

US EPA ARCHIVE DOCUMENT

**Percentiles of Dioxin TEQ for Media Concentration and Risks From Application of Fertilizer Products
Minneapolis, MN (Adult)**

| Product | Percentile | soil conc (mg/kg) | fruit conc (mg/kg-DW) | above- ground vegetable conc (mg/kg-DW) | below- ground veg conc (mg/kg) | beef conc (mg/kg) | milk conc (mg/kg) | fish conc (mg/kg) | Soil Ingestion | Fruit Ingestion | Vegetable Ingestion | Below- ground Vegetable Ingestion | Beef Ingestion | Milk Ingestion | Fish Ingestion | Direct Inhalation | All Indirect Pathways Combined ¹ |
|-------------------------------------|-----------------|----------------------|--------------------------|---|---|----------------------|----------------------|----------------------|-------------------|--------------------|------------------------|--|-------------------|-------------------|-------------------|----------------------|---|
| Iron Micronutrient | 50th Percentile | 5.E-10 | 4.E-11 | 9.E-12 | 6.E-13 | 3.E-10 | 7.E-11 | 2.E-11 | 1.E-11 | 7.E-11 | 1.E-11 | 2.E-12 | 7.E-09 | 6.E-09 | 1.E-12 | 3.E-11 | 1.E-08 |
| | 90th Percentile | 2.E-09 | 1.E-10 | 3.E-11 | 3.E-12 | 1.E-09 | 3.E-10 | 7.E-11 | 5.E-11 | 5.E-10 | 9.E-11 | 2.E-11 | 5.E-08 | 4.E-08 | 3.E-11 | 1.E-10 | 9.E-08 |
| | 95th Percentile | 2.E-09 | 2.E-10 | 4.E-11 | 4.E-12 | 1.E-09 | 3.E-10 | 1.E-10 | 8.E-11 | 9.E-10 | 2.E-10 | 4.E-11 | 8.E-08 | 7.E-08 | 5.E-11 | 2.E-10 | 2.E-07 |
| | 99th Percentile | 3.E-09 | 2.E-10 | 5.E-11 | 6.E-12 | 2.E-09 | 4.E-10 | 2.E-10 | 1.E-10 | 3.E-09 | 4.E-10 | 1.E-10 | 2.E-07 | 2.E-07 | 2.E-10 | 3.E-10 | 3.E-07 |
| Liming Agents | 50th Percentile | 2.E-06 | 2.E-07 | 4.E-08 | 2.E-09 | 1.E-06 | 3.E-07 | 4.E-08 | 4.E-08 | 3.E-07 | 5.E-08 | 7.E-09 | 3.E-05 | 2.E-05 | 4.E-09 | 7.E-08 | 5.E-05 |
| | 90th Percentile | 7.E-06 | 7.E-07 | 2.E-07 | 1.E-08 | 5.E-06 | 1.E-06 | 2.E-07 | 2.E-07 | 3.E-06 | 4.E-07 | 7.E-08 | 2.E-04 | 2.E-04 | 7.E-08 | 4.E-07 | 4.E-04 |
| | 95th Percentile | 9.E-06 | 8.E-07 | 2.E-07 | 2.E-08 | 6.E-06 | 2.E-06 | 3.E-07 | 3.E-07 | 5.E-06 | 9.E-07 | 2.E-07 | 3.E-04 | 3.E-04 | 2.E-07 | 7.E-07 | 6.E-04 |
| | 99th Percentile | 1.E-05 | 1.E-06 | 2.E-07 | 3.E-08 | 8.E-06 | 2.E-06 | 6.E-07 | 5.E-07 | 1.E-05 | 2.E-06 | 5.E-07 | 8.E-04 | 7.E-04 | 6.E-07 | 1.E-06 | 1.E-03 |
| Zinc Micronutrients | 50th Percentile | 4.E-09 | 4.E-10 | 9.E-11 | 4.E-12 | 2.E-09 | 7.E-10 | 8.E-11 | 8.E-11 | 6.E-10 | 1.E-10 | 2.E-11 | 6.E-08 | 5.E-08 | 8.E-12 | 2.E-10 | 1.E-07 |
| | 90th Percentile | 2.E-07 | 2.E-08 | 4.E-09 | 2.E-10 | 1.E-07 | 3.E-08 | 4.E-09 | 4.E-09 | 5.E-08 | 7.E-09 | 1.E-09 | 4.E-06 | 4.E-06 | 7.E-10 | 7.E-09 | 8.E-06 |
| | 95th Percentile | 3.E-07 | 3.E-08 | 7.E-09 | 4.E-10 | 2.E-07 | 6.E-08 | 7.E-09 | 7.E-09 | 1.E-07 | 2.E-08 | 2.E-09 | 8.E-06 | 9.E-06 | 2.E-09 | 1.E-08 | 2.E-05 |
| | 99th Percentile | 6.E-07 | 7.E-08 | 2.E-08 | 1.E-09 | 5.E-07 | 1.E-07 | 2.E-08 | 2.E-08 | 4.E-07 | 5.E-08 | 1.E-08 | 3.E-05 | 2.E-05 | 1.E-08 | 6.E-08 | 5.E-05 |
| Magnesium Micronutrients | 50th Percentile | 7.E-11 | 5.E-12 | 1.E-12 | 7.E-14 | 4.E-11 | 9.E-12 | 2.E-12 | 1.E-12 | 8.E-12 | 1.E-12 | 2.E-13 | 7.E-10 | 6.E-10 | 1.E-13 | 3.E-12 | 1.E-09 |
| | 90th Percentile | 1.E-10 | 1.E-11 | 2.E-12 | 2.E-13 | 8.E-11 | 2.E-11 | 6.E-12 | 5.E-12 | 5.E-11 | 9.E-12 | 2.E-12 | 4.E-09 | 4.E-09 | 2.E-12 | 1.E-11 | 8.E-09 |
| | 95th Percentile | 2.E-10 | 1.E-11 | 3.E-12 | 3.E-13 | 9.E-11 | 2.E-11 | 8.E-12 | 6.E-12 | 8.E-11 | 2.E-11 | 3.E-12 | 6.E-09 | 5.E-09 | 5.E-12 | 1.E-11 | 1.E-08 |
| | 99th Percentile | 2.E-10 | 2.E-11 | 4.E-12 | 6.E-13 | 1.E-10 | 4.E-11 | 1.E-11 | 9.E-12 | 2.E-10 | 3.E-11 | 1.E-11 | 2.E-08 | 1.E-08 | 1.E-11 | 3.E-11 | 3.E-08 |
| Phosphate Fertilizers | 50th Percentile | 3.E-09 | 2.E-10 | 5.E-11 | 3.E-12 | 1.E-09 | 3.E-10 | 8.E-11 | 6.E-11 | 3.E-10 | 6.E-11 | 1.E-11 | 3.E-08 | 3.E-08 | 7.E-12 | 1.E-10 | 6.E-08 |
| | 90th Percentile | 5.E-09 | 4.E-10 | 1.E-10 | 1.E-11 | 3.E-09 | 7.E-10 | 3.E-10 | 2.E-10 | 2.E-09 | 3.E-10 | 8.E-11 | 2.E-07 | 1.E-07 | 1.E-10 | 4.E-10 | 3.E-07 |
| | 95th Percentile | 6.E-09 | 5.E-10 | 1.E-10 | 1.E-11 | 3.E-09 | 9.E-10 | 4.E-10 | 2.E-10 | 3.E-09 | 6.E-10 | 1.E-10 | 3.E-07 | 2.E-07 | 2.E-10 | 6.E-10 | 5.E-07 |
| | 99th Percentile | 7.E-09 | 6.E-10 | 1.E-10 | 2.E-11 | 5.E-09 | 1.E-09 | 6.E-10 | 4.E-10 | 7.E-09 | 1.E-09 | 4.E-10 | 6.E-07 | 4.E-07 | 6.E-10 | 1.E-09 | 1.E-06 |
| Potash | 50th Percentile | 2.E-09 | 1.E-10 | 3.E-11 | 2.E-12 | 1.E-09 | 2.E-10 | 6.E-11 | 4.E-11 | 2.E-10 | 4.E-11 | 8.E-12 | 2.E-08 | 2.E-08 | 5.E-12 | 9.E-11 | 4.E-08 |
| | 90th Percentile | 3.E-09 | 2.E-10 | 6.E-11 | 6.E-12 | 2.E-09 | 5.E-10 | 2.E-10 | 1.E-10 | 1.E-09 | 3.E-10 | 6.E-11 | 1.E-07 | 1.E-07 | 8.E-11 | 3.E-10 | 2.E-07 |
| | 95th Percentile | 4.E-09 | 3.E-10 | 7.E-11 | 8.E-12 | 2.E-09 | 6.E-10 | 2.E-10 | 2.E-10 | 2.E-09 | 4.E-10 | 1.E-10 | 2.E-07 | 2.E-07 | 1.E-10 | 4.E-10 | 3.E-07 |
| | 99th Percentile | 5.E-09 | 4.E-10 | 8.E-11 | 1.E-11 | 3.E-09 | 7.E-10 | 3.E-10 | 2.E-10 | 5.E-09 | 8.E-10 | 2.E-10 | 4.E-07 | 2.E-07 | 4.E-10 | 6.E-10 | 7.E-07 |

¹ All Indirect Pathways Combined includes Fruit, Vegetable, Below-ground Vegetable, Beef, and Milk Ingestion.