Arsenic Toxicity Standard

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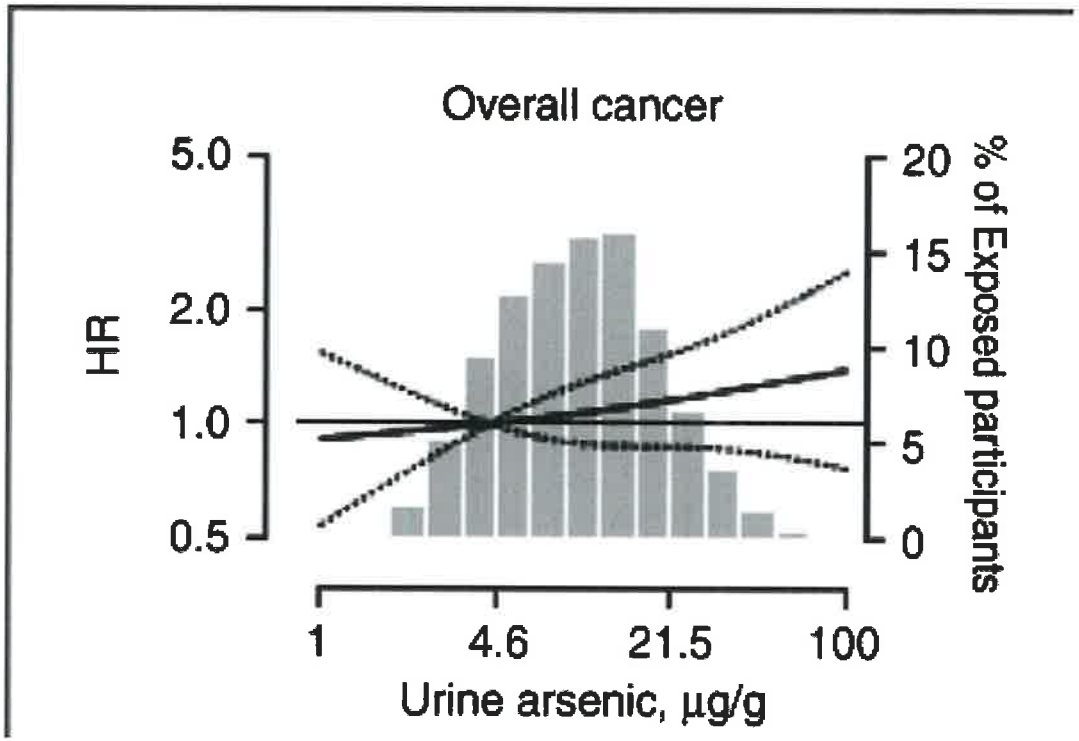
Arsenic Toxicity Standards

Ug/g creatinine

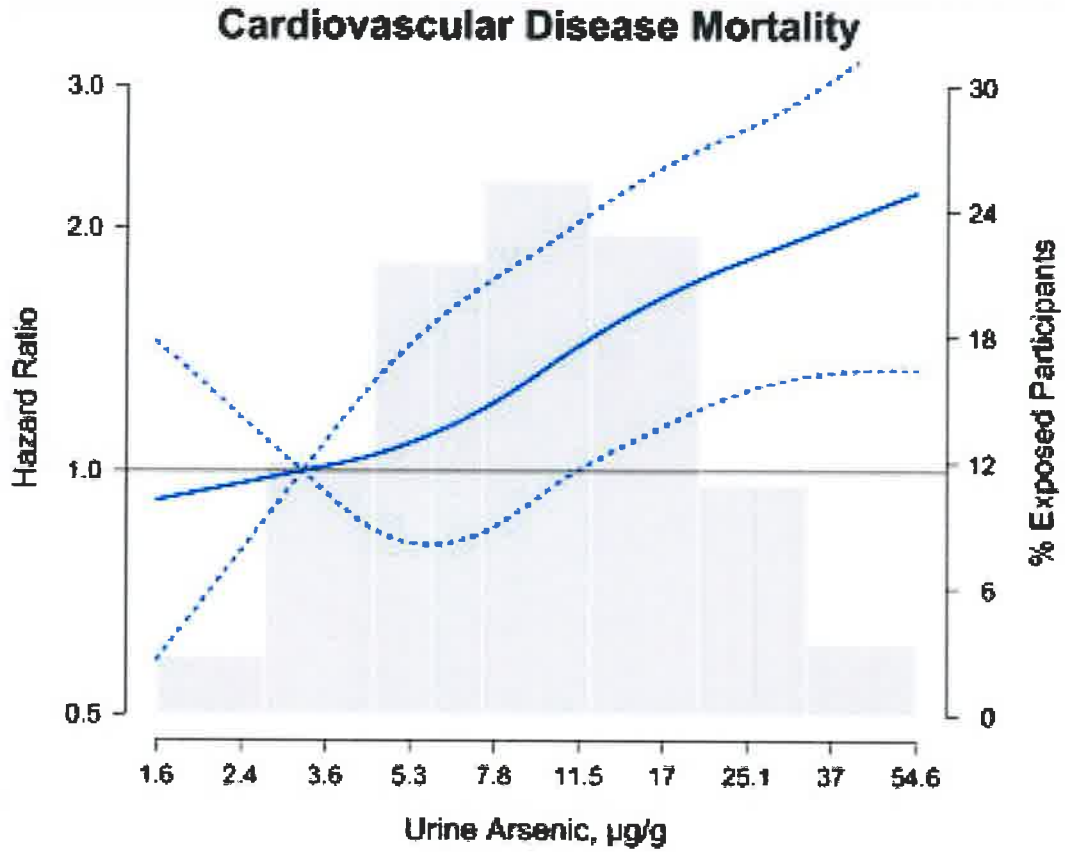
50.0 Acute toxicity standard
10.0 WHO
4.6 Cancer begins to increase
3.4 Death from heart attack begins to increase

Arsenic Major Factor in Many Cancers



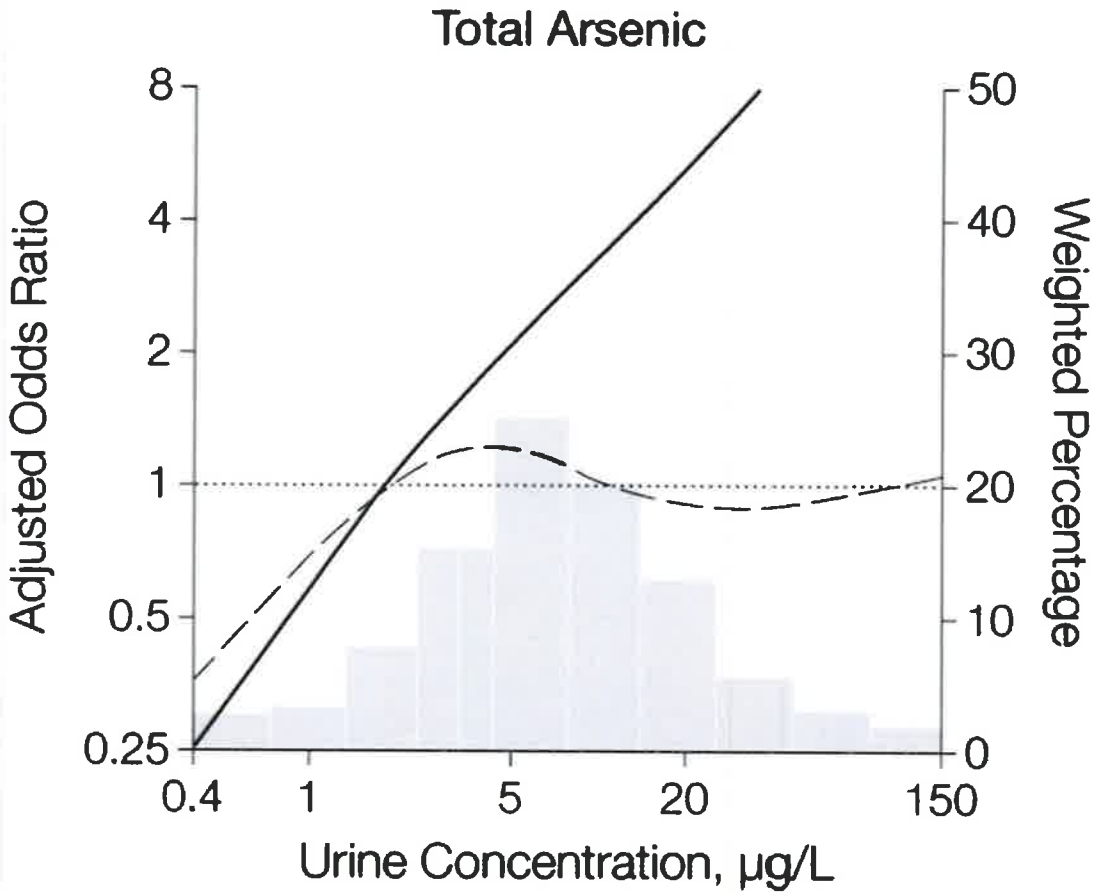
García-Esquinas E, Pollán M, Umans JG, et al. Arsenic exposure and cancer mortality in a US-based prospective cohort: the strong heart study. Cancer Epidemiol Biomarkers Prev. 2013 Nov;22(11):1944-53

Arsenic Heart Attack Mortality



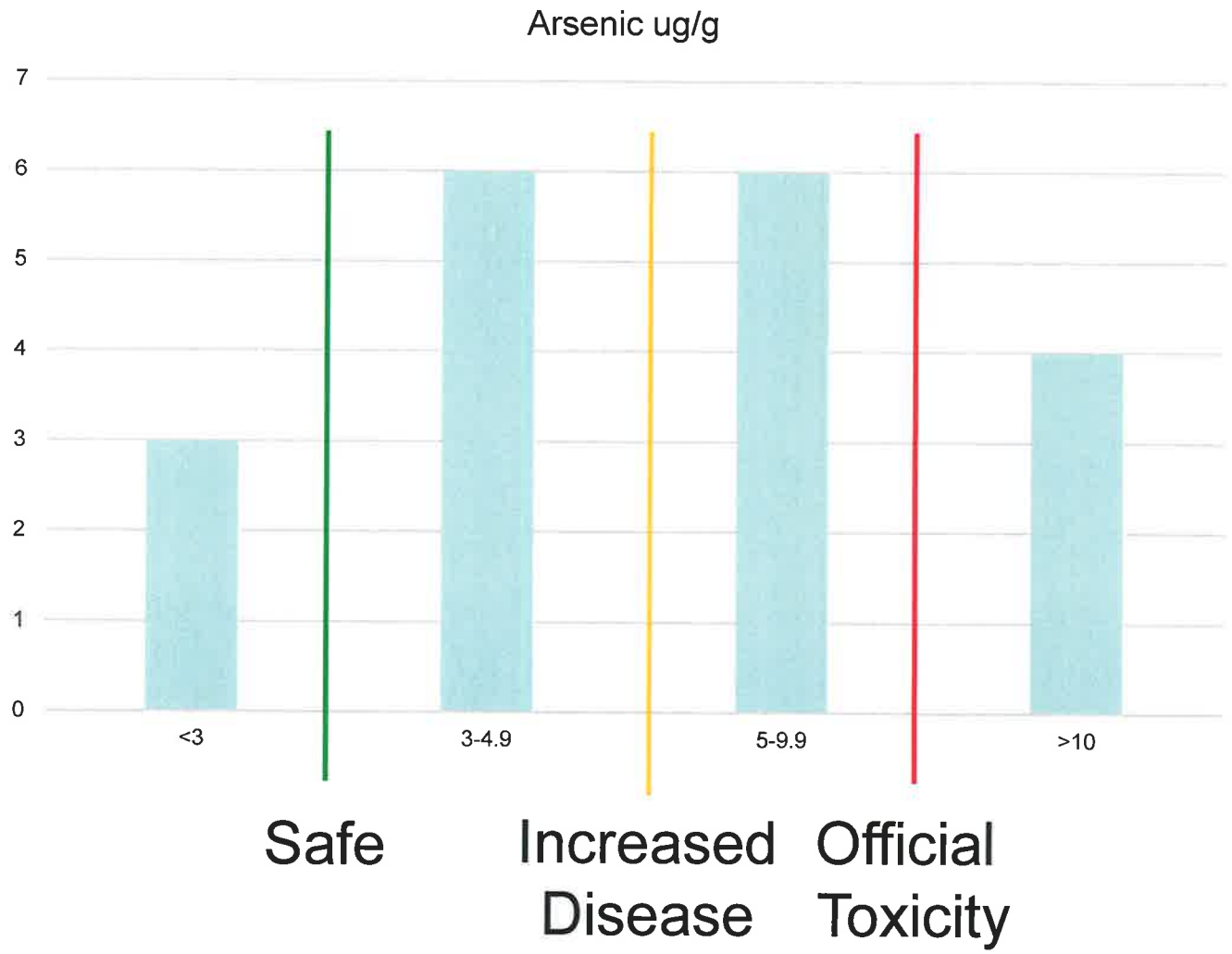
Moon KA, Guallar E, Umans JG, et al. Association between exposure to low to moderate arsenic levels and incident cardiovascular disease. A prospective cohort study. *Ann Intern Med.* 2013;159(10):649-659

Arsenic and Diabetes

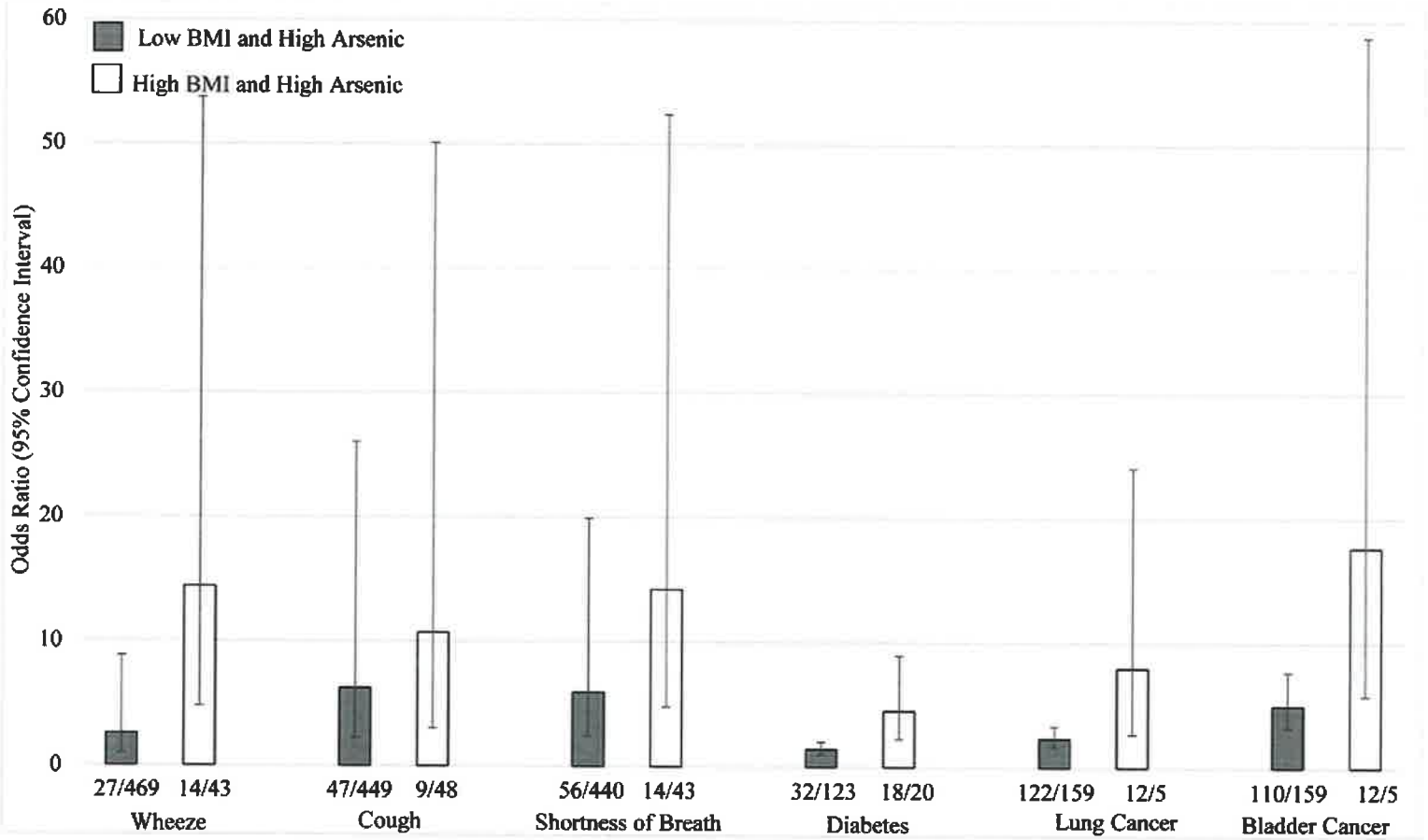


Navas-Acien, A., Silbergeld, E. K., Pastor-Barriuso, R., & Guallar, E. (2008). Arsenic exposure and prevalence of type 2 diabetes in US adults. *JAMA*, *300*(7), 814–822.

What We Found For F.I.N.E. Health

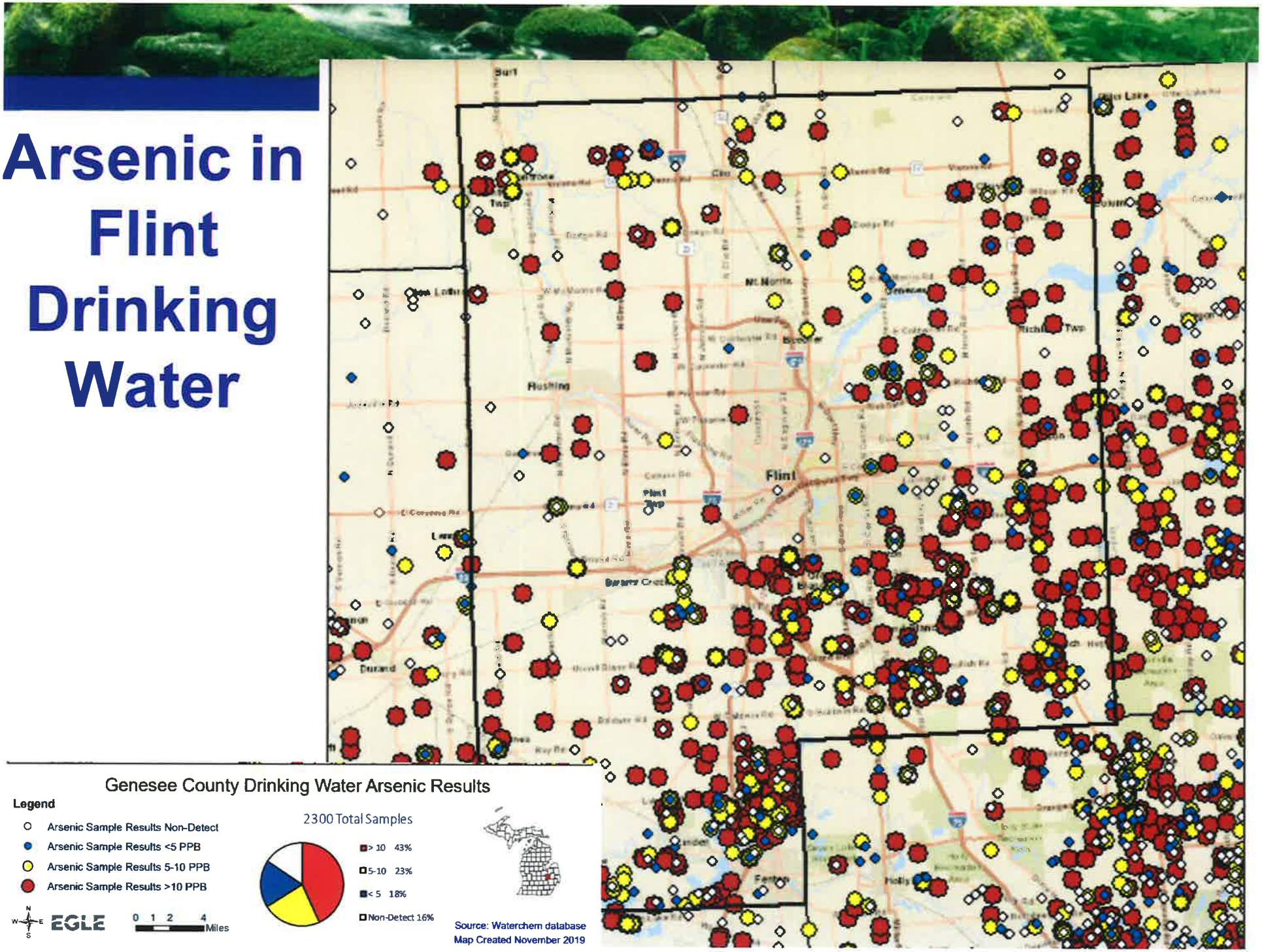


Obesity Makes Arsenic More Toxic



Eick, S. M., & Steinmaus, C. (2020). Arsenic and Obesity: a Review of Causation and Interaction. *Current environmental health reports*, *7*(3), 343–351. https://doi.org/10.1007/s40572-

Arsenic in Flint Drinking Water



Arsenic

Urinary Total Arsenic (2003 – 2010)

CAS Number 7440-38-2

Geometric mean and selected percentiles of urine concentrations (in µg /L) for the U.S. population from the National Health and Nutrition Examination Survey.

Categories (Survey Years)	Geometric Mean (95% conf. interval)	50th Percentile (95% conf. interval)	75th Percentile (95% conf. interval)	90th Percentile (95% conf. interval)	95th Percentile (95% conf. interval)	Sample Size
Total population (2003 - 2004)	8.30 (7.19-9.57)	7.70 (6.90-8.90)	16.0 (14.1-18.7)	37.4 (31.6-43.5)	65.4 (48.7-83.3)	2557
Total population (2005 - 2006)	9.29 (8.05-10.7)	8.65 (7.48-9.99)	17.1 (14.9-20.6)	41.1 (33.3-49.7)	66.7 (53.7-87.0)	2576
Total population (2007 - 2008)	8.10 (7.44-8.83)	7.49 (6.90-8.12)	14.9 (13.2-17.0)	33.3 (29.8-38.7)	50.8 (42.3-65.1)	2605
Total population (2009 - 2010)	9.28 (8.47-10.2)	8.15 (7.20-8.98)	18.0 (15.3-20.8)	44.6 (39.0-55.1)	85.6 (64.7-114)	2860
Total population (2011 - 2012)	6.85 (5.85-8.02)	6.09 (5.22-7.12)	13.0 (10.9-16.6)	32.0 (25.9-39.0)	52.5 (41.9-66.2)	2504
Total population (2013 - 2014)	6.29 (5.58-7.08)	5.82 (5.10-6.69)	11.7 (10.5-13.2)	26.6 (23.7-30.1)	46.0 (37.5-56.1)	2662
Total population (2015 - 2016)	5.96 (5.53-6.43)	5.41 (4.92-5.84)	11.1 (9.91-12.2)	25.0 (20.8-30.0)	44.6 (35.7-53.8)	3061

- Primary sources: water, chicken, rice
- Official threshold for increased Dz risk: 10.0 ug/L urine

⇒ >35% of US population exceeds threshold

Fourth National Report on Human Exposure to Environmental Chemicals. Updated Tables, January 2019, Volume One

D'Ippoliti D, Santelli E, De Sario M, Scortichini M, Davoli M, Michelozzi P. Arsenic in Drinking Water and Mortality for Cancer and Chronic Diseases in Central Italy, 1990-2010. PLoS One. 2015 Sep 18;10(9):e0138182. PMID: 26383851