

Comments on the Integrated Science  
Assessment (ISA) for Oxides of Nitrogen-  
Health Criteria (March 2008 Draft)

On Behalf of the Utility Air Regulatory Group  
(UARG)

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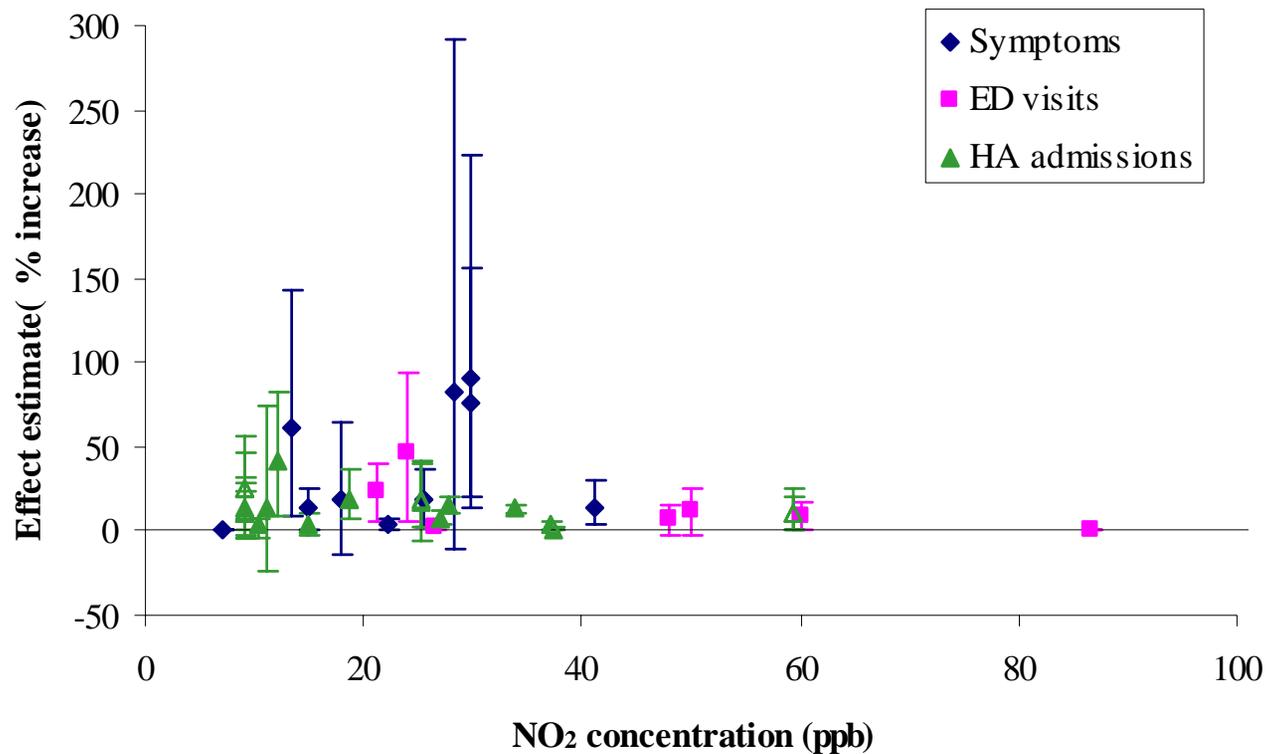
Gradient Corporation

May 1, 2008

# Overarching Comments

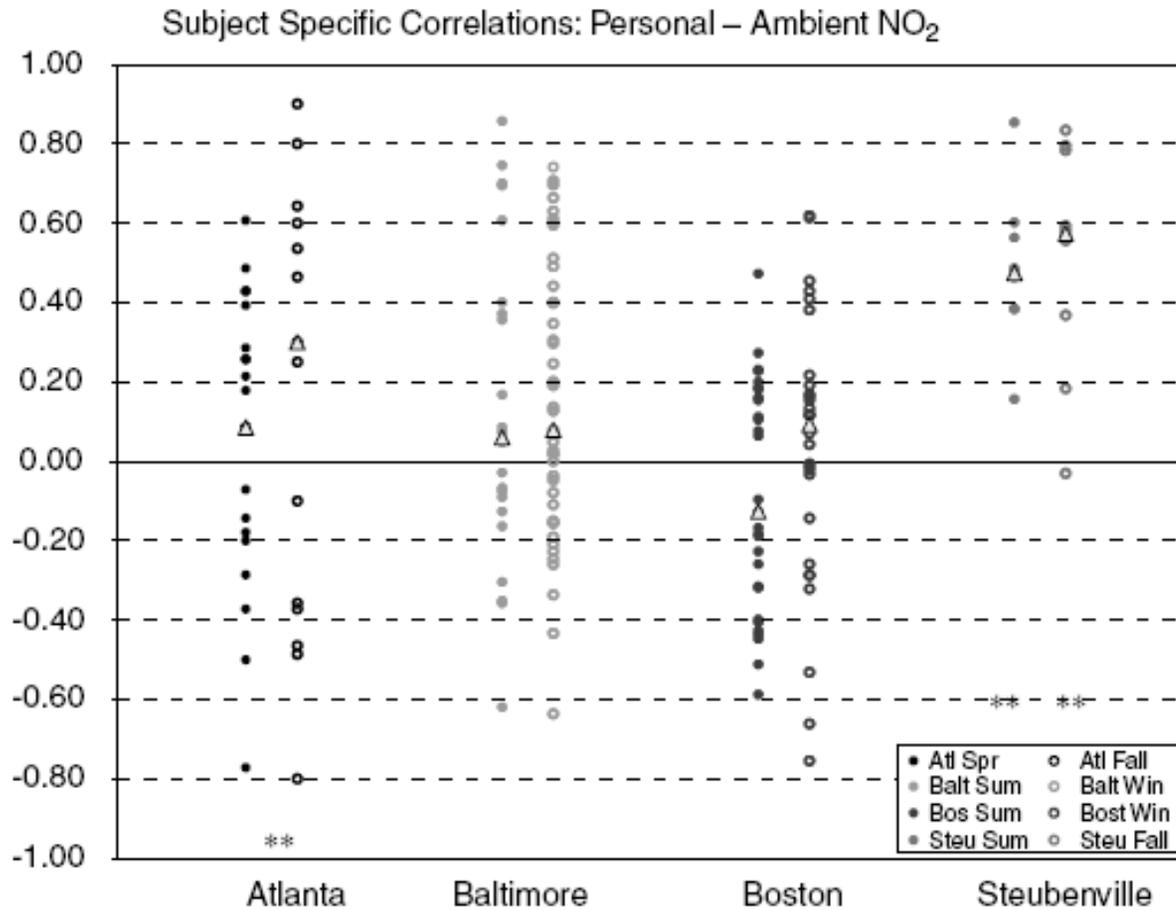
- Chapter 5 does not provide sufficient integration and analysis of the different lines of NO<sub>x</sub> health-effects evidence
  - By disregarding the NO<sub>2</sub> concentrations at which health effect associations have been observed, Figure 5.3-1 gives an incomplete and misleading picture of the epidemiological evidence for short-term exposure NO<sub>2</sub> health effects.
  - The association between ambient NO<sub>2</sub> concentrations and personal NO<sub>2</sub> exposures is complex and remains poorly understood, raising questions regarding the proper interpretation of the reported NO<sub>2</sub> epidemiologic associations.
  - US EPA does not sufficiently consider the fact that NO<sub>2</sub> may be acting as a surrogate for other pollutants.
  - US EPA should quantitatively contrast the dose levels typical of ambient NO<sub>2</sub> epidemiological studies versus those used in human controlled exposure studies.

# Figure 5.3-1 Disregards a Key Factor for Assessing the Consistency and Coherence of the Epidemiologic Evidence, Namely Dose-Response



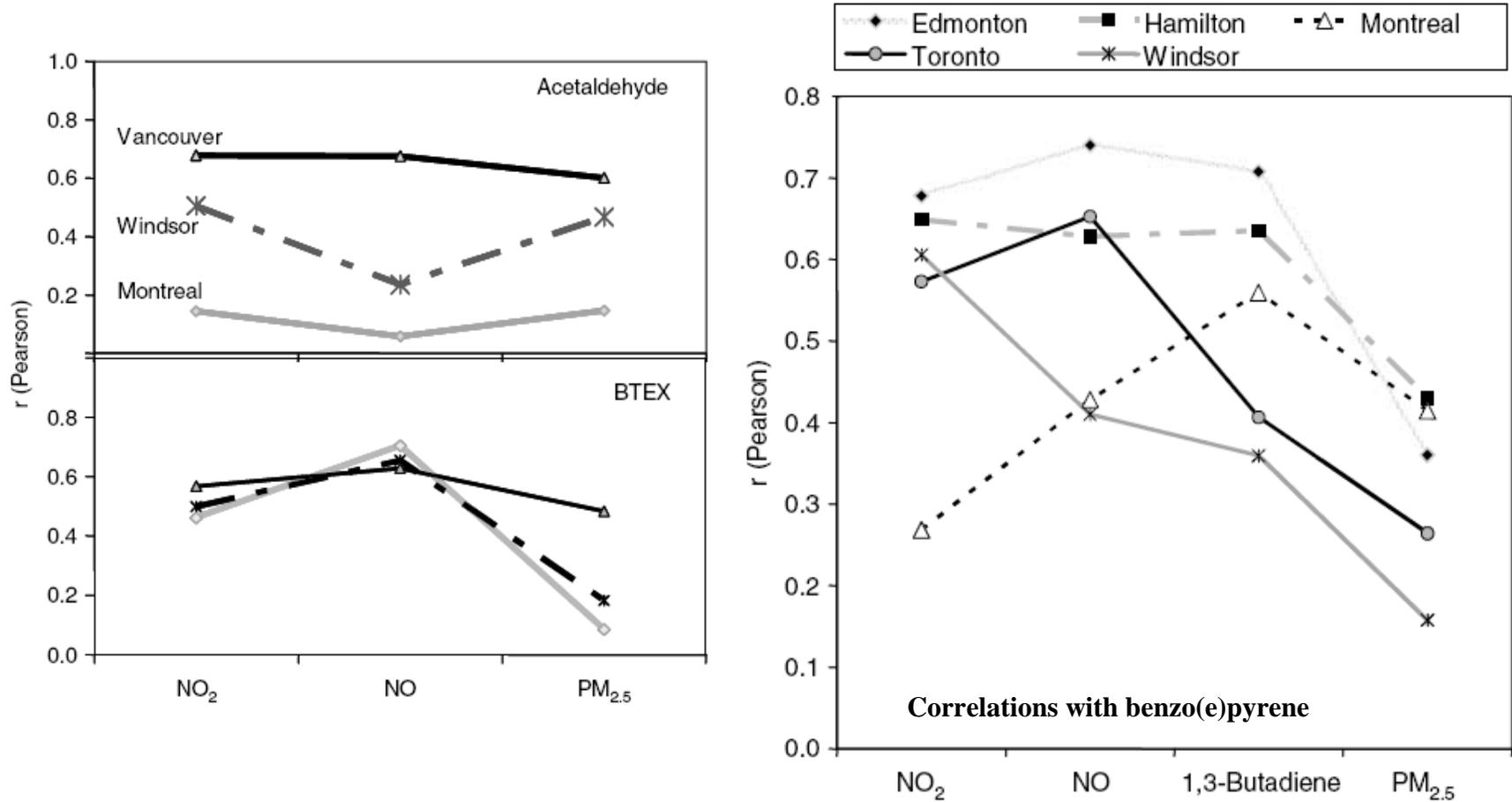
**Respiratory symptoms, emergency department (ED) visits (all respiratory and asthma), and hospital admissions (HA, all respiratory and asthma) for studies of children (24-hour averaging time).**

# Ambient NO<sub>2</sub> vs. Personal NO<sub>2</sub> Correlations Are Poor and Vary Widely



From Sarnat *et al.* (2007)

# Recent Studies Provide Compelling Evidence for Ambient NO<sub>2</sub> Acting as a Surrogate

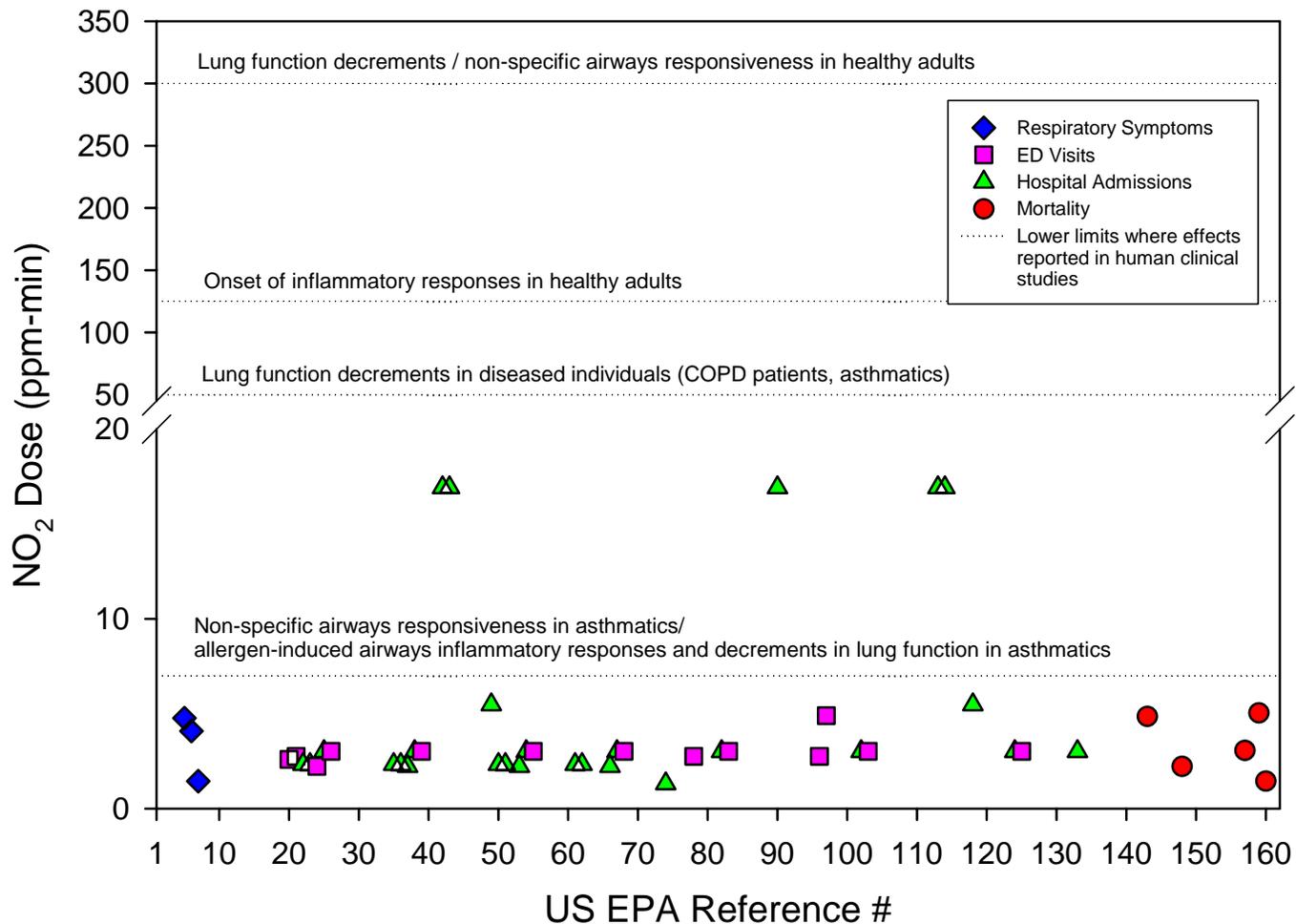


From Brook *et al.* (2007)

# Available Multi-Pollutant Model Results Are Limited and Conflicting

- Of the two-pollutant model results provided in Figures 3.1-10 and 3.1-11 for NO<sub>2</sub> and respiratory-related HA or ED:
  - only one model adjusting for particle concentrations was for PM<sub>2.5</sub>, with most adjusting instead for PM<sub>10</sub>.
  - only two studies included adjustment for a gaseous pollutant other than O<sub>3</sub> or SO<sub>2</sub>.
  - None adjusted for aldehydes, PAHs, or particle-bound organics.
  - None of the cited studies are for U.S. locations.
- Recently published multi-pollutant model results (*e.g.*, Tolbert *et al.*, 2007; McCreanor *et al.*, 2007; Delfino *et al.*, 2008) contradict the EPA conclusion that ambient NO<sub>2</sub> is robust in multi-pollutant models.

# Epidemiologic Associations Are Generally Reported for NO<sub>2</sub> Doses Far Below Human Clinical Toxicology No-Effect Levels



# Recommendations for EPA

- Merely acknowledging uncertainties is not sufficient. Uncertainties must be quantified, and affect the weight that is placed on particular study findings or particular lines of evidence.
- The supportive (or non-supportive) role of clinical and experimental studies at the specific ambient concentrations in question should be directly addressed.
- Chapter 5 needs to be less of an introduction of ideas and recitation of selected study findings, and more of an integrative synthesis that can inform policy-makers.