

Air Quality and Asthma

Climate and Public Health in North Carolina: Emerging Risks and Opportunities

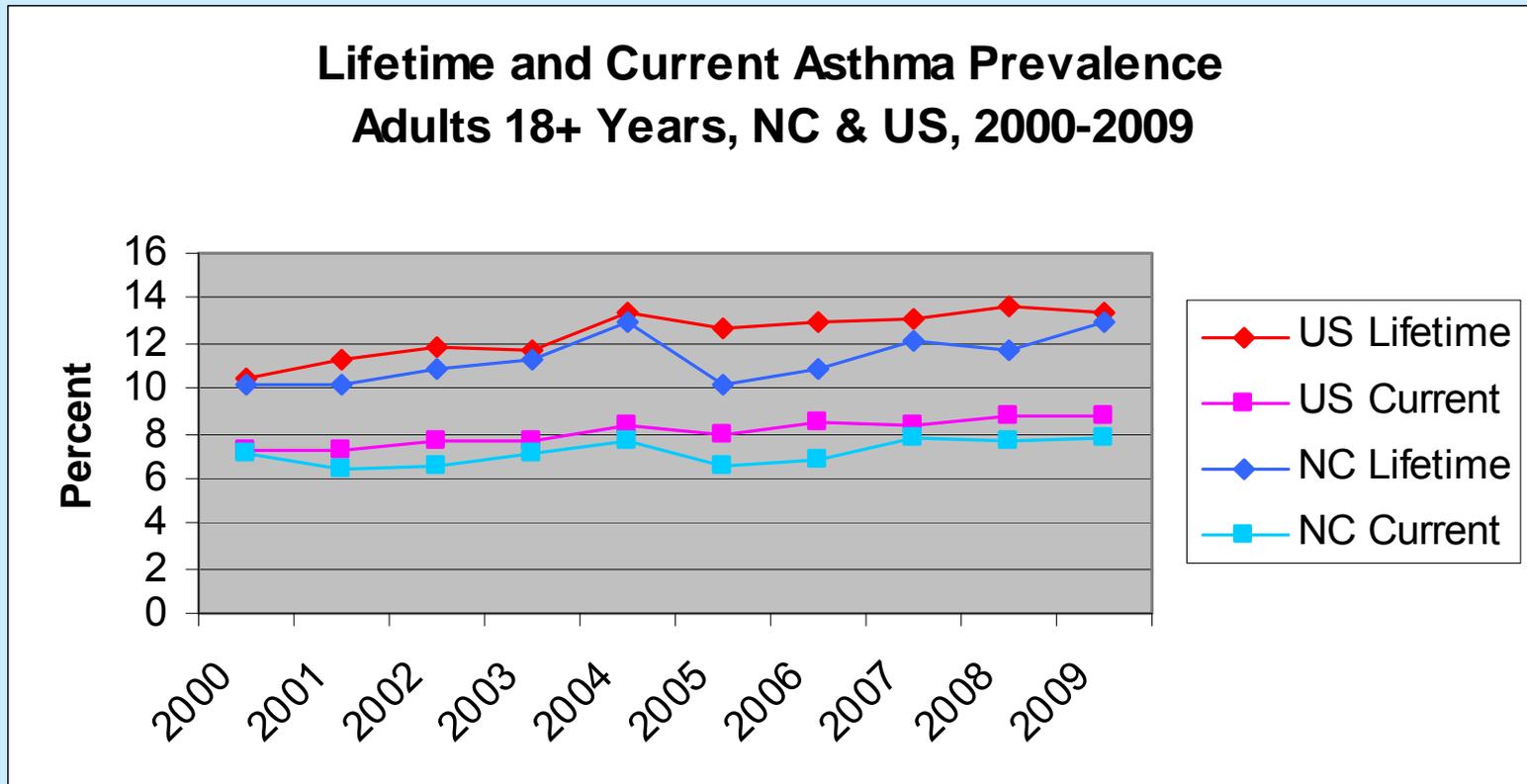
August 19, 2011
University of North Carolina – Chapel Hill
Chapel Hill, NC



Overview

- ▶ Asthma: a critical chronic disease
- ▶ Effect of ozone on lung function
- ▶ Ozone and asthma management
- ▶ Wildfires and health effects
- ▶ Public health surveillance
- ▶ Public health response

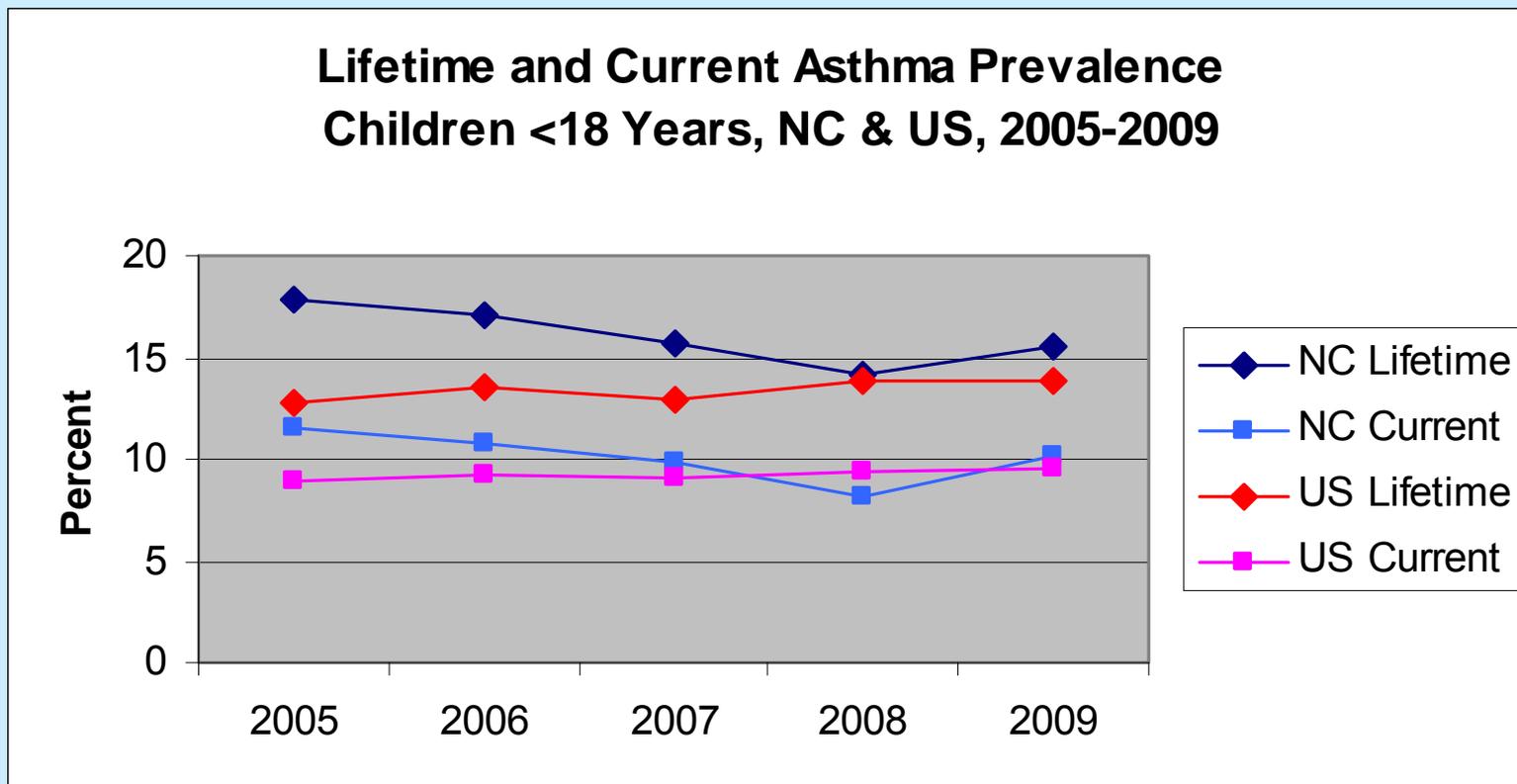
Prevalence: Adults



Source: CDC. Behavioral Risk Factor Surveillance System, 2000-2009



Prevalence: Children

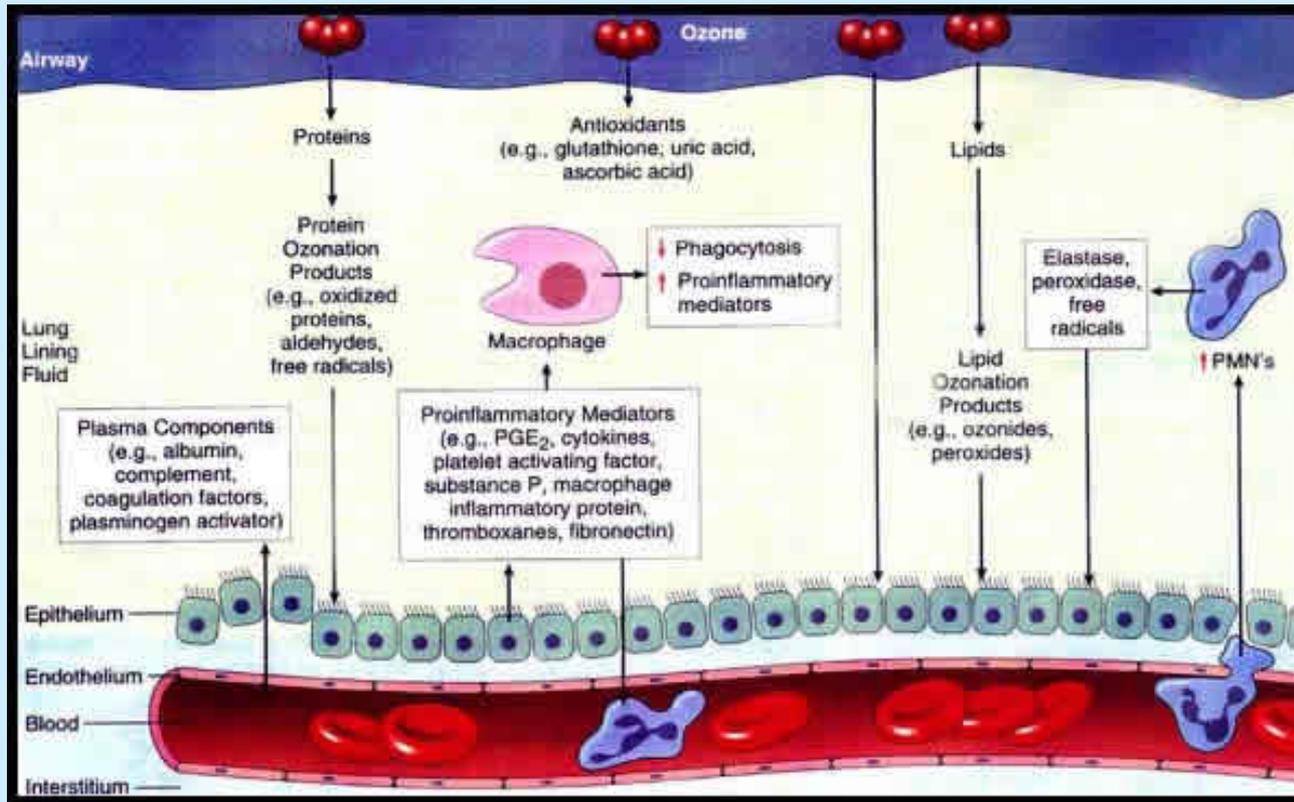


Sources: NC: NC State Center for Health Statistics. Child Health Assessment and Monitoring Program, 2005-2009

US: CDC. National Center for Health Statistics, National Health Interview Survey, 2005-2009



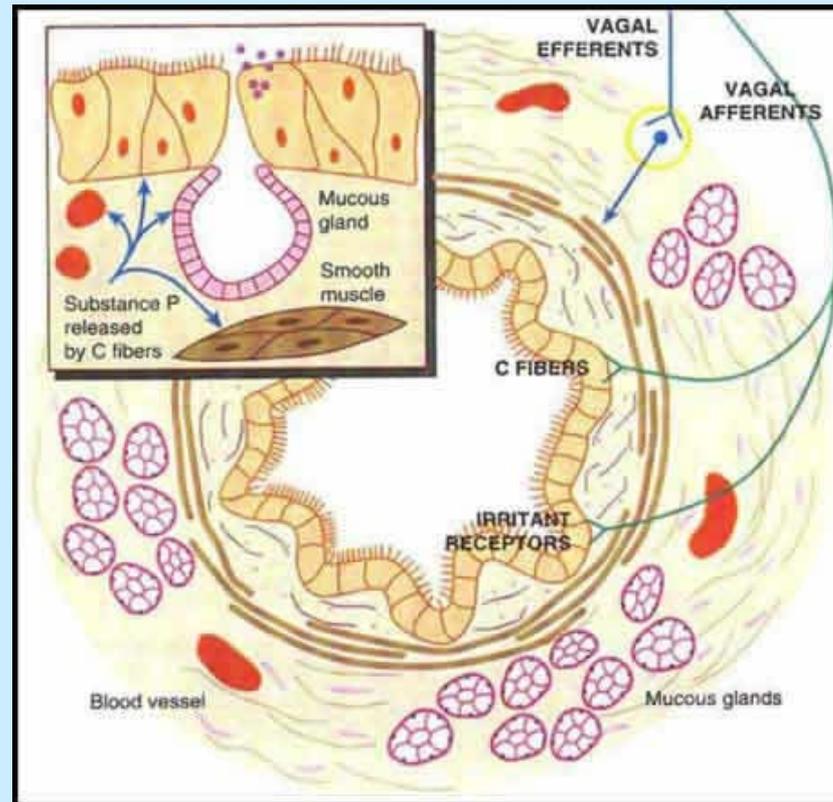
Ozone and the Respiratory Tract



Source: EPA. Health Effects of Ozone in the General Population.

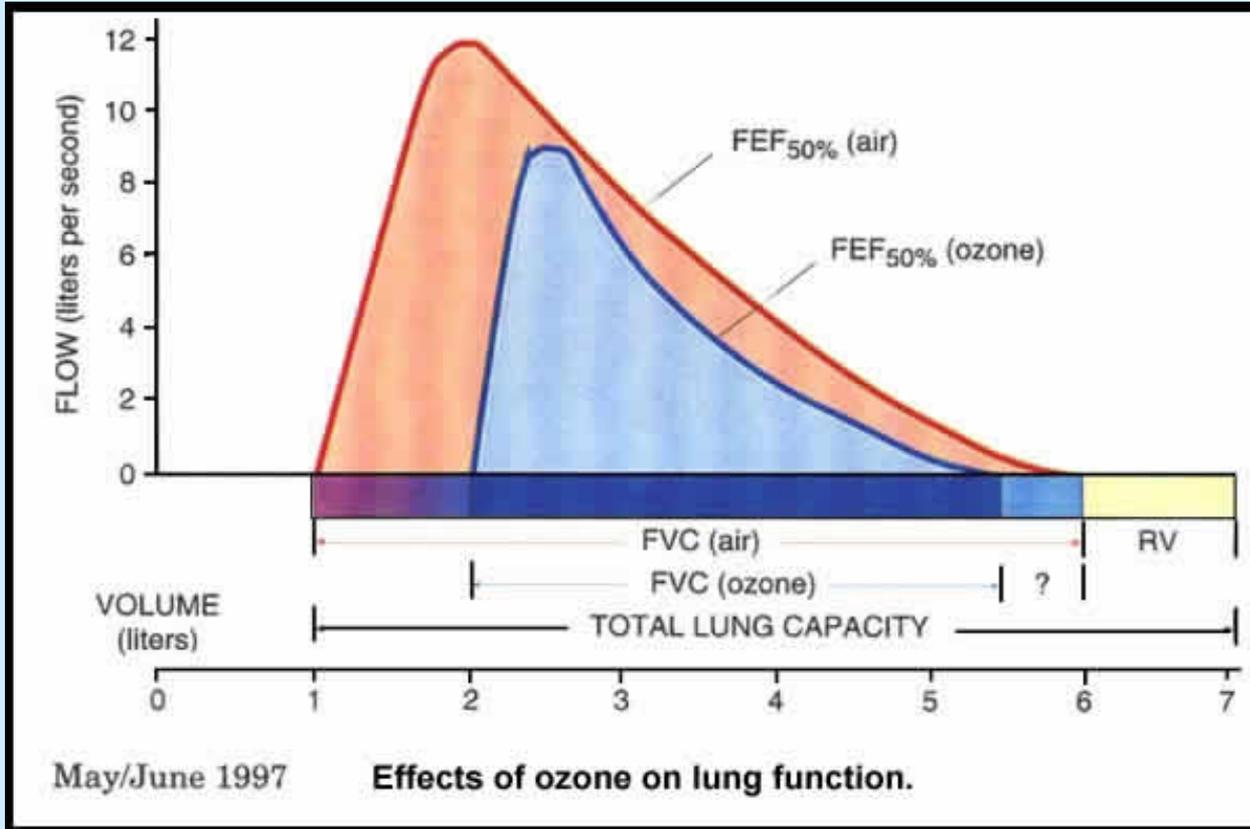
(www.epa.gov/apti/ozonehealth/population.html). Accessed August 12, 2011.

Ozone and Neurally-mediated Responses



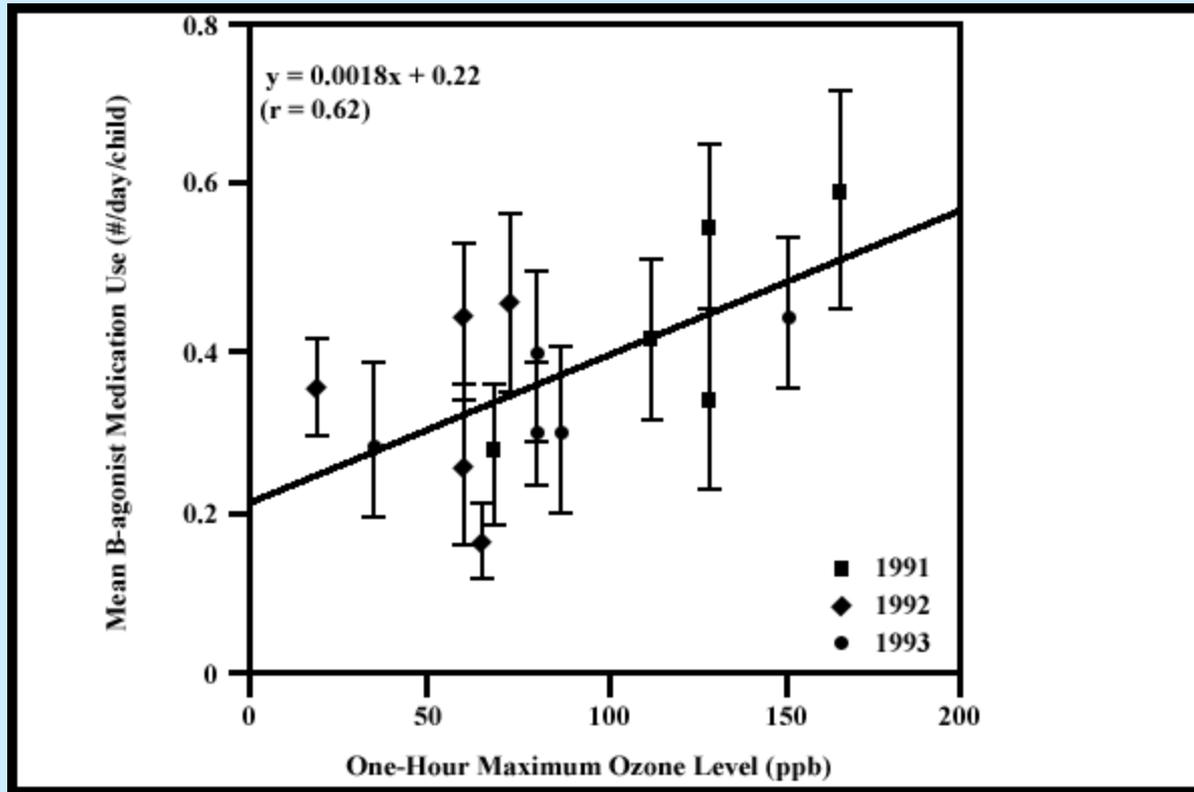
Source: EPA. Health Effects of Ozone in the General Population.
(www.epa.gov/apti/ozonehealth/population.html). Accessed August 12, 2011.

Ozone and Lung Function



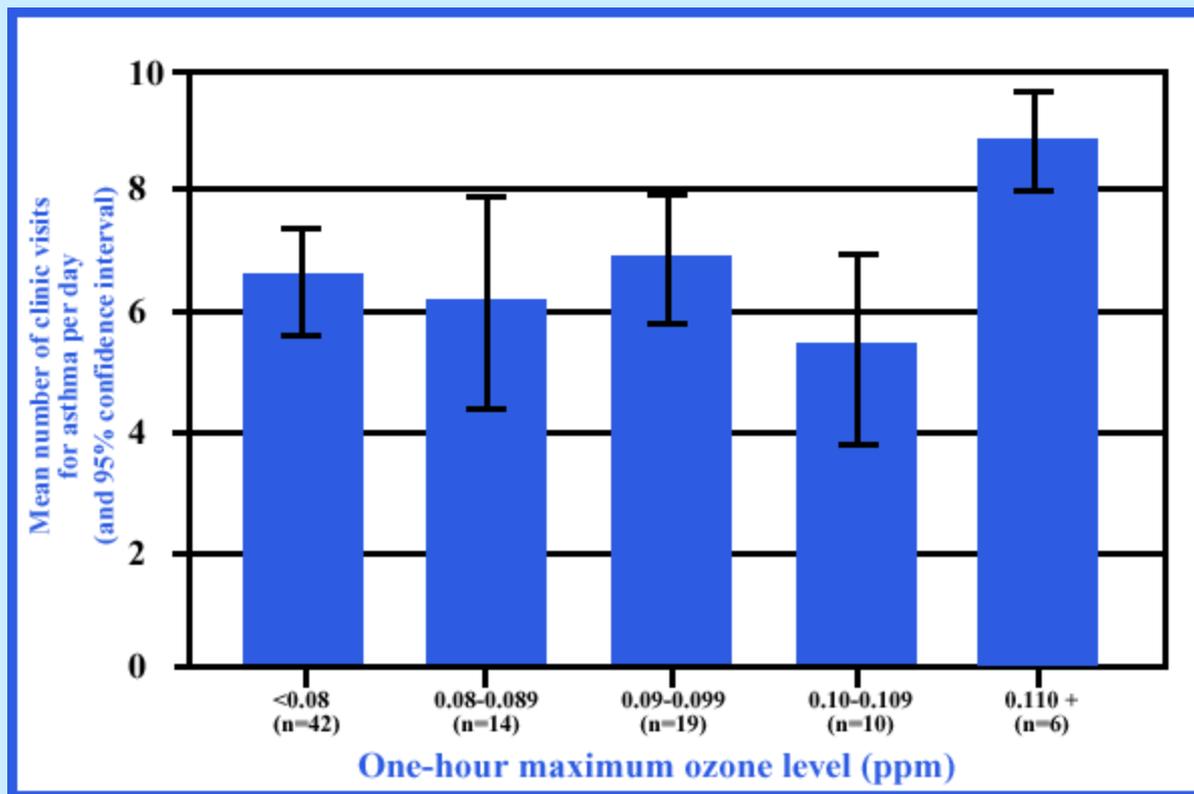
Source: EPA. Health Effects of Ozone in the General Population.
(www.epa.gov/apti/ozonehealth/population.html). Accessed August 12, 2011.

Ozone and Use of Unscheduled Asthma Medication



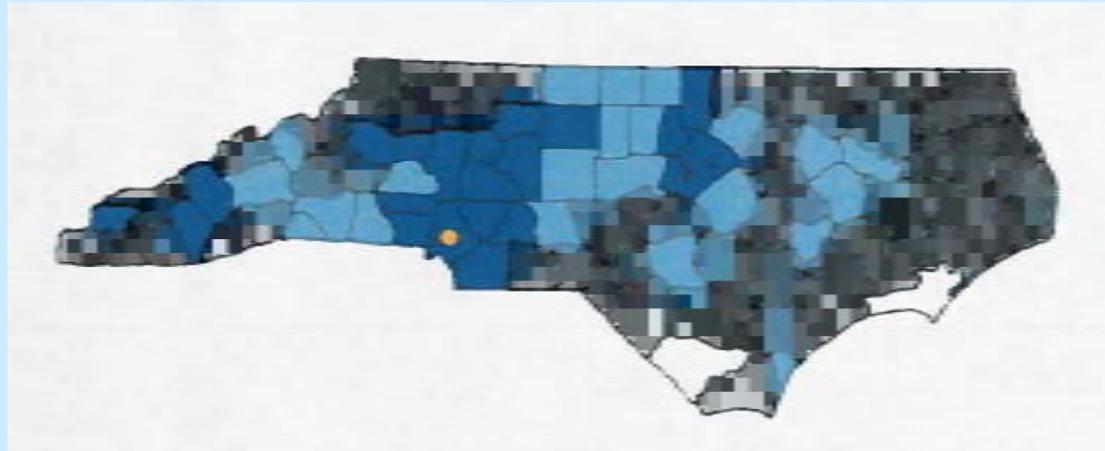
Source: EPA. Health Effects of Ozone in Patients with Asthma.
(www.epa.gov/apti/ozonehealth/effects.html). Accessed August 12, 2011.

Ozone and Clinic Visits



Source: EPA. Health Effects of Ozone in Patients with Asthma.
(www.epa.gov/apti/ozonehealth/effects.html). Accessed August 12, 2011.

Air Pollution-Ozone Days: North Carolina, 2006



Source: Robert Wood Johnson Foundation and University of Wisconsin Population Health Institute. County Health Rankings. (<http://www.countyhealthrankings.org/north-carolina/orange/29>). Accessed August 12, 2011.

Ozone Awareness

Ozone/Air Quality Awareness Campaigns (Not all states are represented):

- [Arizona - Clean Air Make More](#)
- [Arkansas - Ozone Action Days](#)
- [Colorado - Denver - Ozone Aware](#)
- [Connecticut - Ozone Action Days](#)
- [Indiana - Clean Air Indiana](#)
- [Indiana - Partners for Clean Air](#)
- [Indiana - Knozone](#)
- [Kansas - Department of Health Kids Zone](#)
- [Kentucky - Kentuckiana Air Education KAIRE](#)
- [Michigan - Mlair \(select the Mlair icon\)](#)
- [Michigan - Mid-Michigan Action Day Info by CATA](#)
- [Michigan - Southeast Michigan Council of Governments Ozone Action](#)
- [Michigan - West MI Clean Air Action](#)
- [New York - Pollution Control Publications](#)
- [North Carolina - Air Awareness Program](#)
- [North Carolina - Dept of Public Health Ozone](#)
- [North Carolina - Triangle Air Awareness](#)
- [North Carolina, Unifour region](#)
- [North Carolina, Triad region](#)
- [Texas - Ozone Heroes](#)
- [Texas - Clean Air Force of Central Texas](#)
- [Texas – Clean Air Action](#)

Source: Ozone Reduction Strategies. EPA. (<http://www.epa.gov/airquality/ozonestrategy/ozoneaction.html>). Accessed August 12, 2011.



Wildfires and Health Effects

- ▶ Coughing
- ▶ A scratchy throat
- ▶ Irritated sinuses
- ▶ Shortness of breath
- ▶ Chest pain
- ▶ Stinging eyes
- ▶ A runny nose
- ▶ Asthma exacerbations

Wildfires and Pre-existing Health Conditions

Heart Disease

- ▶ Chest pain
- ▶ Rapid heartbeat
- ▶ Shortness of breath
- ▶ Fatigue

Respiratory Conditions

- ▶ Inability to breath normally
- ▶ Cough with or without mucous
- ▶ Chest discomfort
- ▶ Wheezing and shortness of breath

Public Health Surveillance

Division of Public Health

- ▶ Epidemiology Section (Public Health Preparedness & Response)
- ▶ Chronic Disease and Injury (Asthma, Heart Disease & Stroke Prevention))

North Carolina Disease Event Tracking and Epidemiologic Collection Tool (NC DETECT)

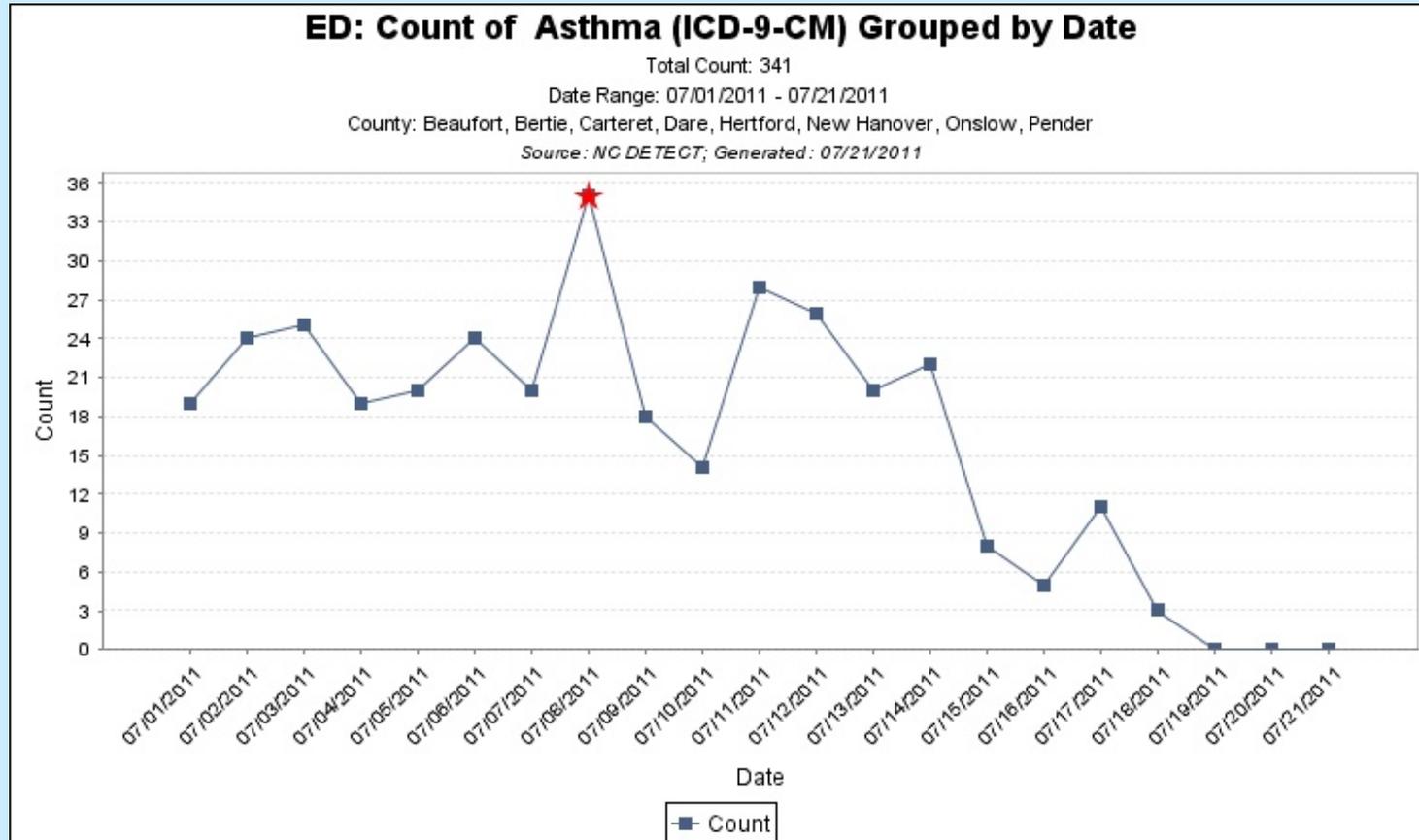
- ▶ Emergency department data

Division of Air Quality

- ▶ Smoke/particulate and visibility data



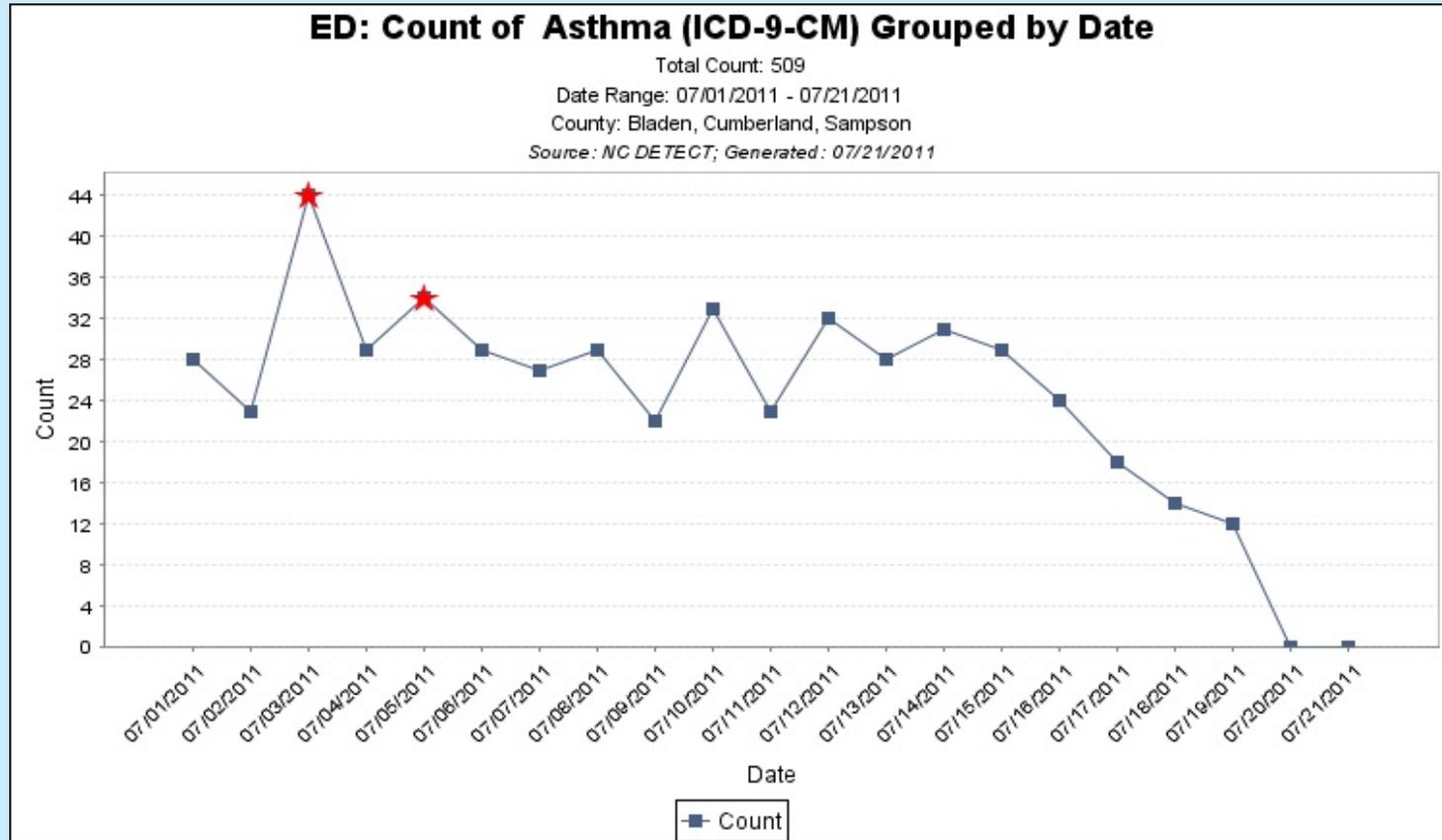
Public Health Surveillance



Source: Epidemiology Section. Division of Public Health. NC DHHS. NC DETECT Asthma ED Visits, July 1-21, 2011.



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Source: Epidemiology Section. Division of Public Health. NC DHHS. NC DETECT Asthma ED Visits, July 1-21, 2011.



Public Health Response

Peat Bog Wildfire Smoke Exposure in Rural North Carolina is Associated with Cardio-Pulmonary Emergency Department Visits Assessed Through Syndromic Surveillance

Citation: Rappold AG, Stone SL, Cascio WE, Neas LM, Kilaru VJ, Carraway MS, et al. 2011. Peat Bog Wildfire Smoke Exposure in Rural North Carolina Is Associated with Cardio-Pulmonary Emergency Department Visits Assessed Through Syndromic Surveillance. *Environ Health Perspectives*:-. doi:10.1289/ehp.1003206



Public Health Response

Poor Air Quality from Eastern North Carolina Wildfires Takes Toll on the Public's Health

The N.C. Division of Public Health has identified an increase in visits to local emergency departments in eastern North Carolina as local residents suffer the effects of poor air quality. Data from the North Carolina Disease Event Tracking and Epidemiologic Collection Tool (N.C. DETECT) indicates that a significant increase in acute respiratory hospital visits was observed the week of June 18-24, but appears to be decreasing.

Forest fires present health risks for everyone, but smoke may make symptoms worse for people who already have conditions such as respiratory allergies, asthma, heart conditions and chronic obstructive pulmonary disease (COPD).

“While older people are usually at risk for health problems resulting from smoke exposure, we also want to be sure that parents are watching out for children who may be exposed,” State Health Director Dr. Jeff Engel said. “Children’s airways are still developing and they take in more air per pound of body weight than adults, so we encourage parents to limit children’s exposure outside when the air quality is poor.”

Source: NC Division of Public Health Press Release, July 2011.



Public/Media Response

Wildfire costs tallied in millions: This year's drought-extended wildfire season exhausts crews and budgets

Respiratory distress

The Dare County fire has generated other costs as well.

Health officials there and in Pender County report an increase in respiratory ailments caused by exposure to smoke... ..in June, ..., there was an increase in the number of visits to local emergency rooms because of respiratory problems.

Source: The News & Observer. Raleigh, N.C. , July 16, 2011.

(<http://www.newsobserver.com/2011/07/16/1347742/wildfire-costs-tallied-in-millions.html>)



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