

**COPPER**

*International Copper Association, Ltd.*

# International Copper Association

---

## Health and Environment Program

# Applications: Copper

## Copper Issues - Discussant

---

*presented to*

Workshop on Health Risk Assessment of Essential Metals

May 6, 2008

---

*presented by*

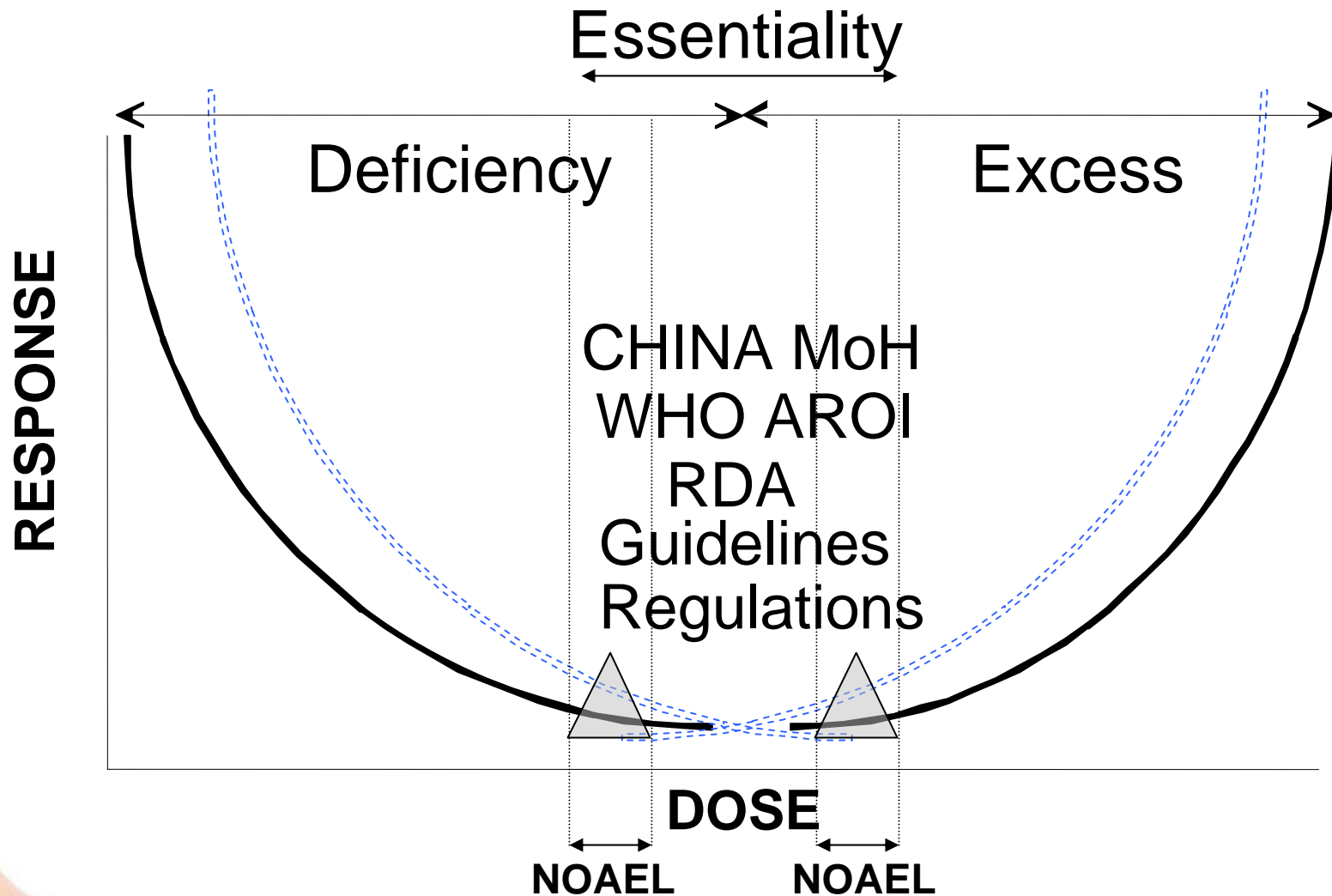
Scott Baker, PhD

Director

Health and Environment Program

International Copper Association

# The dose-response relationship for essential trace elements is U-shaped



# Copper Issues: *Dose-response assessment*

---

- EU VRA Conclusion I data gaps:
  - Occupational exposure to copper and copper compounds
  - Inhalation dose-response assessment
- Dose-response assessment of integrated health endpoints: harnessing the power of genetics and molecular biology in the copper dose-response construct
- Better dose-response data quality
- Molecular (early-warning) biomarkers of copper exposure and effect

# Copper Issues: *Dose-response assessment*

---

- Dose-response assessment of copper compounds, metals mixtures (Cu, Zn, Fe) and metals alloys
- **Human deficiency model:** balancing scientific weight-of-evidence for the U-shape
- **Toxicokinetic/dynamic data for better predictive modeling of:**
  - Bioavailability
  - Time-dependent distribution and dose-to-target-tissue

# Copper Issues: *Exposure assessment*

---

- Human exposures:
  - Dietary in different cultures, age groups, seasonality
  - Occupational, consumer public
  - Environmental and workplace monitoring
  - Copper speciation and particle-size distribution (nanoparticles, air)

# Copper Issues: *Risk-based standards*

---

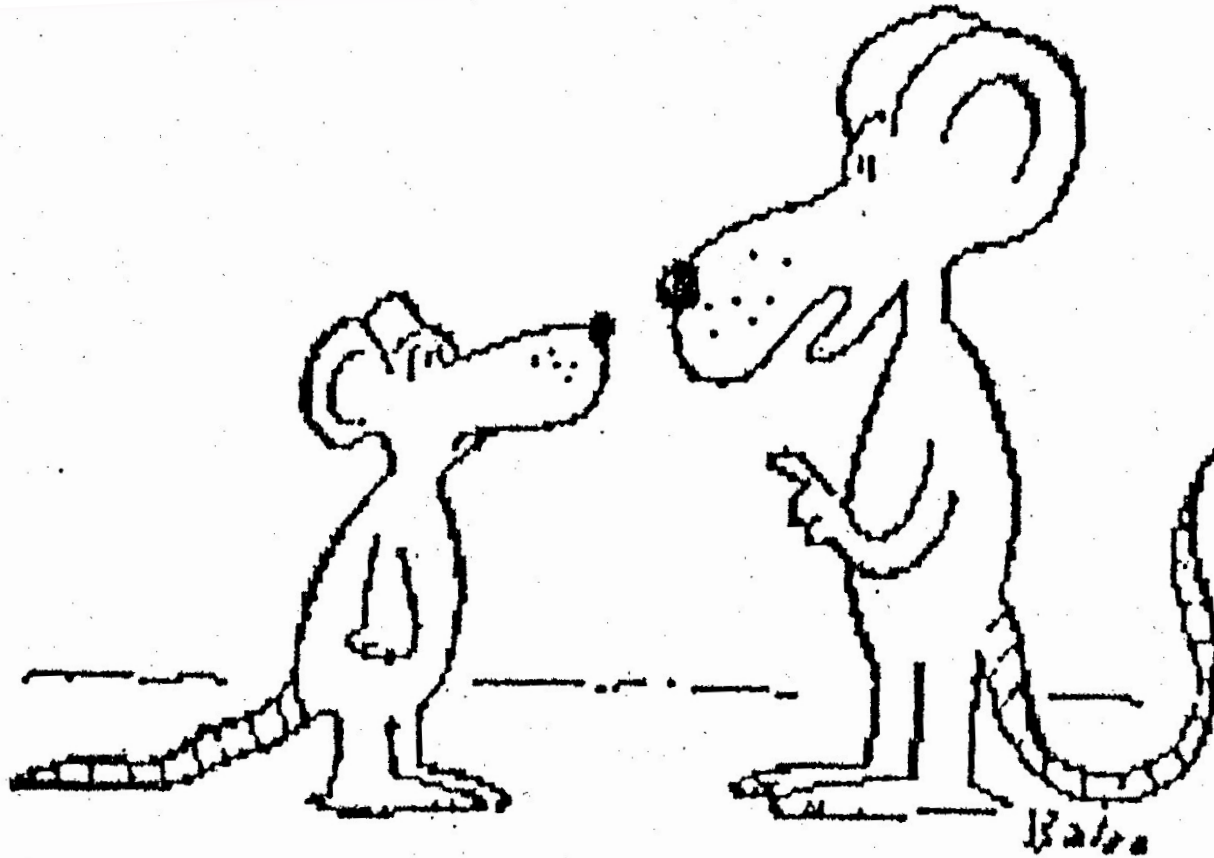
- Harmonization of regulatory standards for copper in drinking water

0.1, 1, 1.3, 2 mg/l

laundry staining, aesthetics, health effects (acute, chronic)

# Rule 1: Keep your sense of humor

---



*“...and stay away from scientists,  
they cause cancer.”*

**COPPER**

*International Copper Association, Ltd.*