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Arsenic and Rice: Translating Research to Address Health Care Providers' Needs

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Arsenic is a naturally occurring element and anthropogenic contaminant present in 2 general forms: inorganic and organic. Inorganic arsenite is considered highly toxic to humans.¹ The International Agency for Research on Cancer, Agency for Toxic Substances and Hazard Registry, and the US Environmental Protection Agency (EPA) all classify inorganic arsenite as a human carcinogen.²⁻⁴ The health effects of organic forms are not fully understood; however, some of the organic forms also may have toxic and potentially carcinogenic properties.⁵

Children can be exposed to arsenic by multiple ways.^{1,6} An important source of chronic exposure to inorganic arsenic worldwide is contaminated drinking water. However, because municipal water systems in the US are regulated to meet federal standards, the primary exposure to arsenic for most people in the US is food.⁷ One food source is rice, particularly high in arsenic in Asia, a staple for much of the world's population.⁸ Rice grows throughout the world, contains arsenic, particularly in its germination.⁹ Though the amount and form of arsenic found in different rice cultivars vary, the average levels of inorganic arsenic detected in rice are high enough to raise questions about potential health impacts, including for children.¹⁰⁻¹²

Dietary exposure to arsenic is of particular concern for children for several reasons.^{1,13} First, exposure to arsenic and other chemicals during critical windows of vulnerability to early

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