased Locally 11/08/2019	10 (0 – 85)	0.225	2.83*	
Wee's Beyond Caldero (Aluminum)	Colombia	Purchased Locally 11/21/2019	138 (0 – 183)	2.38*	62.3**	
LBB Cookware Skillet (Aluminum)	Unknown	Purchased Locally 11/21/2019	387 (8 – 489)	3.73*	106**	

Description (material)	Country of Origin	Purchase Details	XRF, ppm Median (Range)	Pb dose/serving 15 min (ug/250 mL)	Pb dose/serving 24 h (ug/250 mL)	Photo
Kitchen King Pressure Cooker (Aluminum)	Unknown	Purchased Locally 12/13/2019	595 (103 – 53,668)	3.53*	530**	
Luxmi Pooja Cookpot (Aluminum)	India	Purchased Locally 12/13/2019	95 (0 – 374)	1.80	15.8**	
Black Chef Cookpot (Aluminum)	Unknown (India)	Purchased Locally 12/13/2019	476 (12 – 554)	3.88*	34.5**	
Tiantianxi Pressure Cooker (Aluminum)	Unknown (China)	AliExpress.com 11/2019	42 (0 – 78)	0.690	7.18*	
Rashko Baba Pressure Cooker (Aluminum)	Afghanistan	Etsy.com (MenGrills) 5/6/2021	556 (8 – 37,040)	48.8**	1,580**	

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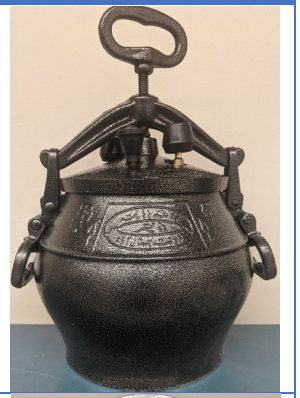
Rashko Baba Pressure Cooker (Aluminum)	Afghanistan	Etsy.com (MenGrills) 5/6/2021	693 (0 – 66,374)	71.0**	1,940**	
Rashko Baba Pressure Cooker (Aluminum)	Afghanistan	Etsy.com (eplov) 5/6/2021	497 (0 – 53,425)	69.8**	1,780**	
Kyyte Idli Maker (Hindalium/indalium)	India	Amazon.com 9/27/2021	626 (81 – 1,463)	4.55*	33.0**	
Unknown Brand Kadai (Brass)	India	Etsy.com (The Articraft India) 11/4/2021	5,049 (128 – 47,191)	192**	335**	

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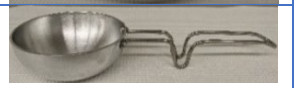
Saravana Cookwares Uruli/Kadai (Hindalium/indalium)	India	Etsy.com (Indian Artisans Club) 11/4/2021	256 (103 – 290)	1.085	6.70*	
Casco Tadka Pan (Hindalium/indalium)	India	Etsy.com (Indian Artisans Club) 11/4/2021	290 (0 – 306)	0.973	33.8**	
Unknown Brand Appam Pan (Hindalium/indalium)	India	Etsy.com (Indian Artisans Club) 11/4/2021	716 (603 – 794)	3.6*	3,075**	
Unknown Brand Kadai (Hindalium/indalium)	India	Etsy.com (Indian Artisans Club) 11/4/2021	756 (15 – 813)	6.13*	232**	
Unknown Brand Gift (Spatula?) (Hindalium/indalium)	India	Etsy.com (Indian Artisans Club) 11/4/2021	517 (362 – 636)	3.93*	263**	
Imusa Caldero (Aluminum)	Colombia	Walmart.com 11/4/2021	13 (0 – 71)	0.23	4.63*	
Lakshmi Nellai Idli Maker (Hindalium/indalium)	India	Amazon.com 11/4/2021	715 (308 – 1,327)	7.00*	67.5**	
Imusa Caldero (Aluminum)	Colombia	Lowes.com 11/4/2021	8 (0 – 15)	0.188	3.93*	

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Imusa Caldero (Aluminum)	Colombia	Lowes.com 11/4/2021	9 (0 – 15)	0.150	4.18*	
Imusa Caldero (Aluminum)	Colombia	Lowes.com 11/4/2021	7 (0 – 17)	0.15	3.73*	
Iron King Kadai (Hindalium/indalium)	India	Etsy.com (HarishTradersMadurai) 11/4/2021	528 (0 – 624)	11.4**	340**	
MSR Cookpot (Aluminum)	Thailand	MSRgear.com 5/2/2022	14 (0 – 27)	0.458	3.85*	
Bayou Classic Stock Pot (Aluminum)	El Salvador	Amazon.com 5/2/2022	15 (0 – 27)	0.295	2.63*	
Economy Stock Pot (Aluminum)	China	ChefsToys.com 5/10/2022	50 (0 – 94)	0.263	2.55*	
GSI Cookpot (Aluminum)	China	GSIoutdoors.com 5/2/2022	13 (0 – 26)	3.25*	5.18*	

Description (material)	Country of Origin	Purchase Details	XRF, ppm Median (Range)	Pb dose/serving 15 min (ug/250 mL)	Pb dose/serving 24 h (ug/250 mL)	Photo
Hamza Baba Pressure Cooker (Aluminum)	Afghanistan	Amazon.com 5/22/2023	538 (0 – 48,193)	45.75**	990**	
Hamza Baba Pressure Cooker (Aluminum)	Afghanistan	Amazon.com 5/22/2023	605 (0 – 64,852)	48.5**	1157.5**	
Rashko Baba Pressure Cooker (Aluminum)	Afghanistan	MangalGrills.com 5/22/2023	548 (0 – 51,021)	32.75**	780**	
Harjee Saucepan (Brass)	India	Amazon.com 7/5/2023	0 (0 – 1,182)	19.75**	32.25**	

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Unknown Brand Tope (Brass)	India	Amazon.com 7/5/2023	1,343 (1,012 – 1,544)	104.5**	182**	
Taluka Pital Pot (Brass)	India	Amazon.com 7/5/2023	3,611 (2,859 – 4,585)	1,430**	2,700**	

Notes:

The cookware presented in this table released lead in the leachate in excess of the FDA's IRL for children.

Hindalium/indalium is an aluminum alloy manufactured in India.

The Interim Reference Levels (IRLs) are benchmarks established by the FDA to evaluate whether lead exposure from food is a potential concern. The IRLs do not have regulatory significance for the FDA. See Updated interim reference levels for dietary lead to support FDA's Closer to Zero action plan - ScienceDirect.

The assumption that people consume 250 mL of liquid prepared in this cookware per day was made by researchers in the Hazardous Waste Management Program and Public Health-Seattle & King County. This method of calculating estimated dose was not stipulated by the FDA.

Complete methodological details are provided in Investigating aluminum cookpots as a source of lead exposure in Afghan refugee children resettled in the United States | Journal of Exposure Science & Environmental Epidemiology (nature.com)