

Comments on Inorganic Arsenic

Key Science Issue 3: Integrating the Results of Epidemiologic Studies – Comments on Exposure/Dose

Barbara D. Beck, Ph.D., DABT, Fellow ATS
Gradient

Presented at the IRIS Bimonthly Public Science Meeting

Science Issue 3: Integrating the Results of Epidemiologic Studies – Comments on Exposure/Dose

- Arsenic exposure characterization is limited in many studies (*e.g.*, single well measurement *versus* multiple measurements)
- Some studies only have urinary As measures
 - Subject to error due to creatinine adjustment and contribution of diet to the organic arsenicals in urine (is the DMA in urine from organic As in food or from metabolized inorganic arsenic?)
 - Some report urinary speciation and others do not
- Very few studies directly address potential intake of As from food and how may affect total and speciated As intake

Science Issue 3: Integrating the Results of Epidemiologic Studies – Comments on Exposure/Dose (cont.)

- Daily intake of inorganic As ranges widely between countries based on factors such as cooking methods and dietary intake (see example in Table 2)
- Unclear how exposure characterization "scores" will play into overall tiers for RoB; studies considering internal dose and diet/nutrition may require heavier weighting in overall classification due to the importance of dose in the assessment of iAs effects for the U.S. population

Table 2. Estimated Mean Intake at 100 µg iAs/L Water (µg/day, adult)

Medium	Bangladesh ¹	United States ²
Water	300	119
Water intake from cooking	200	25 (assume 1 cup in rice)
Food	61	2
Total	561	146
µg/kg-day	9.4	2.1

^[1] Adapted from Tsuji *et al.*, 2014

^[2] Mainly adapted from Petito Boyce *et al.*, 2008