

DRAFT
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Asthma in America: Our Children at Risk

A Plan for Environmental Action to Protect Children from Asthma



President's Task Force on Environmental Health
Risks and Safety Risks to Children

ABOUT THE PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN

In recognition of the growing body of scientific information demonstrating that America's children suffer disproportionately from environmental health risks and safety risks, President Clinton issued Executive Order 13045 on April 21, 1997, directing each Federal Agency to make it a high priority to identify, assess, and address those risks. In issuing this order, the President also created the Task Force on Environmental Health Risks and Safety Risks to Children, co-chaired by Donna Shalala, Secretary of the Department of Health and Human Services, and Carol M. Browner, Administrator of the Environmental Protection Agency. The Task Force was

charged with recommending strategies for protecting children's environmental health and safety. Two subcommittees were established in the Executive Order to carry out this directive: a subcommittee directed to review and foster public access to federal government sponsored research on environmental health and safety risks to children, and a subcommittee directed to identify priority public outreach activities related to protecting children's environmental health and safety.



In April 1998, the Task Force identified four priority areas for immediate attention: childhood asthma, unintentional injuries, developmental disorders, and childhood cancer. The Task Force created and charged the Asthma Priority Area Workgroup with reviewing current Federal efforts to address the many facets of the issue and, most importantly, to make appropriate recommendations for action by the Federal government. This report is the result of that effort.

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EXECUTIVE SUMMARY

An epidemic of asthma is occurring in the United States. While the epidemic affects people of all ages, children are particularly affected. Nearly 1 in 13 school-aged children has asthma, and the percentage of children with asthma (i.e., prevalence rate) is rising more rapidly in preschool-aged children than in any other age group.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic, surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the large, urban inner cities.

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Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many nights of interrupted sleep, limitation of activity, and disruptions of family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a child with asthma from living a fully active life.

In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. A 1996 analysis found the cost of asthma to be \$14 billion, indicating a rapidly increasing financial burden. These estimates, which are not limited to the costs of childhood asthma, indicate that the direct medical costs of asthma account for between 1% and 3% of all health care expenditures in the United States.

Asthma is a particularly important disease to consider in the context of environmental hazards to which children are exposed. Children breathe more air, eat more food, and drink more liquid in proportion to their body weight than do adults, and their developing respiratory, immunological, and digestive systems may be more susceptible to environmental exposures than those of adults. In a typical day, children may be exposed to a wide array of environmental agents at home, in day care centers, schools and while playing outdoors. There is substantial evidence that environmental exposures, including viruses and allergens, play a major role in triggering asthma symptoms. Airborne allergens include those from house dust mites, cockroaches, mold and animal dander. In addition, exposure to environmental tobacco smoke has been shown to be a major determinant of asthma symptoms. Elevated levels of outdoor air pollutants, particularly ozone, are associated with increased symptoms and an increased risk of emergency department visits for asthma, as well.

In addition, environmental factors such as airborne allergens and environmental tobacco smoke (i.e., secondhand smoke) may play a major role in the onset of asthma. Other pollutants may also play a role, although the scientific data are inadequate to offer firm conclusions. Genetic

predisposition is the strongest known risk factor for developing asthma, but the rapidly rising number of cases of childhood asthma cannot be solely genetic because the genetic composition of the population changes slowly. Rather, some interaction between genetic predisposition and environmental exposures, and possibly other factors such as diet or lack of exercise are likely to be responsible for the increase. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma.

Reducing exposures of children with asthma to airborne allergens and pollutants will reduce the health burden of asthma and significantly improve their quality of life. It is not yet certain, but it is possible that reducing the exposure of infants and young children at risk of developing asthma may prevent its onset. Environmental control methods and asthma treatments are available now that can help children and their families control asthma and lead healthy, active lives. Yet not all children have access to these measures. Too many children miss school, limit their physical activity, and are seriously ill because of asthma.

The environmental action plan for asthma outlined in this report is designed to promote concerted Federal action to protect all children with asthma from environmental risks that worsen their disease and to expand federal research to reveal how reducing environmental risks might prevent children from getting asthma.



GUIDING PRINCIPLES

Federal agency actions can provide leadership and direction in reducing environmental risks to protect children from asthma. Recommendations for action put forward in this initiative are predicated on the principles that federal action must have:

- A focus on efforts to *eliminate the disproportionate impact of asthma in minority populations and those living in poverty.*
- An emphasis on *partnerships and community based programs.*
- A commitment to setting *measurable and consistent goals* for childhood asthma under the Healthy People 2010 program.
- *An investment in evaluation* to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

RECOMMENDATIONS FOR ACTION

RESEARCH

Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma.

- ☞ Strengthen and accelerate research into the environmental factors that may contribute to the onset of asthma in children.
- ☞ Expand and accelerate research to develop and evaluate environmental strategies that will improve the quality of life of people with asthma.

This year 2000
initiative is
about
protecting
children from
asthma...

PUBLIC HEALTH PROGRAMS

Implement public health programs that foster improved use of current scientific knowledge to reduce environmental exposures to prevent and reduce the severity of symptoms for those with asthma.

- ☞ Promote clinician and patient implementation of national guidelines for reducing environmental risks that worsen asthma.
- ☞ Expand support for state and local public health action.
- ☞ Reduce children's exposure to environmental tobacco smoke and other indoor triggers in their homes.
- ☞ Establish school based asthma programs in every community that help reduce or eliminate allergens and irritants and that promote student's self management of asthma and full participation in school activities.
- ☞ Continue to reduce outdoor air pollution.

SURVEILLANCE

Establish a coordinated, integrated, and systematic nationwide asthma surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

DISPROPORTIONATE IMPACT ON THE POOR AND MINORITIES

Eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

- ☞ Conduct research and surveillance activities to improve understanding of the problem.
- ☞ Implement activities to eliminate the disproportionate impact of asthma in minority populations and those living in poverty.



INTRODUCTION

The Growing Problem of Asthma in Children

Asthma is a chronic lung disease characterized by recurrent episodes of breathlessness, wheezing, coughing, and chest tightness; these episodes are also known as exacerbations or attacks. The severity of exacerbations can range from mild to life threatening. Both the frequency and severity of asthma symptoms can be reduced by the use of medications and by reducing exposure to the environmental triggers of asthma attacks.

For the past 15 years, an epidemic of asthma has occurred in the United States. By all indications, this epidemic is continuing. Although asthma has become a major public health problem affecting Americans of all ages, races and ethnic groups, children have been particularly severely affected.



National survey data -- the responses of randomly selected U.S. residents being asked whether they had symptoms of physician diagnosed asthma in the previous 12 months -- indicate that the number of children with asthma in the United States has more than doubled in the past 15 years. In 1980, 2.3 million American children had asthma. In 1995, the most recent year for which data are available, the number of affected children had risen to 5.5 million. Based on these trends, it is estimated that in 1998 more than 6 million children in the United States have asthma. Prevalence rates of asthma are highest in boys and are increasing in both boys and girls, and in all race and ethnic groups. The prevalence of asthma in children under age 18 is 7.3%. The most rapid increase has occurred in children under 5 years old, with rates increasing over 160% over the past 15 years.

The number of deaths attributed to asthma in children has also increased. In 1977, 84 deaths in children 18 and younger were recorded; the number of deaths has risen to 280 in 1995, a more than 3-fold increase. Although the death rate due to asthma has increased in all racial and ethnic groups, minority populations experience a disproportionately higher death rate from asthma. In 1995, the death rate from asthma in African-American children, 11.5 per million, was over four times the rate in white Americans, 2.6 per million. The higher death rates among African-American children are especially troubling.

The number of hospitalizations and emergency room visits for asthma have increased in all population groups. Asthma accounts for one-third of all pediatric emergency room visits and is the fourth most common cause for physician office visits. The variation in the impact of asthma across racial and ethnic groups is significant. African American children have an annual rate of hospitalization of 74 per 10,000, over 3 times that for whites, 21 per 10,000. In addition, African American children are approximately 4 times more likely than white children to seek care at an emergency room. In short, African-American children have a slightly higher risk of getting asthma, but have a much higher risk of hospitalization or death due to the disease.

At the present time, surveillance for asthma in children is limited to analyses of ongoing surveys and data systems on health events such as mortality, hospitalization, and outpatient visits. Other than for African Americans, such information is extremely limited for most ethnic groups. There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic, surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the large, urban inner cities.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data.

These measures, particularly for death, hospitalization, and emergency room visits, give an incomplete picture of the true burden of asthma in the United States. For example, one follow-up study of children with asthma in inner city areas found a nearly 10 times higher likelihood of a child suffering symptoms of asthma on a given day than visiting an emergency room. Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many nights of interrupted sleep, limitation of activity, and disruptions of family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a child with asthma from living a fully active life.

Estimating the costs of asthma is an indirect way to measure its health burden. In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. A 1996 analysis found the cost of asthma to be \$14 billion, indicating a rapidly increasing financial burden. These estimates indicate that the direct medical costs of asthma for all ages account for between 1% and 3% of all health care expenditures in the United States.

What We Know About Childhood Asthma

Over the past 15 years, there have been major advances in the scientific understanding of asthma. Asthma is now known to be a disease of airway inflammation resulting from a complex interplay between environmental exposures and genetic and other factors. This has implications for the medical treatment and for the environmental management of asthma.

In contrast to the limited understanding of the relationship of environmental exposures to the onset of asthma, the environmental triggers of asthma attacks for children with asthma have become increasingly well characterized. House dust mites, cockroaches, mold and animal dander have been identified as the principal allergens that trigger asthma symptoms. Reducing exposure to these allergens has been shown not only to reduce asthma symptoms and the need for medication, but also to improve lung function. Environmental tobacco smoke (also called secondhand smoke) is an important irritant that can trigger an asthma episode and possibly potentiate the effects of allergens. Upper respiratory viral infections are also recognized as

important triggers for asthma episodes.

Children with asthma have long been recognized as particularly sensitive to outdoor air pollution. Many common air pollutants, such as ozone, sulfur dioxide, and particulate matter are respiratory irritants and can exacerbate asthma. Air pollution also might act synergistically with other environmental factors to worsen asthma. For example, some evidence suggests that exposure to ozone can enhance a person's responsiveness to inhaled allergens. Whether long term exposure to these pollutants can actually contribute to the development of asthma is not known, though scientists do not believe that outdoor air pollution is a major contributor to the current epidemic. To date, little research has examined the role of other air pollutants in the development or exacerbation of asthma, although this is an issue of increasing public concern.

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In addition to improved understanding of appropriate environmental management of asthma, the medical management of asthma has changed significantly. Inhaled anti-inflammatory medications have become the mainstay of medical management to prevent asthma episodes and lessen chronic symptoms of asthma. In addition, improvements in monitoring techniques now permit objective measures of lung function that are easy for patients and physicians to use in assessing asthma severity and monitoring changes in the disease. In a disease like asthma that varies considerably over time and where changes in lung function can occur before symptoms develop, these objective measures are essential tools for making management decisions.

As a result of these advances, the medical and environmental management of asthma is better defined and the knowledge exists to manage asthma better than ever before. One especially important finding is that patient education has been documented to be cost effective. Teaching patients and their families specific management skills improves asthma management, reduces the use of emergency services, and improves quality of life. This is particularly important for asthma management, since the environmental management of asthma requires knowledge of asthma triggers and specific actions that can be undertaken to reduce exposure to these triggers. The treatment goal for almost all individuals with asthma should be for that person to lead a life unrestricted because of asthma.

Reducing exposure to environmental allergens and pollutants will reduce the frequency and severity of attacks for children with asthma, reduce their need for medicine, and improve their lung function. Children are exposed to many environmental agents that could trigger asthma attacks. For example, 25% of children in America live in areas that regularly exceed EPA limits for ozone. Approximately 38% of children are exposed to environmental tobacco smoke in the home on a regular basis and exposure to environmental tobacco smoke is so widespread that approximately 88% of all children have some level of documented exposure. A high proportion of children living in the inner city are exposed to high levels of cockroach antigen.

Why Has Asthma Reached Epidemic Proportions in Children?

The causes of the increasing rate of asthma over the past 15 years and the particular role that environmental exposures play are not known, but there are some clues. Atopy, the genetically inherited susceptibility to become allergic, is the most important predictor of a child developing asthma. A substantial research effort is underway to identify the genes that are responsible for susceptibility to asthma. Because the genetic make-up of the population changes slowly, genetic susceptibility alone cannot be responsible for the epidemic of asthma that has occurred in the United States over the past 15 years. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma. Factors such as the intensity of environmental exposure and the age of the person being exposed are likely to be important.

Exposure to allergens found indoors is a strong risk factor for developing asthma. Children are spending increasing amounts of time indoors, thus increasing their exposure to indoor allergens.

The environmental exposures most strongly suspected of causing asthma to develop include environmental tobacco smoke and allergens such as house dust mites, cockroaches, mold, and animal dander. Exposures that stimulate the immune system may also be significant, such as diet during the prenatal period and early infancy, the pattern of respiratory infections early in life, and even decreasing rates of exercise have all been suggested as risk factors for the development of asthma. In the broadest sense, many environmental exposures are suspected of contributing to the epidemic of asthma in children.

Scope of the Plan for Environmental Action to Protect Children With Asthma

This action plan is about protecting children from asthma and the consequences of asthma. To accomplish this goal, the environmental aspects of asthma must be considered in the context of other aspects of asthma prevention and management, such as early access to quality medical care and efforts to understand the disproportionate health impact of asthma among minority populations. Childhood asthma is a multi-factorial disease, and efforts to improve its management and to prevent it will require multi-dimensional, multi-disciplinary efforts that must occur simultaneously. This action plan focuses on improving the environment in which children with asthma live, learn, play and work so that they can live productive, active lives and so that future generations of children might be spared the disease altogether.

GOALS OF THE CHILDREN'S ENVIRONMENTAL HEALTH ASTHMA ACTION PLAN

BY THE YEAR 2005, THE NUMBER OF HOUSEHOLDS IN WHICH
CHILDREN ARE REGULARLY EXPOSED TO SECONDHAND SMOKE
WILL BE REDUCED TO 15%.¹

BY THE YEAR 2010, ASTHMA HOSPITALIZATION RATES IN CHILDREN
WILL HAVE FALLEN TO NO MORE THAN 10 HOSPITALIZATIONS PER
10,000 PEOPLE.² (HP 2010 DRAFT)

BY THE YEAR 2010, EMERGENCY DEPARTMENT VISITS WILL BE
REDUCED TO NO MORE THAN 46 PER 10,000 PEOPLE.³ (HP 2010
DRAFT)

BY THE YEAR 2010, NO MORE THAN 10% OF PEOPLE WITH ASTHMA
WILL EXPERIENCE ACTIVITY LIMITATIONS.⁴ (HP 2010 DRAFT)

1 Baseline: 29% in 1994. Source: Biennial Radon and ETS Survey of the Conference of Radiation Control Program Directors and EPA.

2 Baseline: Hospitalization rate per 10,000 population in 1993-94: 18 for total population; 50 for children 0-4 yrs of age and 18 for children 5-14 yrs. Source: HP2010 Draft

3 Baseline: Emergency room visits 71 per 10,000 population for total population in 1992-94; 121 for children 0-4 yrs of age and 81 for children 5-14 yrs. Source: HP2010 Draft

4 Baseline: Activity limitation for persons with asthma 22 percent for overall population in 1992-94. No children-specific data available. Source: HP2010 Draft

VISION FOR THE 21ST CENTURY

Every child in America will live,
learn, work, and play in
environments that do not cause or
worsen asthma.

Asthma will no longer inhibit
children from leading full and active
lives.

More cost-effective medical and
environmental asthma prevention
and management tools will enhance
the lives of children and their
families.

GUIDING PRINCIPLES

Federal agency actions can provide leadership and direction in reducing environmental risks to protect children from asthma. Recommendations for action put forward in this plan are predicated on the principles that federal action must have:

1. A focus on efforts to better understand and eliminate the disproportionate impact of asthma in minority populations and those living in poverty.

The health burden of asthma is not shared equally throughout the U.S. population. Although the rising prevalence of asthma has affected all populations, poor and minority children are much more likely than white, non-Hispanic children to visit an emergency room, to be hospitalized, or to die from asthma. The reasons for this inequity are not known, although environmental exposures and limited access to quality medical care may all play a role.

The focus on eliminating disparities across racial and ethnic groups has to be considered in all efforts to prevent asthma and its health impact; however, because of the importance of this issue the committee has included a specific recommendation in this action plan to examine, understand, and ultimately eliminate disparities.

2. An emphasis on partnerships and community based programs.

A successful effort to reduce childhood asthma will depend in part on the level of success achieved in enlisting all sectors of society in efforts to implement effective programs to prevent and manage the disease. Federal agencies have already forged effective partnerships with many health and professional organizations, corporations, and foundations to conduct training, educate health care providers and the public, and to implement a wide range of prevention activities at the national, state, and local levels.

Expanded partnerships both within government and between government and the private sector are needed. With increasing knowledge about the primary causes of asthma and triggers of asthma attacks, the challenge for the 21st century will be to learn to integrate successfully these findings into more effective environmental, medical and educational programs. Partnerships will be critical to implementing this broad vision of asthma control. In particular, community-based programs should integrate asthma control activities into existing systems such as schools, child care, youth programs, workplaces, primary health, correctional facilities, and job training programs.

The challenge for the 21st century will be to learn to integrate successfully these findings into more effective environmental, medical and educational programs.

3. A commitment to setting measurable and consistent goals for childhood asthma under the Healthy People 2010 program.

Health objectives are now being developed for the year 2010 and represent a significant revision of the goals set for the year 2000. These objectives will set the nation's health agenda for increasing years of healthy life and reducing disparities among the entire American population. Draft objectives currently encompass an expanded set of asthma-related objectives as well as a series of environmental objectives addressing known asthma triggers such as indoor allergens, secondhand smoke and outdoor air pollution.

The goals embodied in the final Healthy People 2010 document will serve as the tools to measure progress towards control of asthma. Although some of the goals are likely to measure aspects of asthma clinical management that will not be directly affected by this action plan, the primary objectives of morbidity reduction and reducing exposures to environmental hazards will be addressed.

4. Investment in evaluation of programs to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

Asthma intervention programs and related activities need to be fully evaluated to determine those techniques which are successful and should be replicated. Evaluation should be incorporated in the planning and should include:

- identification of desired health outcomes of the program;
- measurement of effectiveness of the intervention activities and processes used to implement them;
- identification of unforeseen obstacles;
- assessment of the cost-effectiveness of the program;
- a prediction of long term sustainability of the program.

RECOMMENDATIONS FOR ACTION

I. RESEARCH

Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma.

A. EXPAND RESEARCH INTO THE ENVIRONMENTAL FACTORS THAT CONTRIBUTE TO THE ONSET OF ASTHMA IN CHILDREN.

Though progress has been made in understanding what causes asthma, there is currently insufficient scientific information to establish specific guidelines and recommendations for public health practices to prevent the onset of asthma in children (i.e. primary prevention).

In order to establish primary prevention guidelines, the top priority for research is to determine the causes of asthma in children and particularly the role of the environment. To understand what causes asthma, research must identify the basic cellular and molecular mechanisms that cause airway inflammation and sensitization and, in particular, the interaction of environmental exposures and genetic susceptibility. In addition, clinical and epidemiologic studies are needed to examine the relationship between environmental exposures and the onset of asthma.



Because of promising preliminary work on the relationship of indoor allergens and asthma onset, as well as the much greater proportion of time that children spend indoors, greater emphasis on examining the relationship of indoor exposures to the development of asthma is warranted. Exposures to high levels of allergens in the indoor environment have been shown in some studies to be associated with the subsequent development of asthma. However, few studies have examined the influence of geographic location on the role of allergens. In studies evaluating the role of indoor allergens on exacerbations of asthma, different allergens, such as those associated with cockroaches, dust mites, and mold, have been implicated in different locations. This suggests that different allergens can exacerbate asthma, and that different allergens may be capable of inducing the new onset of asthma.

In one study, avoiding exposure to dust mite and food allergens early in life was found to reduce the risk of developing asthma in the first year of life. However, this effect was not statistically significant at 2 to 4 years of age. Whether such allergen avoidance strategies are feasible and effective in reducing the development of asthma is not known.

The complex interactions between outdoor air pollutants and allergens and the development of asthma have not been adequately evaluated. Some epidemiologic studies have suggested a relationship between exposure to volatile organic compounds and prevalence rates of childhood asthma. Because adult-onset asthma is known to be associated with occupational exposures to volatile organic compounds including formaldehyde, ethylene oxide, and isocyanates, further work to assess the possible etiologic role of specific pollutants in childhood asthma is appropriate.

Exposures to high levels of allergens in the indoor environment have been shown in some studies to be associated with the subsequent development of asthma.

KEY ACTIONS:

NIH, CDC, and EPA will conduct and fund studies to determine the causes of asthma. Such studies should include the following:

- ▶ examine the role of genetic susceptibility to specific environmental exposures in the development of asthma;
- ▶ assess the importance of early life events, such as *in utero* viral infections, viral infections during infancy, specific antigen exposures and exposures to maternal smoking on the development of asthma;
- ▶ examine the effects of pollutants and allergens on immune responses in animal models and in preclinical studies;
- ▶ Identify the clinical characteristics of asthma associated with different genetic, physiologic, immunologic and environmental factors;
- ▶ examine the effectiveness of combinations of immune modulation to reduce IgE responses to allergen and allergen avoidance as a means to reduce the risk of developing asthma;
- ▶ examine the epidemiology of asthma in different populations to identify risk factors for the onset of asthma.

ATSDR, in partnership with state and local health departments and community groups, will investigate childhood asthma in 5-7 communities where sources of emissions from hazardous waste facilities have already been identified. These investigations will characterize any associations between hazardous materials and the burden of asthma in children.

In addition to intramural and extramural grant programs, NIH, CDC, and EPA will fund medical centers to conduct comprehensive research on environmental aspects of asthma.

The National Academy of Sciences, with support of EPA, will complete its assessment of asthma associated with indoor pollutants. These findings will be used to guide research efforts on the causes of asthma.

B. EXPAND AND ACCELERATE RESEARCH TO DEVELOP AND EVALUATE ENVIRONMENTAL STRATEGIES THAT WILL IMPROVE THE QUALITY OF LIFE FOR CHILDREN WITH ASTHMA.

It is well established that inhaled allergens and irritants and outdoor pollutants provoke asthma symptoms. Research is needed to identify if other environmental exposures are significant. Further, the relative importance of various exposures is not well understood. Cost effective strategies for reducing exposures are not well developed.

Patient education strategies in certain populations have profound impacts on reducing the frequency and severity of exacerbations and improving the quality of life for children. But many of these programs are not responsive to the cultural, ethnic, and economic diversity of the American population. Innovative strategies are urgently needed for reaching a wide range of children and their families, for tailoring recommendations for reducing environmental exposures to their needs, and for providing support to follow the recommendations.

KEY ACTIONS:

NIH and EPA will conduct studies to examine the interrelationship between indoor allergen exposures, viral infections, ambient air pollutants, and exacerbations of asthma. This research will include identifying and evaluating cost effective methods to reduce allergen exposures, as well as methods to render the immune system less susceptible to environmental exposures.

NIH, CDC and EPA will conduct studies to improve and evaluate interventions designed to teach families and patients how to minimize exposure to environmental asthma triggers.

CDC and NIH will work with state and local health departments to develop and evaluate the cost-effectiveness of model public health intervention programs.

NIH and HUD will complete the first National Allergen Survey to provide estimates of allergen exposure for the U.S. population; this survey will provide much needed information about the apparent regional differences in allergen exposures.

NIH, with support from EPA for particulate air monitoring, will continue to fund the National Cooperative Inner-City Asthma Study (NCICAS), 1996-2000, which will determine the capacity of interventions to reduce asthma morbidity among inner city children.

EPA, NIH, and CDC will fund and conduct research in collaboration with the private sector to identify home construction, maintenance and occupancy practices that will reduce children's exposure to environmental agents that trigger asthma episodes.

As part of its program on energy efficient buildings, DOE will study the relative effectiveness of energy conservation strategies and technologies on reducing exposures to allergens.

2. PROGRAMS TO IMPROVE PUBLIC HEALTH

Implement public health programs that improve use of scientific knowledge to prevent and reduce the severity of asthma symptoms by reducing environmental exposures.

Despite uncertainty about the causes of the increase in asthma prevalence rates, much can and should be done to prevent severe illness and death from asthma and improve the quality of life of persons with asthma. Experts convened by the National Asthma Education and Prevention Program (NAEPP) coordinated by the National Institutes of Health (NIH) have reviewed the scientific literature and produced guidelines for managing asthma. These include specific recommendations for controlling environmental factors that contribute to asthma severity.

While there is consensus that NAEPP guidelines define the best diagnosis and management practices for asthma, dissemination of the guidelines must be expanded and adoption improved. Many clinicians do not include advice about environmental control in their patient education. Among families who do receive recommendations, adherence is generally low. Asthma is highly variable, and families need help establishing priorities for environmental control measures that will be suitable for their individual child's asthma and their family circumstances. Effective public health programs can provide this education and support.



For children without access to quality health care, appropriate instruction on the environmental triggers of asthma is impossible or severely limited. Emergency rooms or urgent care facilities may serve as the only source of primary care for such children. These settings should be recruited to provide the kind of education and links to chronic disease management services that are essential to reducing the severity and frequency of asthma attacks.

A. PROMOTE CLINICIAN AND PATIENT IMPLEMENTATION OF NATIONAL GUIDELINES FOR REDUCING ENVIRONMENTAL RISKS THAT WORSEN ASTHMA.

KEY ACTIONS:

NIH will use appropriate existing partnerships and innovative mechanisms to ensure wider use of the most up-to-date Guidelines for the Diagnosis and Management of Asthma published and periodically updated by the NAEPP/NIH. These guidelines offer specific advice on the environmental management of asthma.

Encourage and assist health care practitioners, including doctors, nurses, and personnel in emergency rooms and urgent care facilities, to provide high quality patient education on reducing exposure to pollutants that trigger asthma.

NIH, CDC, and EPA will establish partnerships with managed care organizations to integrate strong messages about management of asthma into existing health education programs, emphasizing the environmental management of asthma.

HCFA will investigate ways to improve the management of asthma, following the NAEPP guidelines, in care provided to Medicaid beneficiaries under 18 years old in the Managed Care Program.

ATSDR will expand to ten the number of pediatric environmental health specialty units across the country. These specialty units will develop environmental medicine materials, health education activities, and risk communication strategies on issues related to asthma and the environment well as other environmental health hazards to children; these educational activities will target both primary care providers and persons potentially exposed to harmful pollutants. In addition, these specialty units will provide consultation services to primary care as well as clinical diagnostic services to patients upon referral.

B. EXPAND SUPPORT FOR STATE AND LOCAL PUBLIC HEALTH ACTION.

Recent advances in the treatment of asthma and in identifying the environmental triggers of asthma attacks make it possible to control and prevent symptoms at a level unheard of just ten years ago. But these gains have not been realized by many of our children. Public health agencies have a critical role in helping to reduce environmental factors affecting asthma and the human and financial toll of the disease. These programs should include the following components:

- (1) Education and training
- (2) Asthma surveillance
- (3) Coalitions for prevention

KEY ACTION:

CDC, in collaboration with NIH, will provide grants to 12 state health departments in FY 2000 to ensure that effective asthma education, prevention, and public health outreach activities in local communities are developed and sustained.

C. REDUCE CHILDREN'S EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE AND OTHER INDOOR TRIGGERS IN THEIR HOMES.

Secondhand tobacco smoke and indoor allergens are major contributors to the incidence of wheezing in young children and play a significant role in the number and severity of asthma attacks. Reducing smoking in homes with young children will improve the health status of the estimated 2 million children with asthma who are exposed to secondhand smoke. In addition, exposure to allergens such as cockroach, house dust mite, mold, and animal dander causes many attacks of asthma that are preventable.



KEY ACTIONS:

EPA, CDC, and NIH will conduct a national public information campaign to reduce children's exposure to environmental tobacco smoke.

EPA, HUD, and CDC will work within existing public health programs that visit homes to increase the avenues through which parents and children receive key messages about asthma prevention and

management. For example, partnerships with the extensive lead paint home intervention network, the AmeriCorps volunteers program, VISTA volunteer program, U.S. Department of Agriculture Extension Service, and the "Welfare to Work" program could all be used to bring asthma prevention messages (e.g., smoking and controlling allergens through techniques such as Integrated Pest Management) directly into millions of homes in a cost-effective manner.

Exposure to secondhand smoke and allergens such as cockroach, house dust mite, mold, and animal dander causes many attacks of asthma that are preventable.

EPA and DHHS, under the coordination of the National Asthma Education and Prevention Program and in close cooperation with the private sector, will undertake a national asthma awareness campaign, targeted at parents and emphasizing avoidable asthma triggers such as environmental tobacco smoke, indoor allergens, and outdoor air pollution episodes as well as early diagnosis and effective management.

HUD will collaborate with health departments with authority over low-income housing, home health educators, and building operators to implement appropriate guidance on building operation and maintenance practices, including ventilation, moisture control and integrated pest management techniques.

EPA will develop innovative means to disseminate information to persons and families with asthma on the health impact of ambient air pollutants, particularly ozone and particulate matter.

D. ESTABLISH SCHOOL BASED ASTHMA PROGRAMS IN EVERY COMMUNITY.

The educational system is a critical component of effective efforts to reduce illness due to asthma in children. Programs need to be implemented at the local school level to assure a healthy physical environment at the school and to promote improved self-management of asthma through education.

KEY ACTIONS:

Develop and expand partnerships between EPA, NIH, CDC, the Department of Education, and non-governmental public and private organizations to implement programs to assure that the school environment is safe for children with asthma. Such efforts should include expanding programs such as the Indoor Air Quality Tools for Schools Program.

EPA and NIH will collaborate with private and voluntary organizations to expand their successful school-based asthma management programs.

E. CONTINUE TO REDUCE OUTDOOR AIR POLLUTION

The U.S. EPA set national ambient air quality standards (NAAQS) for six air pollutants in 1971, in part based on evidence of associations between air pollutants such as ozone, particulate matter, and sulfur dioxide and asthma. Since that time substantial new epidemiological evidence has been published supporting the association between levels of ozone and particulate matter and increased hospitalization for respiratory causes, such as childhood asthma. In 1997, NAAQS for both ozone and particulate matter were strengthened to improve the protection afforded by these standards and to help reduce the risk of ambient exposures that aggravate asthma in children.



Federal, State, local, and private sector efforts to implement the original NAAQS resulted in substantial improvements in air quality, yet notable problems remain. Following the 1990 Clean Air Act Amendments, efforts were expanded to improve nationwide air quality and reduce related health effects. In conjunction with the strengthening of the ozone and particulate matter NAAQS, EPA has taken steps to integrate implementation measures for these pollutants and to improve the effectiveness of control programs. EPA has also taken steps to inform the public about air pollution that may affect children.

KEY ACTIONS:

EPA has proposed that twenty-two States revise their implementations programs in order to provide widespread regional reductions in ozone and related pollutants.

Revisions will be made to strengthen the Pollutant Standards Index (PSI) to help make the public more

aware of days when air pollution levels could affect health and to alert individuals to steps which could be taken to mitigate health effects associated with exposure to air pollution.

The Environmental Monitoring for Public Access and Community Tracking (EMPACT) program will increase the availability of real time ozone data over the Internet and through local TV weather broadcasts.

3. SURVEILLANCE

Establish a coordinated nationwide asthma surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

Current national surveillance permits tracking of asthma prevalence, asthma physician office visits, asthma emergency room visits, asthma hospitalizations and asthma mortality at a national level and in four geographic regions (i.e., Northeast, Midwest, South, and West) through surveys conducted by the National Center for Health Statistics. Surveillance information on asthma, with the exception of mortality data, are not available at the state or local level. This information is needed to identify high risk populations and environmental risk factors of relevance to particular communities and to design and implement interventions that will be most suitable for, and therefore most likely to succeed, in that community. State and local health agencies also need this information to evaluate the impact of local sources of air pollution on childhood asthma in specific communities. A significantly enhanced and expanded surveillance program will be essential to study issues related to race and gender differences in asthma morbidity and mortality among children, identify gaps in providing comprehensive care, and monitor trends in asthma morbidity and mortality at the community level.

KEY ACTIONS:

CDC, in collaboration with NIH, will work with state and local health departments to build a national asthma surveillance system. The first priority in this work will be to develop the state and local infrastructure that will be needed to collect, analyze, and interpret data at the local level. The surveillance system will consist of the following components:

- ▶ Annual surveys of states and major metropolitan areas using standard instruments and methods to define the prevalence of asthma, to characterize the severity of asthma and the quality of life for persons with asthma, and to assess the quality of asthma management
- ▶ Systematic, periodic examinations of existing mortality and morbidity data at state/city or county level to determine: deaths, hospitalizations, and emergency room visits for asthma.

- ▶ Expanded capability to integrate analysis of ambient air monitoring data with asthma morbidity and mortality data.
- ▶ Modify existing data collection systems as needed, to ensure the ability to measure progress toward the Healthy People 2010 goals, now under development.
- ▶ Follow-up studies of geographic and population groups with elevated asthma prevalence rates and elevated rates of morbidity.

4. DISPROPORTIONATE IMPACTS ON THE POOR AND MINORITIES

Identify the reasons for and eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities. Prevalence rates vary only by a few percentage points among different race and ethnic groups, yet emergency room use, hospitalization, and mortality rates vary 3- to 4-fold. Understanding the factors that contribute to the disproportionate impact of asthma on minority and lower income populations is the critical first step to reducing and eventually eliminating the disparities between rich and poor, minority and non-minority children. Such factors may include differing intensities of environmental exposures, such as exposure to cockroach antigen and access to and quality of care, among others.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities.

A. CONDUCT RESEARCH AND SURVEILLANCE ACTIVITIES TO IMPROVE UNDERSTANDING OF THE PROBLEM

CDC, NIH and ATSDR will conduct research and collect surveillance data to better define factors contributing to asthma morbidity and asthma prevalence in minority and lower socioeconomic populations. Such data will:

- ▶ Separate roles of geography and environmental factors from ethnicity and socio-cultural variables in assessing their contribution to asthma prevalence.
- ▶ Examine the differences in asthma prevalence in Hispanics of different origins in order to

provide some clues on risk factors contributing to higher rates of asthma.

- Examine the influence of poverty versus racial and ethnic group on use of emergency room services and hospitalization rates.

B. IMPLEMENT PROGRAMS TO ELIMINATE THE DISPROPORTIONATE IMPACT OF ASTHMA IN MINORITY POPULATIONS AND THOSE LIVING IN POVERTY.

KEY ACTIONS:

NIH, EPA, and CDC will implement public health interventions directed specifically to relieve the impact of asthma on vulnerable populations, particularly targeting the environmental exposures of vulnerable populations

- Ensure a substantial and appropriate focus of public health asthma initiatives on vulnerable populations.
- Make culturally and linguistically appropriate information on asthma widely available.
- Expand the availability of services, particularly emphasizing the need to modify the environment to reduce exposure to known asthma triggers, to the under-served in lower socioeconomic communities.

EPA will collaborate with state environmental protection programs to establish targeted compliance monitoring and enforcement efforts in communities with higher than average childhood asthma morbidity and mortality rates.

GLOSSARY

Acute: Brief (days to weeks).

Allergen: A chemical or biological substance (e.g. pollen, animal dander, or house dust mite proteins) that causes an allergic reaction, characterized by hypersensitivity.

Asthma: A chronic lung disease with chronic inflammation of the airways and recurring exacerbations of airflow limitation that result in wheezing, cough, chest tightness, and difficulty breathing.

Atopy: The genetically inherited susceptibility to become allergic.

Chronic: Remains for several years, possibly a lifetime.

Exacerbate: To aggravate or make asthma worse.

Genome: The inherited genetic composition of an organism.

Incidence: The number of individuals that develop an abnormality within a given time (usually a year) expressed as a percentage of the population.

Irritant: Risk factor or trigger that may cause increased symptoms and/or airflow limitation via a neural pathway.

Primary Prevention: Interventions designed to prevent the development of asthma.

Prevalence: The percentage of the population with a disease, disorder, or abnormality.

Secondary Prevention: Interventions designed to prevent the worsening of asthma among individuals who already have the disease.

Surveillance: The ongoing collection, analysis, interpretation, and dissemination of health outcome data used to plan and evaluate public health programs.

Trigger: An exposure that causes symptoms or exacerbations of asthma.

ADDITIONAL READING

Technical

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*. National Institutes of Health pub no 97-4051. Bethesda, MD, 1997.

Mannino DM, Homa DM, Pertowski CA, et al., *Surveillance for Asthma, United States, 1960-1995*. MMWR 1998;47(No. SS-1):1-27.

Institute of Medicine. *Indoor Allergens. Assessing and Controlling Adverse Health Effects*. National Academy Press. Washington, D.C. 1993

Families

American Lung Association. *Family Guide to Asthma and Allergies. How You and Your Children Can Breathe Easier*. Little, Brown and Company. New York. 1997

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Asthma, Physical Activity and School*. National Institutes of Health pub no 95-3651. Bethesda, MD, 1995.

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Facts About Controlling Your Asthma*. National Institutes of Health pub no 97-2339. Bethesda, MD, 1997.

National Heart, Lung, and Blood Institute. Global Initiative for Asthma. *What You and Your Family Can Do About Asthma*. National Institutes of Health pub no 96-3659C. Bethesda, MD, 1996.

Indoor Air Pollution

EPA's *Indoor Air Quality Tools for Schools*. Available from:
Indoor Air Quality Information Clearinghouse: 1-800-438-4318
Indoor Air Quality Web Site: www.epa.gov/iaq/

TIPS FOR AVOIDING AND CONTROLLING ASTHMA TRIGGERS

Tobacco Smoke

✓ Do not allow smoking in your home or around your children.

✓ Be sure no one smokes at a child's day care center.

Dust Mites

✓ Cover pillows and mattresses with plastic or other allergen-impermeable material.

✓ Reduce humidity below 50% and, if dehumidifiers are used, keep them clean according to manufacturer's instructions.

✓ Soft, fabric-covered surfaces (such as carpeting and upholstered furniture) may harbor dust mites; hard surfaces are easier to clean.

✓ When vacuuming, use a high efficiency particulate air (HEPA) filter or central vacuum system. Because vacuuming causes increased levels of mite allergen in the air, have the allergic individual wear a mask or stay away while the building is being vacuumed.

✓ Wash bedding in hot water.

Cockroaches and Rodents

Use Integrated Pest Management (IPM):

✓ Thoroughly clean; remove all cockroach bodies and residues.

✓ Keep all surfaces clean and dry.

✓ Repair any water leaks.

✓ Keep all food away from pests, store in refrigerator or in tightly-sealed containers.

✓ Reduce/eliminate exposure to pesticides.

Pet Dander

At home:

✓ Choose pets based on the sensitivity of the allergic person.

✓ Restrict activity of/isolate pet from sensitive persons (may not be effective with cat allergen which may stay suspended in air for long periods).

Day care/schools:

✓ Keep animals in cages as much as possible; do not let them roam.

✓ Clean cages regularly.

✓ Locate animals away from ventilation system vents to avoid circulating allergens throughout the room or building.

✓ Don't use warm-blooded animals, if possible.

Mold

✓ Reduce humidity below 50% and prevent condensation.

✓ Control moisture sources.

✓ Repair any water leaks.

✓ Replace water-damaged materials.

✓ Don't leave water standing in your home.

✓ If you use a humidifier, choose and use it wisely according to manufacturer's instructions.

Outdoor Air Pollution

During air pollution alerts:

✓ Stay indoors as much as possible.

✓ Avoid strenuous physical activity.

Adapted from: National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma.

DRAFT

9/25/98

Asthma in America: Our Children at Risk

A Plan for Environmental Action to Protect Children from Asthma



President's Task Force on Environmental Health
Risks and Safety Risks to Children

ABOUT THE PRESIDENT'S TASK FORCE ON ENVIRONMENTAL HEALTH RISKS AND SAFETY RISKS TO CHILDREN

In recognition of the growing body of scientific information demonstrating that America's children suffer disproportionately from environmental health risks and safety risks, President Clinton issued Executive Order 13045 on April 21, 1997, directing each Federal Agency to make it a high priority to identify, assess, and address those risks. In issuing this order, the President also created the Task Force on Environmental Health Risks and Safety Risks to Children, co-chaired by Donna Shalala, Secretary of the Department of Health and Human Services, and Carol M. Browner, Administrator of the Environmental Protection Agency. The



Task Force was charged with recommending strategies for protecting children's environmental health and safety. Two subcommittees were established in the Executive Order to carry out this directive: a subcommittee directed to review and foster public access to federal government sponsored research on environmental health and safety risks to children, and a subcommittee directed to identify priority public outreach activities related to protecting children's environmental health and safety.

In April 1998, the Task Force identified four priority areas for immediate attention: childhood asthma, unintentional injuries, developmental disorders, and childhood cancer. The Task Force created and charged the Asthma Priority Area Workgroup with reviewing current Federal efforts to address the many facets of the issue and, most importantly, to make appropriate recommendations for action by the Federal government. This report is the result of that effort.

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EXECUTIVE SUMMARY

An epidemic of asthma is occurring in the United States. While the epidemic affects people of all ages, children are particularly affected. Nearly 1 in 13 school-aged children has asthma, and the percentage of children with asthma (i.e., prevalence rate) is rising more rapidly in preschool-aged children than in any other age group.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic, surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the large, urban inner cities.

An epidemic
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Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many nights of interrupted sleep, limitation of activity, and disruptions of family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a child with asthma from living a fully active life.

In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. A 1996 analysis found the cost of asthma to be \$14 billion, indicating a rapidly increasing financial burden. These estimates, which are not limited to the costs of childhood asthma, indicate that the direct medical costs of asthma account for between 1% and 3% of all health care expenditures in the United States.

Asthma is a particularly important disease to consider in the context of environmental hazards to which children are exposed. Children breathe more air, eat more food, and drink more liquid in proportion to their body weight than do adults, and their developing respiratory, immunological, and digestive systems may be more susceptible to environmental exposures than those of adults. In a typical day, children may be exposed to a wide array of environmental agents at home, in day care centers, schools and while playing outdoors. There is substantial evidence that environmental exposures, including viruses and allergens, play a major role in triggering asthma symptoms. Airborne allergens include those from house dust mites, cockroaches, mold and animal dander. In addition, exposure to environmental tobacco smoke has been shown to be a major determinant of asthma symptoms. Elevated levels of outdoor air pollutants, particularly ozone, are associated with increased symptoms and an increased risk of emergency department visits for asthma, as well.

In addition, environmental factors such as airborne allergens and environmental tobacco smoke (i.e., secondhand smoke) may play a major role in the onset of asthma. Other pollutants may also play a role, although the scientific data are inadequate to offer firm conclusions. Genetic

predisposition is the strongest known risk factor for developing asthma, but the rapidly rising number of cases of childhood asthma cannot be solely genetic because the genetic composition of the population changes slowly. Rather, some interaction between genetic predisposition and environmental exposures, and possibly other factors such as diet or lack of exercise are likely to be responsible for the increase. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma.

Reducing exposures of children with asthma to airborne allergens and pollutants will reduce the health burden of asthma and significantly improve their quality of life. It is not yet certain, but it is possible that reducing the exposure of infants and young children at risk of developing asthma may prevent its onset. Environmental control methods and asthma treatments are available now that can help children and their families control asthma and lead healthy, active lives. Yet not all children have access to these measures. Too many children miss school, limit their physical activity, and are seriously ill because of asthma.

The environmental action plan for asthma outlined in this report is designed to promote concerted Federal action to protect all children with asthma from environmental risks that worsen their disease and to expand federal research to reveal how reducing environmental risks might prevent children from getting asthma.



GUIDING PRINCIPLES

Federal agency actions can provide leadership and direction in reducing environmental risks to protect children from asthma. Recommendations for action put forward in this initiative are predicated on the principles that federal action must have:

- A focus on efforts to *eliminate the disproportionate impact of asthma in minority populations and those living in poverty.*
- An emphasis on *partnerships and community based programs.*
- A commitment to setting *measurable and consistent goals* for childhood asthma under the Healthy People 2010 program.
- *An investment in evaluation* to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

RECOMMENDATIONS FOR ACTION

RESEARCH

Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma.

- ☞ Strengthen and accelerate research into the environmental factors that may contribute to the onset of asthma in children.
- ☞ Expand and accelerate research to develop and evaluate environmental strategies that will improve the quality of life of people with asthma.

This year 2000
initiative is
about
protecting
children from
asthma...

PUBLIC HEALTH PROGRAMS

Implement public health programs that foster improved use of current scientific knowledge to reduce environmental exposures to prevent and reduce the severity of symptoms for those with asthma.

- ☞ Promote clinician and patient implementation of national guidelines for reducing environmental risks that worsen asthma.
- ☞ Expand support for state and local public health action.
- ☞ Reduce children's exposure to environmental tobacco smoke and other indoor triggers in their homes.
- ☞ Establish school based asthma programs in every community that help reduce or eliminate allergens and irritants and that promote student's self management of asthma and full participation in school activities.
- ☞ Continue to reduce outdoor air pollution.

SURVEILLANCE

Establish a coordinated, integrated, and systematic nationwide asthma surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

DISPROPORTIONATE IMPACT ON THE POOR AND MINORITIES

Eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

- ☞ Conduct research and surveillance activities to improve understanding of the problem.
- ☞ Implement activities to eliminate the disproportionate impact of asthma in minority populations and those living in poverty.



INTRODUCTION

The Growing Problem of Asthma in Children

Asthma is a chronic lung disease characterized by recurrent episodes of breathlessness, wheezing, coughing, and chest tightness; these episodes are also known as exacerbations or attacks. The severity of exacerbations can range from mild to life threatening. Both the frequency and severity of asthma symptoms can be reduced by the use of medications and by reducing exposure to the environmental triggers of asthma attacks.

For the past 15 years, an epidemic of asthma has occurred in the United States. By all indications, this epidemic is continuing. Although asthma has become a major public health problem affecting Americans of all ages, races and ethnic groups, children have been particularly severely affected.



National survey data -- the responses of randomly selected U.S. residents being asked whether they had symptoms of physician diagnosed asthma in the previous 12 months -- indicate that the number of children with asthma in the United States has more than doubled in the past 15 years. In 1980, 2.3 million American children had asthma. In 1995, the most recent year for which data are available, the number of affected children had risen to 5.5 million. Based on these trends, it is estimated that in 1998 more than 6 million children in the United States have asthma. Prevalence rates of asthma are highest in boys and are increasing in both boys and girls, and in all race and ethnic groups. The prevalence of asthma in children under age 18 is 7.3%. The most rapid increase has occurred in children under 5 years old, with rates increasing over 160% over the past 15 years.

The number of deaths attributed to asthma in children has also increased. In 1977, 84 deaths in children 18 and younger were recorded; the number of deaths has risen to 280 in 1995, a more than 3-fold increase. Although the death rate due to asthma has increased in all racial and ethnic groups, minority populations experience a disproportionately higher death rate from asthma. In 1995, the death rate from asthma in African-American children, 11.5 per million, was over four times the rate in white Americans, 2.6 per million. The higher death rates among African-American children are especially troubling.

The number of hospitalizations and emergency room visits for asthma have increased in all population groups. Asthma accounts for one-third of all pediatric emergency room visits and is the fourth most common cause for physician office visits. The variation in the impact of asthma across racial and ethnic groups is significant. African American children have an annual rate of hospitalization of 74 per 10,000, over 3 times that for whites, 21 per 10,000. In addition, African American children are approximately 4 times more likely than white children to seek care at an emergency room. In short, African-American children have a slightly higher risk of getting asthma, but have a much higher risk of hospitalization or death due to the disease.

At the present time, surveillance for asthma in children is limited to analyses of ongoing surveys and data systems on health events such as mortality, hospitalization, and outpatient visits. Other than for African Americans, such information is extremely limited for most ethnic groups.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data. Although national data do not provide the resolution necessary to identify particular geographic areas hardest hit by the asthma epidemic, surveys undertaken in a number of large cities in the United States indicate that the prevalence and severity of asthma are greatest in the large, urban inner cities.

There is no national system to collect data from states specifically on asthma, although several states are developing systems to collect such data.

These measures, particularly for death, hospitalization, and emergency room visits, give an incomplete picture of the true burden of asthma in the United States. For example, one follow-up study of children with asthma in inner city areas found a nearly 10 times higher likelihood of a child suffering symptoms of asthma on a given day than visiting an emergency room. Asthma is one of the leading causes of school absenteeism, accounting for over 10 million missed school days per year. Asthma also accounts for many nights of interrupted sleep, limitation of activity, and disruptions of family and care-giver routines. Asthma symptoms that are not severe enough to require a visit to an emergency room or to a physician can still be severe enough to prevent a child with asthma from living a fully active life.

Estimating the costs of asthma is an indirect way to measure its health burden. In 1990, the cost of asthma to the U.S. economy was estimated to be \$6.2 billion, with the majority of the expense attributed to direct medical expenses. A 1996 analysis found the cost of asthma to be \$14 billion, indicating a rapidly increasing financial burden. These estimates indicate that the direct medical costs of asthma for all ages account for between 1% and 3% of all health care expenditures in the United States.

What We Know About Childhood Asthma

Over the past 15 years, there have been major advances in the scientific understanding of asthma. Asthma is now known to be a disease of airway inflammation resulting from a complex interplay between environmental exposures and genetic and other factors. This has implications for the medical treatment and for the environmental management of asthma.

In contrast to the limited understanding of the relationship of environmental exposures to the onset of asthma, the environmental triggers of asthma attacks for children with asthma have become increasingly well characterized. House dust mites, cockroaches, mold and animal dander have been identified as the principal allergens that trigger asthma symptoms. Reducing exposure to these allergens has been shown not only to reduce asthma symptoms and the need for medication, but also to improve lung function. Environmental tobacco smoke (also called secondhand smoke) is an important irritant that can trigger an asthma episode and possibly

potentiate the effects of allergens. Upper respiratory viral infections are also recognized as important triggers for asthma episodes.

Children with asthma have long been recognized as particularly sensitive to outdoor air pollution. Many common air pollutants, such as ozone, sulfur dioxide, and particulate matter are respiratory irritants and can exacerbate asthma. Air pollution also might act synergistically with other environmental factors to worsen asthma. For example, some evidence suggests that exposure to ozone can enhance a person's responsiveness to inhaled allergens. Whether long term exposure to these pollutants can actually contribute to the development of asthma is not known, though scientists do not believe that outdoor air pollution is a major contributor to the current epidemic. To date, little research has examined the role of other air pollutants in the development or exacerbation of asthma, although this is an issue of increasing public concern.

Children with asthma have long been recognized as particularly sensitive to outdoor air pollution.

In addition to improved understanding of appropriate environmental management of asthma, the medical management of asthma has changed significantly. Inhaled anti-inflammatory medications have become the mainstay of medical management to prevent asthma episodes and lessen chronic symptoms of asthma. In addition, improvements in monitoring techniques now permit objective measures of lung function that are easy for patients and physicians to use in assessing asthma severity and monitoring changes in the disease. In a disease like asthma that varies considerably over time and where changes in lung function can occur before symptoms develop, these objective measures are essential tools for making management decisions.

As a result of these advances, the medical and environmental management of asthma is better defined and the knowledge exists to manage asthma better than ever before. One especially important finding is that patient education has been documented to be cost effective. Teaching patients and their families specific management skills improves asthma management, reduces the use of emergency services, and improves quality of life. This is particularly important for asthma management, since the environmental management of asthma requires knowledge of asthma triggers and specific actions that can be undertaken to reduce exposure to these triggers. The treatment goal for almost all individuals with asthma should be for that person to lead a life unrestricted because of asthma.

Reducing exposure to environmental allergens and pollutants will reduce the frequency and severity of attacks for children with asthma, reduce their need for medicine, and improve their lung function. Children are exposed to many environmental agents that could trigger asthma attacks. For example, 25% of children in America live in areas that regularly exceed EPA limits for ozone. Approximately 38% of children are exposed to environmental tobacco smoke in the home on a regular basis and exposure to environmental tobacco smoke is so widespread that approximately 88% of all children have some level of documented exposure. A high proportion of children living in the inner city are exposed to high levels of cockroach antigen.

Why Has Asthma Reached Epidemic Proportions in Children?

The causes of the increasing rate of asthma over the past 15 years and the particular role that environmental exposures play are not known, but there are some clues. Atopy, the genetically inherited susceptibility to become allergic, is the most important predictor of a child developing asthma. A substantial research effort is underway to identify the genes that are responsible for susceptibility to asthma. Because the genetic make-up of the population changes slowly, genetic susceptibility alone cannot be responsible for the epidemic of asthma that has occurred in the United States over the past 15 years. Further work is essential to clarify how genetic susceptibility and environmental exposures interact to cause asthma. Factors such as the intensity of environmental exposure and the age of the person being exposed are likely to be important.

In the broadest sense, many environmental exposures are suspected of contributing to the epidemic of asthma in children.

Exposure to allergens found indoors is a strong risk factor for developing asthma. Children are spending increasing amounts of time indoors, thus increasing their exposure to indoor allergens.

The environmental exposures most strongly suspected of causing asthma to develop include environmental tobacco smoke and allergens such as house dust mites, cockroaches, mold, and animal dander. Exposures that stimulate the immune system may also be significant, such as diet during the prenatal period and early infancy, the pattern of respiratory infections early in life, and even decreasing rates of exercise have all been suggested as risk factors for the development of asthma. In the broadest sense, many environmental exposures are suspected of contributing to the epidemic of asthma in children.

Scope of the Plan for Environmental Action to Protect Children With Asthma

This action plan is about protecting children from asthma and the consequences of asthma. To accomplish this goal, the environmental aspects of asthma must be considered in the context of other aspects of asthma prevention and management, such as early access to quality medical care and efforts to understand the disproportionate health impact of asthma among minority populations. Childhood asthma is a multi-factorial disease, and efforts to improve its management and to prevent it will require multi-dimensional, multi-disciplinary efforts that must occur simultaneously. This action plan focuses on improving the environment in which children with asthma live, learn, play and work so that they can live productive, active lives and so that future generations of children might be spared the disease altogether.

GOALS OF THE CHILDREN'S ENVIRONMENTAL HEALTH ASTHMA ACTION PLAN

BY THE YEAR 2005, THE NUMBER OF HOUSEHOLDS IN WHICH CHILDREN ARE
REGULARLY EXPOSED TO SECONDHAND SMOKE WILL BE REDUCED TO 15%
(FROM 29% IN 1994).

BY THE YEAR 2010, GUIDELINES FOR PREVENTING THE ONSET OF ASTHMA WILL
BE DEVELOPED.

BY THE YEAR 2010, THE INCREASING RATE OF ASTHMA PREVALENCE IN
CHILDREN WILL BE HALTED.

BY THE YEAR 2010, EVERY CHILD IN AMERICA WILL HAVE PROMPT, AFFORDABLE,
AND CONVENIENT ACCESS TO THE MOST EFFECTIVE ASTHMA MANAGEMENT
TECHNIQUES AVAILABLE.

BY THE YEAR 2010, ASTHMA HOSPITALIZATION RATES IN CHILDREN WILL HAVE
FALLEN TO NO MORE THAN 15 HOSPITALIZATIONS PER 10,000 PEOPLE. (HP 2010
DRAFT)

BY THE YEAR 2010, THE ASTHMA DEATH RATE IN CHILDREN WILL HAVE FALLEN
TO NO MORE THAN 2 PER MILLION PEOPLE. (HP 2010 DRAFT)

BY THE YEAR 2010, NO MORE THAN 10% OF PEOPLE WITH ASTHMA WILL
EXPERIENCE ACTIVITY LIMITATIONS. (HP 2010 DRAFT)

VISION FOR THE 21ST CENTURY

Every child in America will live,
learn, work, and play in
environments that do not cause or
worsen asthma.

Asthma will no longer inhibit
children from leading full and active
lives.

More cost-effective medical and
environmental asthma prevention
and management tools will enhance
the lives of children and their
families.

GUIDING PRINCIPLES

Federal agency actions can provide leadership and direction in reducing environmental risks to protect children from asthma. Recommendations for action put forward in this plan are predicated on the principles that federal action must have:

1. A focus on efforts to better understand and eliminate the disproportionate impact of asthma in minority populations and those living in poverty.

The health burden of asthma is not shared equally throughout the U.S. population. Although the rising prevalence of asthma has affected all populations, poor and minority children are much more likely than white, non-Hispanic children to visit an emergency room, to be hospitalized, or to die from asthma. The reasons for this inequity are not known, although environmental exposures and limited access to quality medical care may all play a role.

The focus on eliminating disparities across racial and ethnic groups has to be considered in all efforts to prevent asthma and its health impact; however, because of the importance of this issue the committee has included a specific recommendation in this action plan to examine, understand, and ultimately eliminate disparities.

2. An emphasis on partnerships and community based programs.

A successful effort to reduce childhood asthma will depend in part on the level of success achieved in enlisting all sectors of society in efforts to implement effective programs to prevent and manage the disease. Federal agencies have already forged effective partnerships with many health and professional organizations, corporations, and foundations to conduct training, educate health care providers and the public, and to implement a wide range of prevention activities at the national, state, and local levels.

Expanded partnerships both within government and between government and the private sector are needed. With increasing knowledge about the primary causes of asthma and triggers of asthma attacks, the challenge for the 21st century will be to learn to integrate successfully these findings into more effective environmental, medical and educational programs. Partnerships will be critical to implementing this broad vision of asthma control. In particular, community-based programs should integrate asthma control activities into existing systems such as schools, child care, youth programs, workplaces, primary health, correctional facilities, and job training programs.

The challenge for the 21st century will be to learn to integrate successfully these findings into more effective environmental, medical and educational programs.

3. A commitment to setting measurable and consistent goals for childhood asthma under the Healthy People 2010 program.

Health objectives are now being developed for the year 2010 and represent a significant revision of the goals set for the year 2000. These objectives will set the nation's health agenda for increasing years of healthy life and reducing disparities among the entire American population. Draft objectives currently encompass an expanded set of asthma-related objectives as well as a series of environmental objectives addressing known asthma triggers such as indoor allergens, secondhand smoke and outdoor air pollution.

The goals embodied in the final Healthy People 2010 document will serve as the tools to measure progress towards control of asthma. Although some of the goals are likely to measure aspects of asthma clinical management that will not be directly affected by this action plan, the primary objectives of morbidity reduction and reducing exposures to environmental hazards will be addressed.

4. Investment in evaluation of programs to identify those strategies that are most effective in reducing the burden of asthma so that they may be replicated.

Asthma intervention programs and related activities need to be fully evaluated to determine those techniques which are successful and should be replicated. Evaluation should be incorporated in the planning and should include:

- identification of desired health outcomes of the program;
- measurement of effectiveness of the intervention activities and processes used to implement them;
- identification of unforeseen obstacles;
- assessment of the cost-effectiveness of the program;
- a prediction of long term sustainability of the program.

RECOMMENDATIONS FOR ACTION

I. RESEARCH

Strengthen and accelerate focused research into the environmental factors that cause or worsen childhood asthma.

A. EXPAND RESEARCH INTO THE ENVIRONMENTAL FACTORS THAT CONTRIBUTE TO THE ONSET OF ASTHMA IN CHILDREN.

Though progress has been made in understanding what causes asthma, there is currently insufficient scientific information to establish specific guidelines and recommendations for public health practices to prevent the onset of asthma in children (i.e. primary prevention).

In order to establish primary prevention guidelines, the top priority for research is to determine the causes of asthma in children and particularly the role of the environment. To understand what causes asthma, research must identify the basic cellular and molecular mechanisms that cause airway inflammation and sensitization and, in particular, the interaction of environmental exposures and genetic susceptibility. In addition, clinical and epidemiologic studies are needed to examine the relationship between environmental exposures and the onset of asthma.



Because of promising preliminary work on the relationship of indoor allergens and asthma onset, as well as the much greater proportion of time that children spend indoors, greater emphasis on examining the relationship of indoor exposures to the development of asthma is warranted. Exposures to high levels of allergens in the indoor environment have been shown in some studies to be associated with the subsequent development of asthma. However, few studies have examined the influence of geographic location on the role of allergens. In studies evaluating the role of indoor allergens on exacerbations of asthma, different allergens, such as those associated with cockroaches, dust mites, and mold, have been implicated in different locations. This suggests that different allergens can exacerbate asthma, and that different allergens may be capable of inducing the new onset of asthma.

In one study, avoiding exposure to dust mite and food allergens early in life was found to reduce the risk of developing asthma in the first year of life. However, this effect was not statistically significant at 2 to 4 years of age. Whether such allergen avoidance strategies are feasible and effective in reducing the development of asthma is not known.

The complex interactions between outdoor air pollutants and allergens and the development of asthma have not been adequately evaluated. Some epidemiologic studies have suggested a relationship between exposure to volatile organic compounds and prevalence rates of childhood asthma. Because adult-onset asthma is known to be associated with occupational exposures to volatile organic compounds including formaldehyde, ethylene oxide, and isocyanates, further work to assess the possible etiologic role of specific pollutants in childhood asthma is appropriate.

Exposures to high levels of allergens in the indoor environment have been shown in some studies to be associated with the subsequent development of asthma.

KEY ACTIONS:

NIH, CDC, and EPA will conduct and fund studies to determine the causes of asthma. Such studies should include the following:

- ▶ examine the role of genetic susceptibility to specific environmental exposures in the development of asthma;
- ▶ assess the importance of early life events, such as *in utero* viral infections, viral infections during infancy, specific antigen exposures and exposures to maternal smoking on the development of asthma;
- ▶ examine the effects of pollutants and allergens on immune responses in animal models and in preclinical studies;
- ▶ Identify the clinical characteristics of asthma associated with different genetic, physiologic, immunologic and environmental factors;
- ▶ examine the effectiveness of combinations of immune modulation to reduce IgE responses to allergen and allergen avoidance as a means to reduce the risk of developing asthma;
- ▶ examine the epidemiology of asthma in different populations to identify risk factors for the onset of asthma.

ATSDR, in partnership with state and local health departments and community groups, will investigate childhood asthma in 5-7 communities where sources of emissions from hazardous waste facilities have already been identified. These investigations will characterize any associations between hazardous materials and the burden of asthma in children.

In addition to intramural and extramural grant programs, NIH, CDC, and EPA will fund medical centers to conduct comprehensive research on environmental aspects of asthma.

The National Academy of Sciences, with support of EPA, will complete its assessment of asthma associated with indoor pollutants. These findings will be used to guide research efforts on the causes of asthma.

B. EXPAND AND ACCELERATE RESEARCH TO DEVELOP AND EVALUATE ENVIRONMENTAL STRATEGIES THAT WILL IMPROVE THE QUALITY OF LIFE FOR CHILDREN WITH ASTHMA.

It is well established that inhaled allergens and irritants and outdoor pollutants provoke asthma symptoms. Research is needed to identify if other environmental exposures are significant. Further, the relative importance of various exposures is not well understood. Cost effective strategies for reducing exposures are not well developed.

Patient education strategies in certain populations have profound impacts on reducing the frequency and severity of exacerbations and improving the quality of life for children. But many of these programs are not responsive to the cultural, ethnic, and economic diversity of the American population. Innovative strategies are urgently needed for reaching a wide range of children and their families, for tailoring recommendations for reducing environmental exposures to their needs, and for providing support to follow the recommendations.

KEY ACTIONS:

NIH and EPA will conduct studies to examine the interrelationship between indoor allergen exposures, viral infections, ambient air pollutants, and exacerbations of asthma. This research will include identifying and evaluating cost effective methods to reduce allergen exposures, as well as methods to render the immune system less susceptible to environmental exposures.

NIH, CDC and EPA will conduct studies to improve and evaluate interventions designed to teach families and patients how to minimize exposure to environmental asthma triggers.

CDC and NIH will work with state and local health departments to develop and evaluate the cost-effectiveness of model public health intervention programs.

NIH and HUD will complete the first National Allergen Survey to provide estimates of allergen exposure for the U.S. population; this survey will provide much needed information about the apparent regional differences in allergen exposures.

NIH, with support from EPA for particulate air monitoring, will continue to fund the National Cooperative Inner-City Asthma Study (NCICAS), 1996-2000, which will determine the capacity of interventions to reduce asthma morbidity among inner city children.

EPA, NIH, and CDC will fund and conduct research in collaboration with the private sector to identify home construction, maintenance and occupancy practices that will reduce children's exposure to environmental agents that trigger asthma episodes.

As part of its program on energy efficient buildings, DOE will study the relative effectiveness of energy conservation strategies and technologies on reducing exposures to allergens.

2. PROGRAMS TO IMPROVE PUBLIC HEALTH

Implement public health programs that improve use of scientific knowledge to prevent and reduce the severity of asthma symptoms by reducing environmental exposures.

Despite uncertainty about the causes of the increase in asthma prevalence rates, much can and should be done to prevent severe illness and death from asthma and improve the quality of life of persons with asthma. Experts convened by the National Asthma Education and Prevention Program (NAEPP) coordinated by the National Institutes of Health (NIH) have reviewed the scientific literature and produced guidelines for managing asthma. These include specific recommendations for controlling environmental factors that contribute to asthma severity.

While there is consensus that NAEPP guidelines define the best diagnosis and management practices for asthma, dissemination of the guidelines must be expanded and adoption improved. Many clinicians do not include advice about environmental control in their patient education. Among families who do receive recommendations, adherence is generally low. Asthma is highly variable, and families need help establishing priorities for environmental control measures that will be suitable for their individual child's asthma and their family circumstances. Effective public health programs can provide this education and support.



For children without access to quality health care, appropriate instruction on the environmental triggers of asthma is impossible or severely limited. Emergency rooms or urgent care facilities may serve as the only source of primary care for such children. These settings should be recruited to provide the kind of education and links to chronic disease management services that are essential to reducing the severity and frequency of asthma attacks.

A. PROMOTE CLINICIAN AND PATIENT IMPLEMENTATION OF NATIONAL GUIDELINES FOR REDUCING ENVIRONMENTAL RISKS THAT WORSEN ASTHMA.

KEY ACTIONS:

NIH will use appropriate existing partnerships and innovative mechanisms to ensure wider use of the most up-to-date Guidelines for the Diagnosis and Management of Asthma published and periodically updated by the NAEPP/NIH. These guidelines offer specific advice on the environmental management of asthma.

Encourage and assist health care practitioners, including doctors, nurses, and personnel in emergency rooms and urgent care facilities, to provide high quality patient education on reducing exposure to pollutants that trigger asthma.

NIH, CDC, and EPA will establish partnerships with managed care organizations to integrate strong messages about management of asthma into existing health education programs, emphasizing the environmental management of asthma.

HCFA will investigate ways to improve the management of asthma, following the NAEPP guidelines, in care provided to Medicaid beneficiaries under 18 years old in the Managed Care Program.

ATSDR will expand to ten the number of pediatric environmental health specialty units across the country. These specialty units will develop environmental medicine materials, health education activities, and risk communication strategies on issues related to asthma and the environment well as other environmental health hazards to children; these educational activities will target both primary care providers and persons potentially exposed to harmful pollutants. In addition, these specialty units will provide consultation services to primary care as well as clinical diagnostic services to patients upon referral.

B. EXPAND SUPPORT FOR STATE AND LOCAL PUBLIC HEALTH ACTION.

Recent advances in the treatment of asthma and in identifying the environmental triggers of asthma attacks make it possible to control and prevent symptoms at a level unheard of just ten years ago. But these gains have not been realized by many of our children. Public health agencies have a critical role in helping to reduce environmental factors affecting asthma and the human and financial toll of the disease. These programs should include the following components:

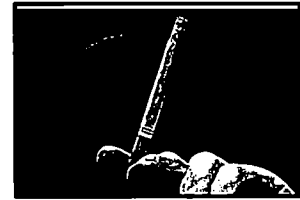
- (1) Education and training
- (2) Asthma surveillance
- (3) Coalitions for prevention

KEY ACTION:

CDC, in collaboration with NIH, will provide grants to 12 state health departments in FY 2000 to ensure that effective asthma education, prevention, and public health outreach activities in local communities are developed and sustained.

C. REDUCE CHILDREN'S EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE AND OTHER INDOOR TRIGGERS IN THEIR HOMES.

Secondhand tobacco smoke and indoor allergens are major contributors to the incidence of wheezing in young children and play a significant role in the number and severity of asthma attacks. Reducing smoking in homes with young children will improve the health status of the estimated 2 million children with asthma who are exposed to secondhand smoke. In addition, exposure to allergens such as cockroach, house dust mite, mold, and animal dander causes many attacks of asthma that are preventable.



KEY ACTIONS:

EPA, CDC, and NIH will conduct a national public information campaign to reduce children's exposure to environmental tobacco smoke.

EPA, HUD, and CDC will work within existing public health programs that visit homes to increase the avenues through which parents and children receive key messages about asthma prevention and management. For example, partnerships with the extensive lead paint home intervention network, the AmeriCorps volunteers program, VISTA volunteer program, U.S. Department of Agriculture Extension Service, and the "Welfare to Work" program could all be used to bring asthma prevention messages (e.g., smoking and controlling allergens through techniques such as Integrated Pest Management) directly into millions of homes in a cost-effective manner.

Exposure to secondhand smoke and allergens such as cockroach, house dust mite, mold, and animal dander causes many attacks of asthma that are preventable.

EPA and DHHS, under the coordination of the National Asthma Education and Prevention Program and in close cooperation with the private sector, will undertake a national asthma awareness campaign, targeted at parents and emphasizing avoidable asthma triggers such as environmental tobacco smoke, indoor allergens, and outdoor air pollution episodes as well as early diagnosis and effective management.

HUD will collaborate with health departments with authority over low-income housing, home health educators, and building operators to implement appropriate guidance on building operation and maintenance practices, including ventilation, moisture control and integrated pest management techniques.

EPA will develop innovative means to disseminate information to persons and families with asthma on the health impact of ambient air pollutants, particularly ozone and particulate matter.

D. ESTABLISH SCHOOL BASED ASTHMA PROGRAMS IN EVERY COMMUNITY.

The educational system is a critical component of effective efforts to reduce illness due to asthma in children. Programs need to be implemented at the local school level to assure a healthy physical environment at the school and to promote improved self-management of asthma through education.

KEY ACTIONS:

Develop and expand partnerships between EPA, NIH, CDC, the Department of Education, and non-governmental public and private organizations to implement programs to assure that the school environment is safe for children with asthma. Such efforts should include expanding programs such as the Indoor Air Quality Tools for Schools Program.

EPA and NIH will collaborate with private and voluntary organizations to expand their successful school-based asthma management programs.

E. CONTINUE TO REDUCE OUTDOOR AIR POLLUTION

The U.S. EPA set national ambient air quality standards (NAAQS) for six air pollutants in 1971, in part based on evidence of associations between air pollutants such as ozone, particulate matter, and sulfur dioxide and asthma. Since that time substantial new epidemiological



evidence has been published supporting the association between levels of ozone and particulate matter and increased hospitalization for respiratory causes, such as childhood asthma. In 1997, NAAQS for both ozone and particulate matter were strengthened to improve the protection afforded by these standards and to help reduce the risk of ambient exposures that aggravate asthma in children.

Federal, State, local, and private sector efforts to implement the original NAAQS resulted in substantial improvements in air quality, yet notable problems remain. Following the 1990 Clean Air Act Amendments, efforts were expanded to improve nationwide air quality and reduce related health effects. In conjunction with the strengthening of the ozone and particulate matter NAAQS, EPA has taken steps to integrate implementation measures for these pollutants and to improve the effectiveness of control programs. EPA has also taken steps to inform the public about air pollution that may affect children.

KEY ACTIONS:

EPA has proposed that twenty-two States revise their implementations programs in order to provide widespread regional reductions in ozone and related pollutants.

Revisions will be made to strengthen the Pollutant Standards Index (PSI) to help make the public more aware of days when air pollution levels could affect health and to alert individuals to steps which could be taken to mitigate health effects associated with exposure to air pollution.

The Environmental Monitoring for Public Access and Community Tracking (EMPACT) program will increase the availability of real time ozone data over the Internet and through local TV weather broadcasts.

3. SURVEILLANCE

Establish a coordinated nationwide asthma surveillance system for collecting and analyzing health outcome and risk factor data at the state, regional and local levels.

Current national surveillance permits tracking of asthma prevalence, asthma physician office visits, asthma emergency room visits, asthma hospitalizations and asthma mortality at a national level and in four geographic regions (i.e., Northeast, Midwest, South, and West) through surveys conducted by the National Center for Health Statistics. Surveillance information on asthma, with the exception of mortality data, are not available at the state or local level. This information is needed to identify high risk populations and environmental risk factors of relevance to particular communities and to design and implement interventions that will be most suitable for, and therefore most likely to succeed, in that community. State and local health agencies also need this information to evaluate the impact of local sources of air pollution on childhood asthma in specific communities. A significantly enhanced and expanded surveillance program will be essential to study issues related to race and gender differences in asthma morbidity and mortality among children, identify gaps in providing comprehensive care, and monitor trends in asthma morbidity and mortality at the community level.

KEY ACTIONS:

CDC, in collaboration with NIH, will work with state and local health departments to build a national asthma surveillance system. The first priority in this work will be to develop the state and local infrastructure that will be needed to collect, analyze, and interpret data at the local level. The surveillance system will consist of the following components:

- ▶ Annual surveys of states and major metropolitan areas using standard instruments and methods to define the prevalence of asthma, to characterize the severity of asthma and the quality of life for persons with asthma, and to assess the quality of asthma management
- ▶ Systematic, periodic examinations of existing mortality and morbidity data at state/city or county level to determine: deaths, hospitalizations, and emergency room visits for asthma.

- ▶ Expanded capability to integrate analysis of ambient air monitoring data with asthma morbidity and mortality data.
- ▶ Modify existing data collection systems as needed, to ensure the ability to measure progress toward the Healthy People 2010 goals, now under development.
- ▶ Follow-up studies of geographic and population groups with elevated asthma prevalence rates and elevated rates of morbidity.

4. DISPROPORTIONATE IMPACTS ON THE POOR AND MINORITIES

Identify the reasons for and eliminate the disproportionate burden of asthma among different racial and ethnic groups and those living in poverty.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities. Prevalence rates vary only by a few percentage points among different race and ethnic groups, yet emergency room use, hospitalization, and mortality rates vary 3- to 4-fold. Understanding the factors that contribute to the disproportionate impact of asthma on minority and lower income populations is the critical first step to reducing and eventually eliminating the disparities between rich and poor, minority and non-minority children. Such factors may include differing intensities of environmental exposures, such as exposure to cockroach antigen and access to and quality of care, among others.

Poor and minority children are disproportionately affected by asthma, which has reached epidemic proportions in many American inner cities.

A. CONDUCT RESEARCH AND SURVEILLANCE ACTIVITIES TO IMPROVE UNDERSTANDING OF THE PROBLEM

CDC, NIH and ATSDR will conduct research and collect surveillance data to better define factors contributing to asthma morbidity and asthma prevalence in minority and lower socioeconomic populations. Such data will:

- ▶ Separate roles of geography and environmental factors from ethnicity and socio-cultural variables in assessing their contribution to asthma prevalence.

- ▶ Examine the differences in asthma prevalence in Hispanics of different origins in order to provide some clues on risk factors contributing to higher rates of asthma.
- Examine the influence of poverty versus racial and ethnic group on use of emergency room services and hospitalization rates.

B. IMPLEMENT PROGRAMS TO ELIMINATE THE DISPROPORTIONATE IMPACT OF ASTHMA IN MINORITY POPULATIONS AND THOSE LIVING IN POVERTY.

KEY ACTIONS:

NIH, EPA, and CDC will implement public health interventions directed specifically to relieve the impact of asthma on vulnerable populations, particularly targeting the environmental exposures of vulnerable populations

- Ensure a substantial and appropriate focus of public health asthma initiatives on vulnerable populations.
- Make culturally and linguistically appropriate information on asthma widely available.
- Expand the availability of services, particularly emphasizing the need to modify the environment to reduce exposure to known asthma triggers, to the under-served in lower socioeconomic communities.

EPA will collaborate with state environmental protection programs to establish targeted compliance monitoring and enforcement efforts in communities with higher than average childhood asthma morbidity and mortality rates.

GLOSSARY

Acute: Brief (days to weeks).

Allergen: A chemical or biological substance (e.g. pollen, animal dander, or house dust mite proteins) that causes an allergic reaction, characterized by hypersensitivity.

Asthma: A chronic lung disease with chronic inflammation of the airways and recurring exacerbations of airflow limitation that result in wheezing, cough, chest tightness, and difficulty breathing.

Atopy: The genetically inherited susceptibility to become allergic.

Chronic: Remains for several years, possibly a lifetime.

Exacerbate: To aggravate or make asthma worse.

Genome: The inherited genetic composition of an organism.

Incidence: The number of individuals that develop an abnormality within a given time (usually a year) expressed as a percentage of the population.

Irritant: Risk factor or trigger that may cause increased symptoms and/or airflow limitation via a neural pathway.

Primary Prevention: Interventions designed to prevent the development of asthma.

Prevalence: The percentage of the population with a disease, disorder, or abnormality.

Secondary Prevention: Interventions designed to prevent the worsening of asthma among individuals who already have the disease.

Surveillance: The ongoing collection, analysis, interpretation, and dissemination of health outcome data used to plan and evaluate public health programs.

Trigger: An exposure that causes symptoms or exacerbations of asthma.

ADDITIONAL READING

Technical

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*. National Institutes of Health pub no 97-4051. Bethesda, MD, 1997.

~~Mannino DM~~ Homa DM, Pertowski CA, et al., *Surveillance for Asthma, United States, 1960-1995*. MMWR 1998;47(No. SS-1):1-27.

Institute of Medicine. *Indoor Allergens. Assessing and Controlling Adverse Health Effects*. National Academy Press. Washington, D.C. 1993

Families

American Lung Association. *Family Guide to Asthma and Allergies. How You and Your Children Can Breathe Easier*. Little, Brown and Company. New York. 1997

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Asthma, Physical Activity and School*. National Institutes of Health pub no 95-3651. Bethesda, MD, 1995.

National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Facts About Controlling Your Asthma*. National Institutes of Health pub no 97-2339. Bethesda, MD, 1997.

National Heart, Lung, and Blood Institute. Global Initiative for Asthma. *What You and Your Family Can Do About Asthma*. National Institutes of Health pub no 96-3659C. Bethesda, MD, 1996.

Indoor Air Pollution

EPA's *Indoor Air Quality Tools for Schools*. Available from:
Indoor Air Quality Information Clearinghouse: 1-800-438-4318
Indoor Air Quality Web Site: www.epa.gov/iaq/

TIPS FOR AVOIDING AND CONTROLLING ASTHMA TRIGGERS

Dust Mites

✓ Cover pillows and mattresses with plastic or other allergen-impermeable material.

✓ Reduce humidity below 50% and, if dehumidifiers are used, keep them clean according to manufacturer's instructions.

✓ Soft, fabric-covered surfaces (such as carpeting and upholstered furniture) may harbor dust mites; hard surfaces are easier to clean.

✓ When vacuuming, use a high efficiency particulate air (HEPA) filter or central vacuum system. Because vacuuming causes increased levels of mite allergen in the air, have the allergic individual wear a mask or stay away while the building is being vacuumed.

✓ Wash bedding in hot water.

Cockroaches and Rodents

Use Integrated Pest Management (IPM):

✓ Thoroughly clean; remove all cockroach bodies and residues.

✓ Keep all surfaces clean and dry.

✓ Repair any water leaks.

✓ Keep all food away from pests, store in refrigerator or in tightly-sealed containers.

✓ Reduce/eliminate exposure to pesticides.

Pet Dander

At home:

✓ Choose pets based on the sensitivity of the allergic person.

✓ Restrict activity of/isolate pet from sensitive persons (may not be effective with cat allergen which may stay suspended in air for long periods).

Day care/schools:

✓ Keep animals in cages as much as possible; do not let them roam.

✓ Clean cages regularly.

✓ Locate animals away from ventilation system vents to avoid circulating allergens throughout the room or building.

✓ Don't use warm-blooded animals, if possible.

Mold

✓ Reduce humidity below 50% and prevent condensation.

✓ Control moisture sources.

✓ Repair any water leaks.

✓ Replace water-damaged materials.

✓ Don't leave water standing in your home.

✓ If you use a humidifier, choose and use it wisely according to manufacturer's instructions.

Outdoor Air Pollution

During air pollution alerts:

✓ Stay indoors as much as possible.

✓ Avoid strenuous physical activity.

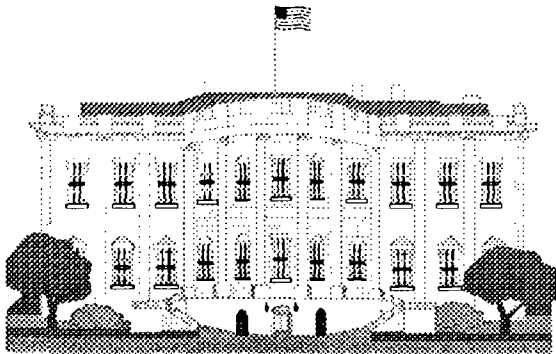
Adapted from: National Heart, Lung, and Blood Institute, National Asthma Education and Prevention Program. *Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma*.



Protecting the Future: ***Putting Children First***

Executive Order 13045

In April 1997 President Clinton signed an Executive Order that requires federal agencies:



✓to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children, and

✓ensure that its policies, programs, activities and standards address disproportionate risk to children

Implementing the Executive Order

Executive Order



Selected Accomplishments To Date

- ▲ Established 8 Centers of Excellence in Children's Environmental Health Research (EPA and NIEHS)
- ▲ Sponsored Conference on "Preventable Causes of Cancer in Children" and Research Agenda Published
- ▲ Fourth *National Health and Nutrition Examination Survey* to Measure Environmental Contaminants in Children's Body Fluids
- ▲ Established specific programs aimed at providing information and assistance to communities and parents (e.g., EPA's Child Health Champion Campaign and HUD's Healthy Homes initiative)
- ▲ Significant Progress in Protecting Children from Environmental Threats through Implementation of Environmental Standards
- ▲ An interagency web site highlighting children's environmental health and safety has been developed.

E.O. 13045 Established an Interagency Task Force

Executive Order



The Task Force on Environmental Health Risks and Safety Risks to Children, Co-chaired by the DHHS Secretary and the EPA Administrator, includes 10 federal agencies and 6 White House offices

In April 1998, the Task Force identified 4 priority areas for immediate attention

- ✓ **Asthma** - close to 6 million American children have asthma
- ✓ **Unintentional Injuries** - leading cause of death in children in the United States - leading causes are traumatic brain injury (TBI) and fires
- ✓ **Childhood Cancer** - Cancer among children is the most common cause of disease-related mortality for children 1-14 years old.
- ✓ **Developmental Disorders** - Birth defects are the leading cause of infant mortality



**U.S. Department of
Health & Human Services**

**U.S. Environmental
Protection Agency**

**U.S. Consumer Product
Safety Commission**

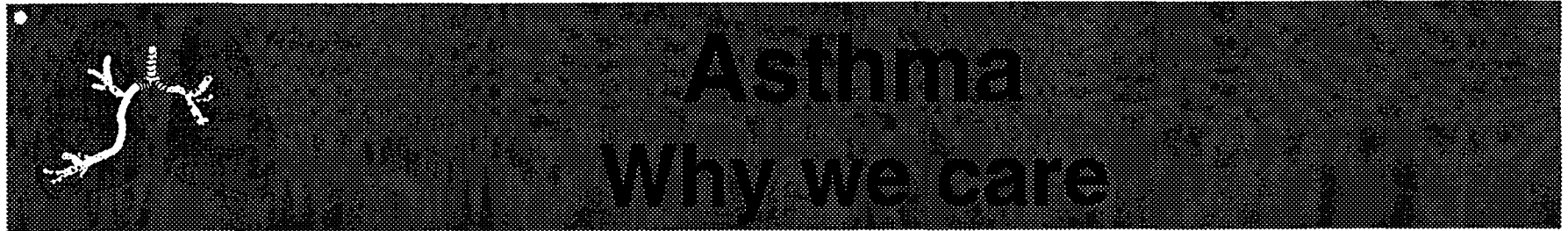
**U.S. Department
of Transportation**

**U.S. Department
of Housing & Urban
Development**

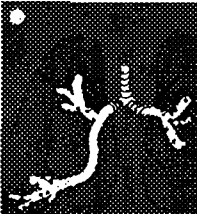
**U.S. Department
of Justice**

Other agencies represented on the Task Force are: DoED, DoL, State, DOE, Ag, OMB, CEQ, NEC, DPC, OSTP and CEA





- ▲ The number of children with asthma has doubled in the past 15 years
- ▲ 5,500,000 children are affected
- ▲ 150,000 hospitalizations due to asthma each year
- ▲ A 3-fold increase in the number of deaths in children from asthma from 84 in 1977 to 280 in 1995
- ▲ Over 10 million missed school days per year.
- ▲ Cost of asthma to the U.S. economy was estimated to be \$6.2 billion in 1990 and is projected to be more than \$14 billion in 1996 .



Asthma Proposal

To address environmental aspects of asthma within the broader context of prevention and control the workgroup proposes to...

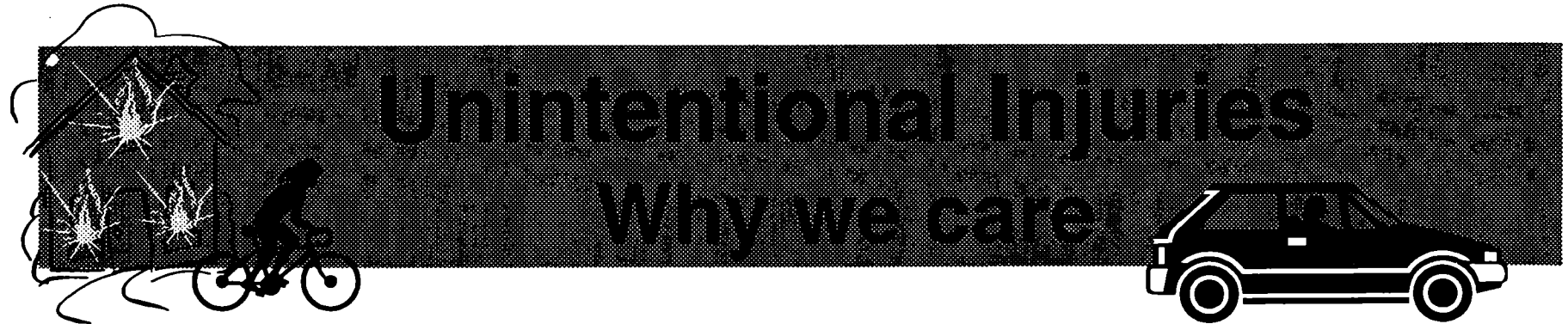
- ▲ Increase research on environmental factors that may cause or worsen asthma ,**
- ▲ implement public health programs to reduce environmental exposures to asthma triggers,**
- ▲ establish a nationwide system for collecting and analyzing asthma data**
- ▲ Reduce the disproportionate health burden of asthma in poor and minority children**



Goals

By the year 2010...

- ▲ the increasing rate of asthma prevalence in children will be halted
- ▲ asthma hospitalization rates in children will be reduced to no more than 15 hospitalizations per 10,000 people - *down from 18.1*
- ▲ the asthma death rate in children will be reduced to no more than 2 per million people - *down from 3.7*
- ▲ no more than 10% of people with asthma will experience activity limitations - *down from 22%*



- ▲ **About 8,000 children and teens are killed in motor vehicle crashes and 1 million are injured each year. (62% were totally unrestrained)**
- ▲ **More than 250 children under 15 die and another 350,000 are injured in bicycle crashes annually, largely from brain injuries.**
- ▲ **about 1000 die in residential fires each year and another 5000 are injured**



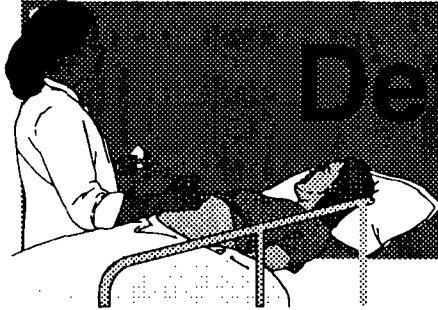
- ▲ **reduce motor vehicle-related brain injuries through education & information, and assistance to states on legislation and enforcement relating to children's car restraints,**
- ▲ **reduce bicycle-related brain injury by increased emphasis on the importance of and distribution of helmets, and**
- ▲ **reduce residential fire-related deaths by increasing public awareness, providing smoke alarms at reduced cost and insure proper installation**

Research and surveillance are also incorporated into the proposal for each area



By the year 2004...

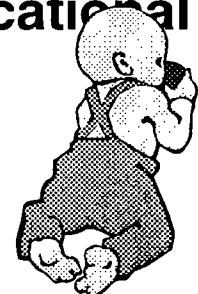
- ▲ **89% child safety seat use for children <5 years old** - *up from 63% currently*
- ▲ **50% car booster seat use** - *up from 6% in 1995*
- ▲ **89% seat belt use for youth 5-15 years old** - *up from 65% in 1996*
- ▲ **50% bicycle helmet use** - *up from 25% in 1994*
- ▲ **10% reduction in bicycle & pedestrian injuries & fatalities**
- ▲ **reduce residential fire death rate for children 0-5 to 1 per 100,000** - *down from current rate of 2.6*
- ▲ **working smoke alarms on every floor in 74% of households** - *up from 52% in 1995*

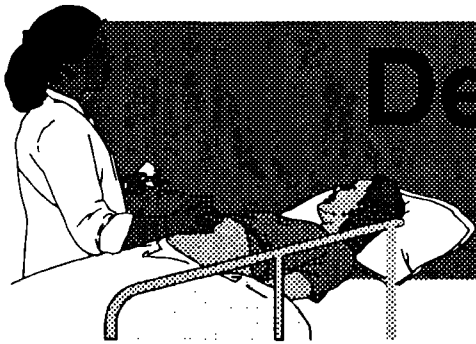


Developmental Disorders

Why we care

- ▲ More than 150,000 babies (4% of all live births) are born with significant birth defects each year
- ▲ Birth defects are the leading cause of infant mortality
- ▲ Estimated lifetime costs to care for children with the most common birth defects are more than \$8 billion
- ▲ About 17% of American school children have a developmental disability
- ▲ Services to children with developmental disorders cost states \$128M a year in health services & \$29B a year for educational programs
- ▲ Nearly 1 million children have elevated lead blood levels





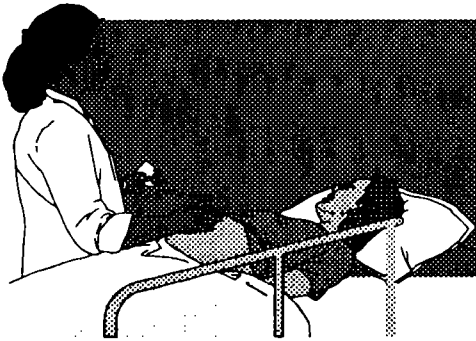
Developmental Disorders Proposal

▲ Research to elucidate and prevent developmental disorders

- basic and etiologic studies on environmental factors and developmental disorders
- develop a National Information Database on Children's Health Risks

▲ Reduce the incidence of lead poisoning through enforcement of lead-based paint regulations

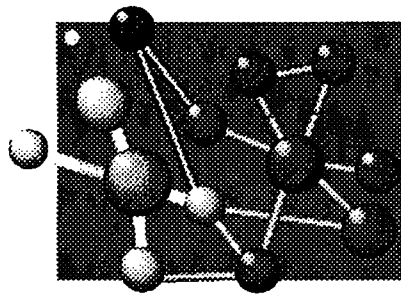




Goals

By the year 2010...

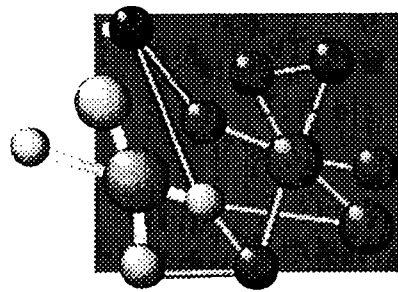
- ▲ reduce the occurrence of neural tube defects to 3 per 10,000 live births- *down from 5 per 10,000***
- ▲ reduce the infant mortality rate to no more than 7 per 1,000 live births- - *down from 7.2 in 1000***
- ▲ reduce the prevalence of developmental disabilities to no more than 10% - *down from 17%***
- ▲ reduce the prevalence of blood lead levels (10 ug/dL or greater) among children 1-5 years to virtually zero- *down from 4.4%***



Childhood Cancer

Why we care

- ▲ 8000 new cases diagnosed annually
- ▲ About 1600 children under 15 die each year
- ▲ Childhood cancer incidence increased 6% from 1974 to 1995
- ▲ The causes of most cases of childhood cancers are not known



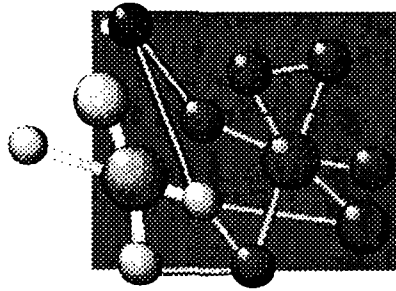
Childhood Cancer Proposal

▲ National Network for Research on Cancer in Children, including:

- National Childhood Cancer Registry
- Childhood Cancer Tissue Bank

▲ Model Cancer Inquiry Response System

▲ Workshops to 1) identify research needs relating to causes of childhood cancer, and 2) develop predictive toxicological models for children's cancer



Goals

By the year 2010...

- ▲ Identify environmental and other causes of childhood cancer
- ▲ Develop effective means of communicating with the public about associations between environmental factors and childhood cancers

Resources



		FY1999	FY2000
Asthma		\$95.5M	\$38.3M ¹
Unintentional Injuries		\$12.4M	\$28M
Developmental Disorders		\$191M ²	\$25M
Childhood Cancer		\$85M ³	\$2.5M

x 17-55

¹Does not include an additional \$17M for high priority asthma needs identified by EPA in it's OMB submission. For HHS represents an estimate of environmental aspects of asthma.

²Includes all research on developmental disorders

³Includes NCI research on childhood cancer



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
 Office of the Assistant Secretary for Health
 Office of Disease Prevention and Health Promotion
 200 Independence Avenue, Room 738G
 Washington, DC 20201

FACSIMILE TRANSMITTAL SHEET

TO:	FROM:
See List Below	Ron Chambers
ORGANIZATION:	DATE:
	October 1, 1998
FAX NUMBER:	TOTAL NO. OF PAGES INCLUDING COVER:
See List Below	3
PHONE NUMBER:	
See List Below	
RE:	
Senior Staff Planning Committee Meeting	

URGENT

FOR REVIEW PLEASE COMMENT

PLEASE REPLY

PLEASE RECYCLE

<u>SSPC co-chairs</u>	<u>Telephone #</u>	<u>Fax #</u>
Richard Jackson	770-488-7000	770-488-7015
Ramona Trovato	202-260-7778	202-260-4103
<u>SSPC members</u>		
Bill Modzeleski	202-260-3954	202-260-7767
Fred Siskin	202-219-6197	202-219-9216
Lois Schiffer	202-514-1442	202-514-4231
Heather Stockwell	301-903-3721	301-903-4776
Karen Hinton	202-708-0685	202-708-3106
Brian E. Burke	202-720-7173	202-720-4732
Robert M. Clarke	202-366-2916	202-366-7618
Claudia Abendroth	202-395-4708	202-395-5836
Brad Campbell	202-456-6224	202-456-6546
Pamela Gilbert	301-504-0550	301-504-0121
Jean Lambrew	202-456-5377	202-456-7431
Nichol Rabner	202-456-6266	202-456-2878
Maria Hanratty	202-395-6982	202-395-6853
Judith Aucrbach	202-456-6139	202-456-6027
Phil Ellis	202-622-2342	202-622-2563
Bill Dinkelacker	202-622-1285	202-622-1294
<u>PISC co-chairs</u>		
Jerry Clifford	214-665-2100	214-665-6648

len - I
 think this
 is the
 environmental
 health
 committee
 that you
 attended before...

Barry Johnson	404-639-0700	404-639-0744
<u>RDNSC co-chairs</u>		
Bill Farland	202-564-3319	202-565-0090
Ken Olden	919-541-3201	919-541-2260
<u>Asthma co-chairs</u>		
Stephen Redd	202-205-8829	770-488-3507
Bob Axelrad	202-564-9315	202-565-2071
<u>Unintentional Injuries co-chairs</u>		
Pamela Gilbert	301-504-0550	301-504-0121
Ricardo Martinez	202-366-1836	202-366-2106
(Joan Harris)	202-366-2105	202-366-2106
Mark Rosenberg	770-488-4696	770-488-1670
<u>Cancer co-chairs</u>		
Susan Sieber	301-496-5947	301-496-2471
Steve Galson	202-260-7778	202-260-4103
<u>Developmental Disorders co-chairs</u>		
Carole Kimmel	202-564-3307	202-565-0078
Duane Alexander	301-496-3454	301-402-1104
Sue Swenson	202-690-6590	202-401-9507

Message:

There is a tentatively scheduled Senior Staff Planning Committee Meeting on Nov. 20, from 10:00 - 12:00pm. The meeting will be held in room 742-G of the Humphry Building. Prior to the meeting an agenda and briefing materials will be sent to you, but if you have any questions or comments please contact me.

For any questions regarding this fax, please contact me by e-mail at rchambers@osophs.dhhs.gov or by phone (202) 205-5566..

Ron Chambers

CONTROLLING ASTHMA THROUGH COMMUNITY LEVEL INTERVENTIONS

SUMMARY

This proposal would establish an inter-departmental asthma initiative to educate patients and providers about new treatment guidelines for asthma, expand support for State and local public health action, conduct a national asthma awareness campaign, reduce asthma triggers in homes, and establish school based asthma programs in every community in order to alleviate the morbidity and mortality associated with this illness. (Cost: \$75 million)

BACKGROUND

- **Asthma is a serious public health problem.** Over the past 15 years, the number of children afflicted with asthma has doubled to total about 6 million. The most rapid increase in prevalence over this time period has occurred in children under the age of 5, with rates increasing over 160 percent. The steep climb in rates of morbidity and mortality classify asthma as an illness with significant public health implications. The number of deaths in children under the age of 18 attributed to asthma has tripled over the past 18 years, with a total of 280 deaths in 1995. This disease is also one of the leading causes of school absenteeism, accounting for over 10 million missed school days.
- **Minority children experience disproportionate rates of asthma related deaths.** Although African American children under the age of 18 have only a slightly higher risk of actually having asthma than non-Hispanic white children, they experience a disproportionately high rate of death from asthma attacks. In 1995, the rate of death from asthma in African American children was 11.5 per million, over 4 times the rate in white children.
- **Recent scientific breakthroughs allow asthma patients to live fully active lives.** The scientific community has generated information that enables most people with asthma to live fully active lives. The Guidelines on Diagnosis and Management of Asthma, developed by the National Heart, Lung, and Blood Institute, provide information to health care providers and patients with asthma to help control the disease. Implementation of the guidelines demonstrates that appropriate medical care, along with measures to control allergens and other triggers in the indoor environment, can have a tremendous impact in reducing the frequency and severity of attacks.
- **Many asthma sufferers are unaware that there is help for them.** Many asthma patients remain chronically impaired because their physicians and others involved in the management of their asthma are not sufficiently familiar with the new guidelines for treating asthma. Still others lack support systems that enable them to effectively manage their own disease, access sufficient medications or equipment, or receive quality medical care.

POLICY DESCRIPTION

This proposal would implement public health programs that foster access to medical care and accelerate the use of current scientific knowledge to reduce the severity of this growing public health problem.

- **Identify the causes of asthma and develop primary care interventions.** It is still unclear which early life events affect the onset of the disease. Funds will be spent to research the effect of exposures in utero or in early infancy to allergens, tobacco smoke, maternal diet, diet of the child, level of exercise, or respiratory infections. In addition, new surveillance systems, as well as studies in large samples of people, are needed to identify populations with significantly high or low prevalence that could shed light on factors that influence the development of asthma.
- **Address the disproportionate burden of asthma in minority and low income populations.** Substantial efforts are needed to ensure that minority, underserved populations have access to quality care. Research will be conducted to better understand the causes of the disproportionate impact of asthma and to distinguish the role in asthma prevalence of geography and environmental factors from those of ethnicity, socioeconomic status, and genetics.
- **Educating patients and providers about new treatment guidelines.** While the health care community has released treatment guidelines detailing the best way to diagnose and treat asthma, medical practice lags behind the NHBLI recommendations. This proposal would develop outreach mechanisms to ensure that health practitioners utilize the most recent treatment guidelines for asthma. As a prerequisite to participation in the Medicaid program, managed care providers would be required to use these treatment guidelines for diagnosing and treating asthma. HHS would develop partnerships with managed care organizations to integrate asthma prevention programs into existing health education programs. It would also encourage health care practitioners to provide patient education on reducing pollutants that may cause or trigger asthma.
- **Expanding support for State and local public health action.** Public health agencies are in a unique position to develop a national strategy to reduce the medical and financial toll of asthma. State health departments would receive grants to ensure that effective asthma education, prevention, and public health outreach activities in local communities are developed, expanded, and sustained. Health departments will also identify and address economic and institutional barriers to primary health care services.
- **Conducting a national asthma awareness campaign.** Parents should be educated about the importance of early diagnosis and treatment of asthma and basic secondary prevention actions. This proposal would fund a national asthma awareness campaign, targeted to parents and emphasizing avoidable asthma triggers such as environmental tobacco smoke, indoor allergens, and outdoor pollution episodes as well as early diagnosis and effective management.

- **Reducing asthma triggers in homes.** External tobacco smoke and other indoor allergens exacerbate the incidence of asthma in children and play a significant role in the severity of asthma attacks. Existing home intervention networks and programs will be used to dramatically expand the mechanisms through which parents and children receive key messages about asthma prevention and management. Health departments with authority over low income housing, home health educators, and building operators will work together to implement appropriate guidance on building operation and maintenance practices, including ventilation, moisture control and pest management techniques.
- **Establishing school based asthma programs.** The educational system is a critical component of effective efforts to reduce asthma in children. Programs need to be developed involving asthma education, management, and awareness at the local school level to help monitor and control the physical environment, identify students with asthma, train school staff, and establish action plans for handling asthma episodes. This proposal would develop partnerships between EPA, HHS, and the Department of Education to implement these programs, implement programs to reduce potential asthma triggers in schools, and establish guidelines for storage and administration of asthma medications.

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EMBARGOED: 4 PM ET
April 23, 1998

4/23

Jan -
I wanted
you to know
what went out
on this
report as
an FYI -
Marybeth

Contact: CDC Press Office
(404) 639-3286

ASTHMA RATES IN U.S. INCREASE

More Americans than ever before say they are suffering from asthma, according to a report released today by the Centers for Disease Control and Prevention. In 1993 and 1994, an average of 13.7 million persons reported that they experienced asthma-related conditions. Based on trends for the past 15 years, CDC estimates that today more than 15 million Americans suffer from asthma. The increase in asthma cases and deaths affects all ages, spans across all racial groups and occurs throughout the U.S. However, higher rates of hospitalization and emergency room visits were reported in the northeast; and blacks reported higher rates of emergency visits, hospitalization and deaths.

In a special CDC report entitled, "Surveillance for Asthma -- United States, 1960-1995", CDC studied asthma from the perspective of how often people reported they had asthma; visited either their doctor's office or the emergency room; or were admitted to the hospital for treatment. Finally, researchers examined the number of asthma deaths that occurred throughout the U.S.

Asthma is a chronic lung disease characterized by temporary obstruction of airflow that leads to breathing difficulty, coughing, inflammation of the airways, and an increased sensitivity to a variety of triggers that can cause breathing difficulty.

CDC researchers also found that the overall picture of asthma is changing, and today's report recommended a comprehensive national monitoring system to identify these emerging trends on a state-by-state basis, especially to understand why some areas have lower rates of emergency room visits and hospitalization.

"Asthma is a complicated illness that adults and children live with daily. To prevent asthma, we need a

-More-

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better understanding to unravel the mysteries of why some people develop it and others do not," said Claire V. Broome, M.D., Acting Director of CDC. "Promoting healthy home environments and sharing proven prevention strategies with health care providers to define the problems and causes is a key step towards prevention of this serious illness."

Other key findings in this report included:

Self-Reported Asthma Cases

- Rates increased 75% between 1980 and 1994. This increase was evident across all races; both sexes; and all age groups. Self-reported rates were 50.8 per 1,000 among whites and, and 57.8 per 1,000 among blacks.

Office Visits

- The number of doctor's office visits to treat asthma more than doubled between 1975 and 1995. These increases were evident in all groups of races, both sexes, and all age groups.

Emergency Room Visits

- In 1995 there were more than 1.8 million emergency room visits made for asthma. The rate was 48.8 per 10,000 among whites and 228.9 per 10,000 among blacks.

Hospitalization

- Between 1979 and 1994, hospitalization rates were highest for those from birth to 4 years old and lowest among persons 15-34. Among whites, hospitalization rates were 10.9 per 10,000 and among blacks the rate was 35.5 per 10,000 visits.

Death Attributed to Asthma

- Asthma-related deaths vary substantially by age group with the highest rates appearing in the elderly. Deaths due to asthma as the underlying cause were 15.1 per million among whites, and 38.5 per million among blacks.

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CDC's role in asthma prevention programs is to ensure that proven, comprehensive asthma interventions and surveillance programs are implemented by the states and their partners. CDC shares this information with state health officials so that they can adapt what has worked in other regions of the country to their communities. Through CDC's educational efforts, public health officials will have a greater understanding of the environmental interventions and medical management tools such as patient education, demonstrating behavior changes to avoid asthma triggers, using drug therapies, and frequent medical follow-up to treat and identify asthma patients.

###