

## Symposium summary: Children's Health Risk—What's So Special about the Developing Immune System?

Michael P. Holsapple,<sup>a,\*</sup> Dennis J. Paustenbach,<sup>b</sup> Gail Charnley,<sup>c</sup> Lori J. West,<sup>d</sup>  
Michael I. Luster,<sup>e</sup> Rodney R. Dietert,<sup>f</sup> and Leigh Ann Burns-Naas<sup>g</sup>

<sup>a</sup>ILSI Health and Environmental Sciences Institute (HESI), Washington, DC 20005-5802, USA

<sup>b</sup>ChemRisk, Inc., San Francisco, CA 94105-1524, USA

<sup>c</sup>HealthRisk Strategies, Washington, DC 20002, USA

<sup>d</sup>Sick Children's Hospital, University of Toronto, Toronto, ON M5G 1X8, Canada

<sup>e</sup>NIOSH, Morgantown, WV 26505-2888, USA

<sup>f</sup>Cornell University, Ithaca, NY 14853-5601, USA

<sup>g</sup>Pfizer Global Research and Development, San Diego, CA 92121, USA

Received 1 January 2004; accepted 2 March 2004

Available online 17 April 2004

### Abstract

In recent years, there has been increasing regulatory pressure to protect the health of children, with the basic tenet being that children differ significantly from adults in their biological or physiological responses to chemical exposures. In a regulatory context, this has been translated to mean a requirement for an additional 10-fold safety factor for environmental contaminants, specialized tests, or both. Much of the initial focus has been on the developing endocrine and nervous systems; but increasingly, the developing immune system has been identified as a potential target organ for chemically mediated toxicity. More recently, the question has been raised regarding whether the current state of science supports the creation of developmental immunotoxicology (DIT) test guidelines. What is needed is a risk-based evaluation of the biology associated with the proposed differential sensitivity between children and adults and the impact of that assessment on additional regulatory measures to protect children in risk assessment analyses. Additionally, an understanding of whether the developing immune system shows greater susceptibility, either qualitatively or quantitatively, to chemical perturbation is critical. To address the question “What's so special about the developing immune system?” a symposium was organized for the 2003 Society of Toxicology annual meeting that brought together risk assessors, clinicians, immunologists, and toxicologists. © 2004 Published by Elsevier Inc.

Keywords: Developmental immunotoxicology; Children's health; Immune; Immunity; Risk