Health Update
Ozone and PM2.5 Cause Symptoms in Children with Asthma

April 22, 2004
“Association of Low-Level Ozone and Fine Particles With Respiratory Symptoms in Children With Asthma”


- Objective
  - To examine effects of ozone and PM2.5 at levels below EPA standards and symptoms and medication use in children with asthma
Study Details

• 270 young asthmatic children recruited in New England---80% Caucasian
• Half took at least occasional “maintenance” medication, half took none
• Symptoms and “rescue” medication use evaluated April through September 2001
• Ozone and PM 2.5 levels during study were low
  – Federal 1-hour ozone standard (120 ppb) violated 3 times
  – Federal 8-hour ozone standard (80 ppb) violated 10 times
  – Federal 24-hour PM2.5 standard (65 µg/m3) was not violated
Study Findings

• General health observations
  Kids using “maintenance” medication had more severe asthma
  – They had more respiratory symptoms (chest tightness, shortness of breath, cough and/or wheeze)
  – They used more “rescue” medication for relief
Responses in “severe” asthmatics

• **When same day ozone levels were above**
  - 51 ppb (1-hr) --- more wheeze, bronchodilator use
  - 63 ppb (8-hr) --- more chest tightness

• **When prior day ozone levels were above**
  - 52 ppb (1-hr) --- more chest tightness
  - 59 ppb (1-hr) --- more shortness of breath
  - 72 ppb (1-hr) --- more persistent coughs
  - 52 ppb (8-hr) --- more chest tightness, cough, shortness of breath
Study Findings (cont.)

• Same day PM2.5 levels
  – Few effects found

• When prior day PM2.5 levels were
  – 19 µg/m3 or higher---more cough, chest tightness, shortness of breath

Responses in less “severe” asthmatics

• Ozone
  – Almost no effects detected

• PM2.5
  – Almost no effects detected
Implications and Applications

• Adds to existing knowledge about ozone

• Suggests that ozone increases medication use

• Meds don’t make asthmatic kids immune to ozone

• Will be considered in ozone standards review

• Do not view PM2.5 as harmless to asthmatic kids