Breathe IN Breathe OUT

Asthma In Indiana

Spring/Summer 2006

Inside This Issue

Special Topic	1 - 2	InJAC Update	5
Data and Surveillance	3 - 4	Upcoming Events	6
Around the State	5	ISDH Asthma Staff	2

Special Topic

How Air Quality affects Asthma

by Sarah Raymond, Indiana Department of Environmental Management

Asthma attacks can be triggered by poor air quality, such as high levels of ozone and fine particulate matter.

What is Ozone?

Ozone is an unstable and highly reactive form of oxygen. A chemical reaction between nitrogen oxides and volatile organic compounds in the presence of heat and sunlight can convert oxygen particles to ozone. Ozone can be useful or harmful depending on its location. "Good" ozone is formed naturally in the upper atmosphere and forms a layer that protects life on earth from the sun's harmful ultraviolet rays. Ground-level ozone is considered "bad" because it affects human health and creates a brown haze.

What is Particulate Matter?

Particulate matter is the term for small particles in the air, including dust, dirt, soot, smoke and liquid droplets. Some particles are large or dark enough to be seen as soot or smoke while others are so small that particles can only be seen with an electron microscope. Particles less than or equal to 2.5 microns (a human hair is about 70 microns wide) are called "fine" particles. Fine particulate matter ($PM_{2.5}$) can be suspended in the air for long periods of time and cannot be exhaled easily from the lungs. $PM_{2.5}$ can be emitted or formed any time of year.

Where Do $PM_{2.5}$ and Ozone Come From?

Motor vehicle exhaust, industrial emissions, gasoline vapors and chemical solvents emit chemicals that form ozone. $PM_{2.5}$ comes from industrial and residential combustion activities, such as vehicle

exhaust, factories and burning wood. Other particles are formed when gaseous emissions react with

sunlight and water vapor.

How Does Air Quality Affect Health?
Ozone and $PM_{2.5}$ can irritate lung airways and cause inflammation. Fine particles can penetrate into the sensitive regions of the respiratory tract. Health symptoms associated with particulate matter can increase when people are exposed to high levels for several days. Scientific studies link breathing ozone and particulate matter to aggravated asthma, increased respiratory symptoms (wheezing and coughing), chronic bronchitis, decreased lung function and premature death.

Who is Most at Risk?
Children, elderly adults and anyone with respiratory problems, like asthma, are most vulnerable, but even healthy people who are active outdoors can be affected when ozone and $PM_{2.5}$ levels are high. Asthma can be aggravated by prolonged exposure to ozone and fine particles and is one of the leading causes of childhood hospital admissions. Children are more susceptible to poor air quality because they spend more time outdoors than adults, have respiratory systems that are still developing and, pound for pound, breathe more air than adults.

Adults of all ages who exercise or work vigorously outdoors expose themselves to higher levels of air pollution than less active people. Elderly adults and individuals with asthma or other respiratory diseases are more vulnerable to ground-level ozone and $PM_{2.5}$ because their lungs are weakened. They usually experience health effects earlier and at lower pollution levels than less sensitive individuals.

Air Quality Action Days
Forecasters call Air Quality Action Days (AQADs) when conditions are favorable for high levels of ozone and $PM_{2.5}$, similar to how meteorologists predict the weather. IDEM and local agencies review data and forecast AQADs when the air quality may be unhealthy for sensitive groups. Ozone is monitored May through September, when ozone formation could exceed the standard. $PM_{2.5}$ is monitored year-round.

The best course of action during AQADs is to protect your health by limiting activity outdoors and being aware of possible health symptoms. Everyone should do their part to prevent ozone and $PM_{2.5}$ by reducing automobile emissions and energy usage. If everyone takes action on AQADs, it is possible for air quality to improve and reduce or eliminate future AQADs.

A Look at the Indiana State Department of Health (ISDH) Asthma Program

The Asthma Program is excited to bring you the *Breathe In, Breathe Out: Asthma in Indiana* newsletter that focuses on current asthma research and initiatives in Indiana. The program's primary goal is to reduce the morbidity and mortality rates of asthma in Indiana. To accomplish this goal, the Asthma Program focuses on the development of a comprehensive asthma surveillance system, the implementation of intervention activities, and the growth of collaborative relationships.

Who are We?
The Asthma Program is located in the Division of Chronic Disease at ISDH. The program works closely with the members of the Indiana Joint Asthma Coalition to accomplish the goals and objectives of *The Strategic Plan for Addressing Asthma in Indiana*.

Asthma Team
Dr. Judith A. Ganser, Medical Director of Maternal and Children's Special Health Care Services, is the Principal Investigator.

Sue Percifield, Director of Chronic Disease, provides management and guidance for the Asthma Program.

Marcie L. Memmer, Director, coordinates the Asthma Program.

Mohammad (Hesam) Lahsaee, Epidemiologist, analyzes, interprets and reports asthma data.

Kristin A. Hobson, Health Educator, develops, implements and evaluates health education initiatives.

Data and Surveillance

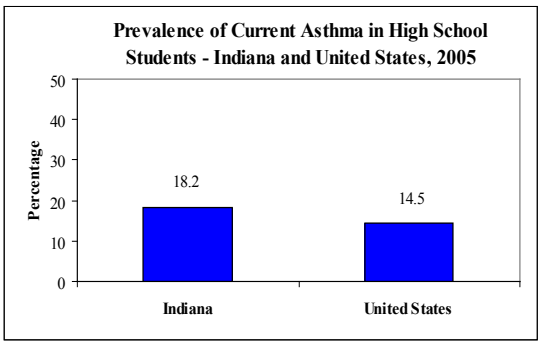
Youth Risk Behavior Survey, 2005

Description of the System: The Youth Risk Behavior Survey (YRBS) is part of a biennial national effort led by the Centers for Disease Control and Prevention (CDC). The YRBS monitors health risks and behaviors in six categories, which are related to the leading causes of mortality and morbidity among both youth and adults. Data is collected from 9th through 12th graders on behaviors that contribute to physical activity, nutrition, tobacco use, alcohol and other drug use, violence and injuries, and sexual behavior. In addition to the six categories listed in 2005, Indiana collected data on self-reported asthma and asthma attacks among high school students.

During the spring of 2005, the Indiana State Department of Health conducted the YRBS in 53 public high schools. Weighted data was obtained from 1528 student in grades 9th through 12th. The survey participants included 797 (50.9%) males and 731 (49.1%) females.

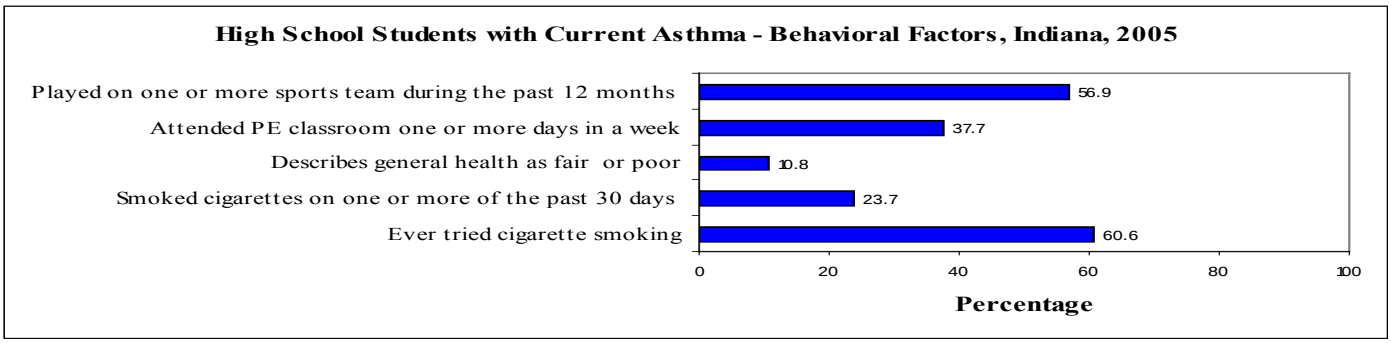
Based on the 2005 YRBS, 22.2% of high school students had been told by a doctor or nurse that they had asthma (lifetime asthma) and 18.2% had current asthma. There were no significant differences in prevalence for both lifetime and current asthma by sex, age, grade, or race/ethnicity.

Among those students with current asthma, 40.9% said they had an episode or asthma attack during the past 12 months. The prevalence of attacks among females (54.2%) was significantly higher than among males (27.0%). There was no significant difference between the percentages of Black and White students who reported having had an episode or asthma attack during the past 12 months.



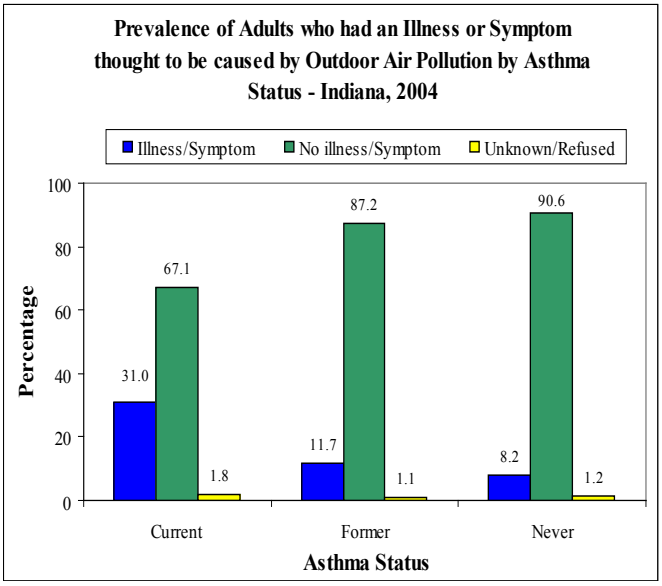
Current and lifetime asthma among high school students in Indiana is significantly higher than the national percentages (18.2% vs. 14.5% for current and 22.2% vs. 17.1% for lifetime asthma).

This chart shows the prevalence of some behavioral factors among high school student in Indiana with asthma. These behaviors can irritate the airways and cause asthma attacks. Regarding these particular behavioral factors, there are no significant differences in prevalence between those students who had asthma and those students that did not have asthma.

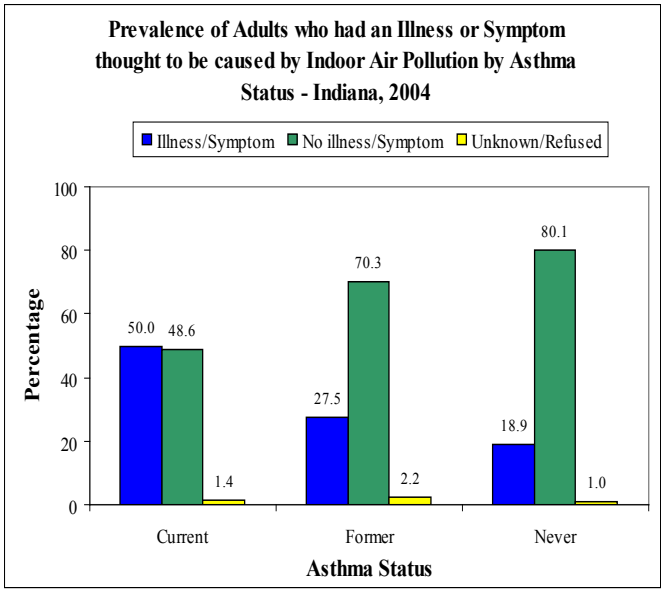


The YRBS results indicate there is a need in Indiana for a collaborative effort among public health and medical professionals, parents, and school personnel to help students manage their asthma and avoid behaviors that can cause asthma attacks.

Indiana BRFSS, 2004: Indoor and Outdoor Air Pollution



Thirty-one percent of adults with current asthma reported outdoor air pollution such as smog, automobile exhaust, and chemicals had affected their health in the last 12 months. This is significantly higher than those adults with former asthma (11.7%) or those who have never had asthma (8.2%).



Fifty percent of adults with current asthma and 27.5% of adults with former asthma report indoor air pollution such as dust, mold, and chemicals found in the home had affected their health in the last 12 months. This is significantly higher than those adults who have never had asthma (18.9%).

Resources for Identifying Poor Air Quality

The Air Quality Index (AQI) is a tool used for reporting daily air quality. The purpose of the AQI is to help you understand what local air quality means to your health. The AQI tells you how much pollution is in your area and what health effects you should be concerned with when pollutants in your area reach unhealthy concentrations. You can learn about your air quality on a given day by looking at the AQI. The Air Quality Index is published on U.S. EPA's Web site at www.epa.gov/airnow and in some newspapers. ***In many areas, you can also find air quality forecasts and reports on local TV or radio stations.

Smog Watch is a Web site designed to provide Hoosiers with an easy-to-read forecast of air quality in their communities. Smog Watch provides daily health information, ozone and $PM_{2.5}$ forecasts and health scale readings for seven regions of Indiana (East Central, North Central, Northeast, Northwest, Southeast, Southwest and West Central). Smog Watch information can be accessed by going to www.smogwatch.in.gov or by calling 1-800-631-2871.

IDEM E-News System is an automated e-mail system that allows media, reporters, citizens and interested parties to sign up for access to instant e-mail new releases, press information and advisories including Air Quality Action Days issued throughout the state. The E-News list can be accessed at www.in.gov/idem/macs/notice/index.html.

Around the State

The Reduction of Asthma Triggers with Integrated Pest Management (IPM)

by Marc L. Lame, Ph.D.

Asthma attacks can be avoided by reducing their triggers. The most common asthma triggers include exposure to arthropod (cockroach and dust mite) exoskeletons, dander, and chemicals. Thus, reducing pests will reduce the need to use chemical pesticides; ultimately, reducing the incidence of asthma attacks.

Pesticides might kill pests, but they do not prevent pests. Instead of killing pests, one should prevent pests – real IPM. IPM defined as an innovation to be adopted: is a cluster of technologies (cultural, mechanical, biological, genetic, and chemical) which is an integrated application (based on biological information) designed to allow humans to compete with other species (pests).

IPM is a proactive strategy instead of the reactive use of pesticides. IPM requires investigation regarding: 1) Whether or not pests are present and if there is a current infestation; 2) What biological factors (food, water and shelter) have attracted them; and 3) What actions are needed to manage existing infestations and prevent them in the future.

Minimum standards for safe and effective IPM in facilities requires a partnership with a pest management professional in the role of an diagnostician/educator, documentation of actual pests, no scheduled pesticide application, staff training regarding pest management, and the ability of the facility manager to verify their pest management program type. While all this sounds somewhat technical, everyone prevents pests everyday with better sanitation, food storage and keeping pests out of buildings… that is 80-90% of IPM. To improve efforts, all everyone needs to do is "do what they are doing now, just think pests."

Entomologist Marc Lame teaches in the School of Public and Environmental Affairs at Indiana University in Bloomington and is the author of *A Worm in the Teacher's Apple: Protecting America's School Children from Pests and Pesticides*.

InJAC Update

A Look from the Chair

My most sincere thanks to everyone who was at the meeting either in person or via phone. It's great to have your support! Our meeting focused on protocols and by-laws. I am grateful to Janet McCabe and Dr. Ingrid Ritchie for offering to help sort out our by-laws. We'll keep you posted.

We're always in need of people to take on leadership roles in InJAC (Indiana Joint Asthma Coalition). If there's something you want to do, please let me know, and we can create a formal role. Many of us have interest in workplace asthma - it would be great to have a workgroup that focuses on this area.

I encourage you to see who is missing at our meetings. I would be happy to extend a letter of invitation to anyone or group, whom you feel should be engaged.

Also, keep me posted regarding interest in speakers and programs for our future meetings.

Warmest Regards,
Fred Leickly, MD

Governor Daniels has challenged Hoosiers to start making healthier choices. This call to action begins with INShape Indiana. The Governor's health initiative focuses on improving nutrition and physical activity and encourages adults to quit smoking and young people not to start. If you have asthma, not only is it important to properly manage the disease, but to also maintain a healthy diet, get plenty of exercise, and stop smoking. The INShape Indiana Web site has valuable information on how you can incorporate these healthy behaviors in your daily activities, so you can live a longer, healthier life.

LOG ON AND LIGHTEN UP!
www.INShape.IN.gov

Upcoming Events

August

15: Indiana State Fair, **ISDH Asthma Program booth at Governor Daniels' Sports Spot; "Family Day,"** Indianapolis

25: Asthma Alliance of Indianapolis Meeting, Indianapolis
8:30 a.m. - 10 a.m., Marion County Health Department
Contact: Robin Costley, CRT
E-mail: rcostley@hhcorp.org

26: Radio Disney and Ad Council "Feelin Groovy" Tour, Indianapolis
12 p.m. - 3 p.m., Greenwood Park Mall

September

9: Radio Disney and Ad Council "Feelin Groovy" Tour, Indianapolis
12 p.m. - 3 p.m., Castleton Square Mall

14: InJAC Quarterly Meeting, Indianapolis
2 p.m. - 4 p.m., ISDH, Rice Auditorium
Contact: Kathy Such
E-mail: ksuch@lungin.org

21 - 22: Indiana Society for Respiratory Care Fall Meeting, Bloomington
Bloomington Convention Center
www.in-isrc.org

27 – 28: Asthma Educator Institute, Merrillville
www.lungin.org
Contact: Brett Aschliman
E-mail: baschliman@lungin.org
Phone: 260-486-2001

October

24 – 25: Indiana Lead Safe and Healthy Homes Conference, Indianapolis
www.ikecoalition.org/Lead_Conf_2006/Conf_Preview_2006.htm
Contact: Janet G. McCabe
E-mail: mccabe@ikecoalition.org
Phone: 317-902-3610

25 – 26: Asthma Educator Institute, Indianapolis
www.lungin.org
Contact: Brett Aschliman
E-mail: baschliman@lungin.org
Phone: 260-486-2001

Indiana State
Department of Health

State Health Commissioner
Judith A. Monroe, MD

Medical Director, Maternal and Children's Special Health Care Services
Judith A. Ganser, MD, MPH

Director, Chronic Disease
Sue Percifield, RN, MSN

Director, Asthma
Marcie L. Memmer, MPH, CHES

Epidemiologist, Asthma
Mohammad (Hesam) Lahsaee, MS

Health Educator/Editor, Asthma
Kristin A. Hobson, MPH

Breathe In, Breathe Out: Asthma in Indiana is a semi-annual newsletter published by the Indiana State Department of Health Asthma Program in conjunction with the Indiana Joint Asthma Coalition (InJAC). The purpose of this newsletter is to provide timely information on asthma to those interested in addressing the asthma burden in Indiana.

This newsletter is supported by Grant/Cooperative Agreement #U59/CCU525032 from the Centers for Disease Control and Prevention (CDC). Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

For more information contact
The Asthma Program, Chronic Disease
Indiana State Department of Health
2 North Meridian Street
Indianapolis, IN 46204
317-233-1325
www.statehealth.IN.gov/programs/asthma