

June 3, 2004

William V. Kennedy  
Executive Director  
Commission for Environmental Cooperation  
393, rue St-Jaques Ouest, bureau 200  
Montreal (Quebec) Canada H2Y 1N9

Dear Mr. Kennedy:

Copper Development Association Inc. is pleased to submit the following comments (prepared with the assistance of Dr. Scott Baker, International Copper Association) on the draft report of the NAFTA Commission on Environmental Cooperation (CEC), *Taking Stock: A Special Report on Toxic Chemicals and Children's Health in North America*.

*General comments*

1. *The report's claim of a link between developmental effects of copper and industrial emissions based on TRI data is unsupported by the current scientific weight of evidence.* In its opening chapters, the report associates broadly represented TRI emissions with general assumptions of morbidity (carcinogenicity, neurotoxicity, developmental effects) within the North American population — in an exercise that amounts to neither correlation nor causation, let alone any link between the two. This is a cavalier disregard for the sound science that is a high priority in governmental decision-making processes in NAFTA countries.
2. *The report fails to live up to its stated objectives of informing and empowering the public.* Sweeping generalizations are made in the report's opening chapters that *misinform* the general public by misleading, giving out-of-context information, and drawing conclusions from generalities rather than location-specific conditions and circumstances. These generalizations are contrary to the stated goal of “empower[ing] the general public with information on risks in their immediate environments.” As such, the report (1) does not inform, empower, or focus on immediate environments, (2) violates the intentions of right-to-know, and is abusive of accepted screening-level risk assessment methods and practices, and (3) is not consistent with recent hallmark publications on the of risk assessment in decision-making.<sup>1</sup> The approach taken in the report is a form of scaremongering that clearly demonstrates the bias of the report, its authors, and

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<sup>1</sup> U.S. National Research Council. 1994. *Science and Judgment in Risk Assessment*. National Academy Press.

Presidential/Congressional Commission on Risk Assessment and Risk Management. 1997. Vol. 1. *Framework for Environmental Health Risk Management* and Vol. 2 *Risk Assessment and Risk Management in Regulatory Decision-Making*.

the CEC in general. The objective impartiality required of a commission representing three governments in their protection of public health and public communication is compromised.

3. *Out of context, the CEC report refers to copper as a potential developmental toxicant, completely overlooking copper's vital role in fetal and neonatal development.* Physicians encourage women in pregnancy to supplement their copper intake to fuel the growing fetus' demand for copper and its vital role in normal fetal development. Further, infants are born with 10 times the adult liver concentration of copper to meet their developmental demands in early life. These traits are not the hallmark of a developmental toxicant.

#### *Specific comments on the CEC report's use of the Environmental Defense Scorecard*

The CEC report relies on the methods and results of the Environmental Defense (ED) Scorecard. The basic features of the Scorecard, applied to copper, are presented in Figure 1 and Figure 2. Applying this methodology, the ED Scorecard arrives at a copper "ToxScore" of  $6.7 \times 10^5$ . The Scorecard includes several technical errors in the development of this "ToxScore."

- "ToxScore" does not account for metal-specific ligand binding to environmental media, thereby limiting bioavailability.
- "ToxScore" does not account for copper speciation and species-dependent differences in environmental fate.
- "ToxScore" does not account for the ability of biological organisms to regulate copper — an essential trace element that is nutritionally required to maintain good health and without which debilitating illness occurs. The World Health Organization has acknowledged that, worldwide, copper deficiency is a greater problem than copper excess.
- "ToxScore" requires a single set of generic coefficients for the distribution and partition of chemicals among different environmental media (air, water, soil). Such a generality cannot be applied with any validity to metals like copper, whose environmental fate and transport are highly dependent on site-specific conditions.
- "ToxScore" uses a single, unjustifiably large bioconcentration factor (BCF) to estimate uptake from surface water to fish (H22,000). Typical BCFs based on laboratory studies range from H100 to H300. It has been amply demonstrated, through the Biotic Ligand Model, that most copper is bound to suspended and sedimentary organic matter.
- The Scorecard relies on outdated toxicity information to express the toxicity values for ingestion and inhalation of copper:
  - For ingestion, the Scorecard cites HEAST (the USEPA's Health Effects Assessment Summary Tables) 1987 as the source for the ingestion reference dose of 0.037 mg/kg/day. The citation within HEAST is EPA's 1987 Drinking Water Criteria Document for copper. The document, now outdated, provides a Health Advisory of 1.3 mg/L and not a reference dose. The Scorecard's reference dose value is presumably this Health Advisory, adjusted for daily water consumption of 2L and 1 kg of body weight (H2 L and )70 kg). The basis for this advisory (Wyllie 1957) has been replaced by more definitive studies in 2003 and 2004 and is no longer the primary source for derivation of the LOAEL and NOAEL for copper in drinking water. An oral reference dose for copper was withdrawn by EPA and currently does not exist. HEAST is no longer available online, and can be accessed only through direct contact with relevant

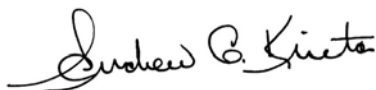
USEPA personnel. The ingestion value cited by Scorecard is not for any developmental effects, but rather for the onset of nausea from ingesting copper in drinking water.

- For inhalation, an outdated occupational, anecdotal, observational study of three workers (Gleason 1968) was used. The results were confounded by presence of other chemicals, and the author's assumptions and conclusions are fatally flawed based on current knowledge (30 years later). Again, the inhalation value cited by Scorecard is not for any developmental effects, but rather for occupationally- related metal fume fever and from a metals mixture (not copper alone).

As such, the Scorecard's treatment of copper toxicity is (1) for health endpoints not relevant to developmental effects, and (2) inappropriately normalized to toluene (to establish a common "toxicity equivalency potential") whose toxicity characteristics are completely different from those of copper.

In conclusion and for the reasons stated above, the entire approach taken in the CEC report is scientifically unfounded, ignores well-established principles of scientific doctrine, and irresponsibly makes sweeping generalizations without scientific basis of fact. Accordingly, we respectfully request that the USEPA engage in a thorough scientific review of the analytic process and technical content used by the CEC in preparing its report.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Andrew G. Kireta". The signature is fluid and cursive, with a long horizontal stroke at the beginning.

Andrew G. Kireta, Sr.  
President & CEO

Figure 1. Basic features of the ED Scorecard

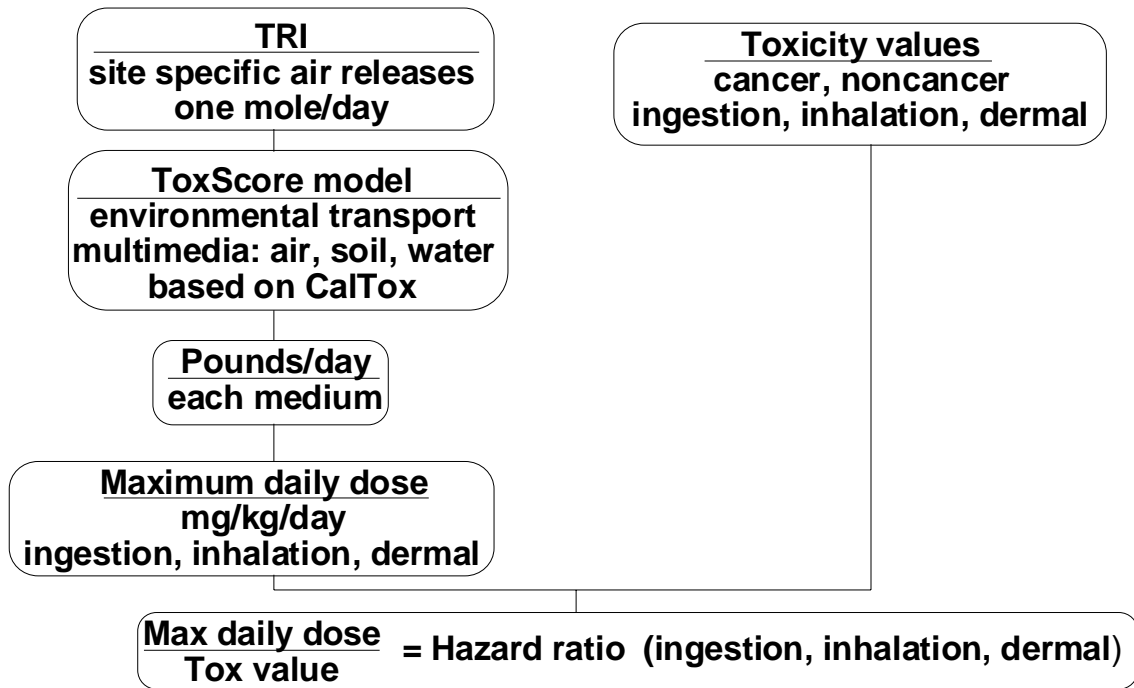


Figure 2. Basic features of the ED

