Various mushroom species were collected from farms in Pennsylvania and California. Consumption of arsenic contaminated foods, like mushrooms, contributes to the daily arsenic exposure in the human diet.

Arsenic contamination has been documented in other foods, such as rice, and also in other parts of the world, such as Europe, and Southern Asia. However, little research has been done for arsenic contamination of mushrooms grown in the USA. Variou
s mushroom species were collected from farms in Kennett Square, PA, and San Francisco, CA.

**Objective:** To determine the human health risk of arsenic in mushrooms in the USA.

**Introduction**

**Background**

To understand the source and mechanisms of As risk associated with ingestion of As-containing foods, it is necessary to understand the chemical speciation, the arsenic load, and arsenic forms. Understanding the mechanisms of As transfer from soil to higher fungi is important.

**Methods**

The samples collected from different farms in Kennett Square, PA, and San Francisco, CA were dried and ground. Microwave digestions were performed on these samples before being run through the ICP-MS to measure the total concentration of arsenic in the mushrooms.

**Results**

**Figure 1.** Total arsenic found in raw mushrooms and white rice sampled 3 to 4 times per year during the FDA’s Total Diet Study from 1994 to 2006.

**Figure 2.** Minimum and maximum arsenic concentrations from different mushroom farms in Pennsylvania and California. Most As accumulates in the mushroom cap. Arsenic concentrations ranged from 0.118 to 1.660 μg g⁻¹.

**Figure 3.** Average arsenic concentrations +/- standard error of various mushroom species from Pennsylvania and California. The arsenic concentrations varied between different mushroom species and also from farm to farm.

**Figure 4.** Localization of calcium and arsenic in a Shiitake mushroom from Mother Earth Mushroom Emporium using X-ray Fluorescence (XRF) imaging.

**Conclusions**

- Most As accumulates in the mushroom cap.
- Arsenic concentrations ranged from 0.118 to 1.660 μg g⁻¹.
- The arsenic concentrations varied between different mushroom species and also from farm to farm.
- While tests are being performed to determine the arsenic speciation, our conservative estimates show that most of the samples contribute to less than 5% of the daily allowable arsenic load for an average adult in the US.

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