



# INFOTOX (Pty) Ltd

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**Retrieval and scientific interpretation of ecotoxicological information**

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## Technical Note 008 Rev 1.0

### Assessment of the Intake of Essential Elements

Nutrients are generally regarded as non-toxic, but the addition of high doses of nutrients to a diet, such as through nutrient supplements and over-the-counter pharmaceutical preparations, may pose some risk of adverse health effects. The potential risk may be assessed in terms of the *Tolerable Upper Intake Level (UL)*. The UL is defined as “*the maximum level of total chronic daily intake of a nutrient judged to be likely to pose no risk of adverse health effects to the most sensitive members of the healthy population*”. Derivation of a UL from available toxicological data involves application of uncertainty factors to account for data gaps and limitations in the understanding of dose-response factors.

The assessment of potential health risks associated with chronic intake of a dietary supplement includes consideration of background intakes of the substances of interest from other sources, most notably from food and water. Background intakes are not easily estimated, because of variations in diet amongst communities and individuals. Risk assessment is further complicated by differing inter-personal susceptibility to adverse health effects, variations in substance uptake and biological response with age and gender, and potential risks of maternal intake to the foetus and the breast-feeding infant.

INFOTOX conducts human health risk assessments for nutrients in dietary supplements and food additives and are competent in the application of models of bioaccessibility, bioabsorption and bioavailability. Interactions between essential elements and/or heavy metals or trace elements are also considered. For example, insufficient intake of iron may enhance the uptake of manganese and lead, potentially resulting in increased exposure. This covers an area of human health risk assessment where potential risks are often disregarded on the premise of the beneficial effects and perceived low toxicity of the nutrients, which may lead to an underestimation of health risks.



**Artist: Jo Roos**

**Triumph, maquette in bronze, mounted on a steel construction: 730mm**