Asthma explained by common allergy to milk and dairy products

The link between asthma and cows' milk is familiar to many young asthma sufferers and their parents. I first became aware of the connection through my cousin's experiences with his four-year-old son. Since infancy, my cousin's son has experienced severe asthma attacks and has been hospitalized twice for asthma-related pneumonia. When his asthma attacks become more frequent or more severe, my cousin and his wife respond by temporarily eliminating milk and milk products from his diet, and it usually works. I always assumed that milk worsened his asthma by stimulating mucus production in his lungs. However, studies suggest that, either along with or instead of creating excess mucus, milk may worsen asthma due to an undiagnosed milk allergy.

"In all respiratory conditions, mucous-forming dairy foods, such as milk and cheese, can exacerbate clogging of the lungs and should be avoided," writes Professor Gary Null in his Complete Encyclopedia of Natural Healing. Very simply, when more mucus accumulates in the lungs than can be expelled, asthma attacks develop. This belief has long been held in practiced medicine, and many medical doctors still stand behind this theory.

At the same time, many other doctors and researchers are now beginning to feel that undiagnosed milk allergies may be the underlying problem behind the link between milk and asthma. As Dr. Robert M. Giller writes in Natural Prescriptions, eliminating dairy products from the diets of many adult and child asthma patients helps "not because dairy products stimulate mucus production but because they're very common causes of allergy, upper-respiratory allergies and asthma (which may be an allergy in itself)."

"Milk is one of the two or three most common food allergens in the American diet," says allergy specialist Dr. James Braly in Bill Gottlieb's book Alternative Cures. In fact, Dr. Frank Oski, the chief of pediatrics at the John Hopkins School of Medicine, believes that 50 percent of all schoolchildren may be allergic to milk, though many of them remain undiagnosed. Some researchers believe that the figure may be even higher, up to 60 percent of children, according to Dr. Charles R. Attwoods's book, A Vegetarian Doctor Speaks Out. When most people think of milk allergies, they think of anaphylactic shock -- a severe, life-threatening allergic reaction that can only be relieved with a shot of epinephrine. However, allergies sometimes manifest in very different ways, and these may change throughout a person's life.

In Get Healthy Now, Professor Null explains a milk allergy's changing symptoms: "Even if the symptoms are not the same, the underlying allergy may be. A child who has suffered milk-associated asthma, for instance, may have severe acne as a teenager. The milk allergy is still there, but its symptoms have moved to a different organ system, often misleading the patient and physician into thinking that the original allergy has been outgrown." According to Alternative Medicine, up to half of all infants may be sensitive to cows' milk. As a result, symptoms of an underlying milk allergy may start as early as
infancy, only manifested as eczema, a symptom that may remain later on in childhood and adulthood. Furthermore, in addition to asthma and eczema, an underlying milk allergy may manifest as bronchitis, sinusitis, autoimmune disorders, frequent colds and ear infections and even behavioral problems.

**Antibiotics in milk**

Like any dairy allergy, the milk protein is probably the cause of allergy-related asthma. However, according to Dr. Oski, some children and adults may not be allergic to the milk itself, but rather the small amount of antibiotics passed into the milk from dairy cows. Dr. Oski explains this phenomenon: "Antibiotics, most commonly penicillin, are given to cows for the treatment of mastitis, an inflammation of the udders. Cows are not supposed to be milked for 48 hours after receiving penicillin. Often this precaution is not followed and then penicillin appears in the milk in small quantities." If you or your child is part of the estimated one percent of the United States population who develop symptoms of penicillin allergy after drinking antibiotic-contaminated milk, you may be able to stop your allergy by drinking milk from cows that are not treated with antibiotics. To be on the safe side however, you may want to entirely eliminate cows' milk from your or your asthmatic child's diet.

Whether milk causes excess mucus production, is an undiagnosed allergy or a combination or both -- research suggests that milk definitely worsens asthma. Accordingly, a diet that is free of both milk and meat, another common allergen, can greatly lessen asthma symptoms. According to a study of 25 patients reported in Jean Carper's book, Food: Your Miracle Medicine, after following a milk- and meat-free diet for only four months, 71 percent of the patients experienced an improvement in their asthma symptoms. After a year, asthma improved in 92 percent of the patients. On a larger scale, Dr. Joseph Pizzorno, President Emeritus of Bastyr University, found that 25 percent of respiratory patients experienced long-term improvement after following a vegan diet, a diet that contains no animal products -- dairy, eggs and meat -- whatsoever.

Plenty of calcium from other food sources

While considering a milk-free diet for themselves or their children, many people worry that doing so will result in a calcium deficiency. In a Washington press conference, Suzanne Havala, registered dietician and co-author of the American Dietetic Association's 1992 edition of its position paper on vegetarian diets, said that after weaning, humans do not need to drink milk: "Vegetarians and their children get all the calcium they need from leafy vegetables, broccoli, tahini and tofu made with calcium sulfate." So, according to research, if you have asthma, you can happily adjust to life without cows' milk without really missing anything, except severe asthma attacks.

The experts speak on milk and asthma:

A prime consideration for those with asthma should be the identification and elimination of allergens in foods and in the environment. Although any food is suspect, the ones most likely to trigger asthma are dairy products, eggs, chocolate, wheat, corn, citrus fruits, and fish. ... In all respiratory conditions, mucous-forming dairy foods, such as milk and cheese, can exacerbate clogging of the lungs and should be avoided.

*Complete Encyclopedia Of Natural Healing by Gary Null PhD, page 316*
I treated a patient who was fond of yogurt and, for health reasons, prepared it from skim-milk powder. This produces yogurt with a much higher lactose content than yogurt from full-fat milk (see table 5-1). When I persuaded her to use somewhat less yogurt and prepare it only from whole milk without additional skim-milk powder, her asthma disappeared for good. The asthma-causing skim-milk yogurt provided approximately 50 g of lactose per day, while she was asthma-free on whole-milk yogurt with about 5 g of lactose daily.

The Natural Way to Heal by Walter Last, page 228

When I was in medical school, I read a book by a physician who had had good results in treating asthma in children by eliminating all milk and dairy products. When I discussed the book with my professors, they said it was nonsense. I guess there are still people around who discredit the idea, but I've found that eliminating milk and cheese from the diet can be helpful for both asthmatic adults and children. This is not because dairy products stimulate mucus production but because they're very common causes of allergy, upper-respiratory allergies, and asthma.

Natural Prescriptions by Dr Robert M Giller, page 25

Type As, as you will remember, naturally produce copious amounts of mucus, and when they eat foods that are mucus producing (such as dairy), they suffer from too much mucus, which can exacerbate respiratory problems. In this case, when Type As are careful to avoid mucus-producing foods, and when the causes of the stress are addressed positively, their asthmatic condition always improves or is eliminated.

Eat Right for Your Type by Dr Peter J D'Adamo, page 253

An undiagnosed milk allergy may manifest in different ways throughout a person's lifetime

Ah, milk. It's right up there with Mom and apple pie as a national icon, a nutritional necessity (or so we're told) for strong bones and sparkling teeth. Well, many alternative practitioners say that all of those good things that you hear about milk are white lies. "Milk is not a perfect food, as is frequently advertised," says Jacqueline Krohn, M.D., a physician in New Mexico. Milk, she says, can cause allergic symptoms of all kinds, such as diarrhea, asthma, ear infections, rashes, and hives. "Milk is a misunderstood and vastly overrated food," agrees James Braly, M.D., an allergy specialist in Boca Raton, Florida. "Ironically, while milk products are the most commonly consumed foods, milk is one of the two or three most common food allergens in the American diet," he says.

Alternative Cures by Bill Gottlieb, page 428

Mead interviewed Frank A. Oski, M.D., chief of pediatrics at Johns Hopkins School of Medicine, who stated: At least 50 percent of all children in the United States are allergic to cow's milk, many undiagnosed. Dairy products are the leading cause of food allergy, often revealed by diarrhea, constipation, and fatigue. Many cases of asthma and sinus infections are reported to be relieved and even eliminated by cutting out dairy. The exclusion of dairy, however, must be complete to see any benefit.

Milk The Deadly Poison by Robert Cohen, page 260

Though I haven't had asthma since leaving home for college at age seventeen. Many years later, during my pediatric specialty training, I made the connection: Milk and dairy
products, which I never really liked, had been discontinued when I left home for college. During the following years, as a practicing pediatrician, I would see this relationship of asthma, and several other allergic disorders, to dairy products time and time again. After seeing two generations of my patients struggle with this malady, I've come to the conclusion—which is now shared by many allergists—that six out of ten children are allergic to milk protein. Not all are asthmatics; many have recurrent middle-ear infections, allergic rhinitis and, especially in infants, chronic skin rashes such as eczema. Older children and adults often manifest their food-related allergies as chronic bronchitis and sinusitis. But asthma itself may persist for a lifetime.

A Vegetarian Doctor Speaks Out by Charles R Attwood MD FAAP, page 74

Even if the symptoms are not the same, the underlying allergy may be. A child who has suffered milk-associated asthma, for instance, may have severe acne as a teenager. The milk allergy is still there, but its symptoms have moved to a different organ system, often misleading the patient and physician into thinking that the original allergy has been outgrown.

Get Healthy Now by Gary Null, page 584

For babies who are not breast-fed, prepared formulas may contribute to colic. Cow's milk, commonly found in infant formulas, is often the culprit. According to Dr. Smith, up to 50% of infants are sensitive to cow's milk, which can precipitate not only colic but also diarrhea, rashes, ear infections, asthma, and other conditions. Prepared cow's milk formulas may include many additives such as high-fructose corn syrup, which can cause problems for infants.

Alternative Medicine by Burton Goldberg, page 637

Dr. J. Dan Baggett, a practicing pediatrician in Alabama, has been interested for a number of years in the possible harmful effects of cow milk. Here are portions of a letter written by Dr Baggett describing his experiences: When I opened my practice here in Montgomery, Alabama, in 1960, I was aware of a causal relationship between cow milk protein in the diet and infantile eczema. I also knew that many of these eczematoid children became asthmatics later on unless their eczema could be cleared early by dietary manipulation. This prompted me to begin a system of dietary prophylaxis against allergic disease among the newborns in my care.

Don't Drink Your Milk by Frank A Oski MD, page 22

We determined that Rose had an almost lifelong condition that explained not only her asthma but her eczema, sinus infections, and digestive symptoms as well. Subsequent testing confirmed our suspicion: Rose suffered from a strong dairy allergy. When she was a child, this manifested itself as eczema; as a young adult she developed the sinus infections. Antibiotic treatment aggravated Rose's digestive problems by changing the delicate balance of bacteria in her gut. And as she continued to eat dairy products, her symptoms became worse and the asthma appeared. Now she was taking the standard asthma treatment, which seemed to be helping, but was causing measurable bone loss. The solution was simple. We eliminated dairy products entirely from Rose's diet. She was amazed at the results. Not only did her asthma improve to the point where she no longer needed to take her medications on a daily basis, but her digestive symptoms cleared up as well.
If you or your spouse has allergies, asthma, eczema, autoimmunity, bronchitis, or sinusitis, or if your child is experiencing frequent colds and ear infections, it is worth experimenting with total elimination of cow's milk in all of its forms. Goat's milk is OK, as is soy milk, but be aware that soy is a common allergen in infants, especially if it is introduced too early.

People who suffer from recurring bouts of diarrhea, bronchitis, eczema, asthma, or runny nose, should be tested for a milk or cheese allergy and should avoid all allergens in their diet.

The young mother of a seven-year-old boy handed me 11 a note from the grade-school dietitian. "Billy's diet has come to our attention," it read, "because he no longer selects milk in the cafeteria." Billy had recently given up milk, at my suggestion, because it worsened his asthma and eczema.

Milk is also an unappreciated terror in triggering "allergic" reactions that induce joint pain and symptoms of rheumatoid arthritis, asthma, irritable bowel syndrome and diarrhea.

A number of allergic and environmental agents can precipitate asthma attacks, including pollen, dust, mold, animal dander, feathers, textiles such as cotton and flax, detergents, petrochemicals, air pollution, and smoke. According to James Braly, M.D., of Hollywood, Florida, wheat, milk, and eggs are among the most likely foods that will trigger an asthma attack.

Milk allergies may sometimes be penicillin allergies

Antibiotics, most commonly penicillin, are given to cows for the treatment of mastitis, an inflammation of the udders. Cows are not supposed to be milked for forty-eight hours after receiving penicillin. Often this precaution is not followed and then penicillin appears in the milk in small quantities. People allergic to penicillin-an estimated 1 percent of the United States population-may develop symptoms of penicillin allergy after drinking milk contaminated with this antibiotic. The allergic reaction may take the form of hives, sneezing, asthma, or an unexplained rash.

A milk-free diet lessens asthma symptoms
There's evidence that embracing vegetables totally and giving up all animal products helps relieve asthma. In a study of twenty-five patients, 71 percent improved after four months without meat and daily foods; after a year, 92 percent had improved! That meant no meat, fish, eggs or dairy products. Why did it work? Doctors say maybe because the diet deprived patients of possible allergens—agents in food that could trigger asthma.

Food Miracle Medicine by Jean Carper, page 352

Joseph E. Pizzorno, N.D., President Emeritus of Bastyr University, in Seattle, Washington, has found that a vegan diet (elimination of all animal products, including dairy) can have a long-term positive effect on respiratory conditions, primarily asthma. In one study, Dr. Pizzorno noted significant improvement in 25 patients treated with a vegan diet. The diet excluded all meat, fish, eggs, and dairy products, and drinking water was limited to spring water.

Alternative Medicine by Burton Goldberg, page 890

Going on milk-free diets can cause considerable improvement in some asthmatics. Though children are most apt to have asthmatic reactions to milk, it can also happen in adults. A twenty-nine-year-old man suddenly began to suffer from bronchospasms two or three times a week; each attack lasted for one or two hours. Every day he seemed to have a dry cough and some breathlessness after breakfast. His asthma became so severe that on a couple of occasions he had to go to a hospital emergency room. Then one day he drank a cold glass of milk, and 20 minutes later found himself in the emergency room with a major broncho-spasm and hives all over his body. He was treated with drugs and within an hour he had recovered. But his doctors in Madrid, Spain, kept him for further tests. Milk was the villain. When asked to drink a quarter cup of milk, he suffered a bronchospasm. When given dried casein (from milk) he had an attack of wheezing and abdominal pain within 20 minutes.

Food Miracle Medicine by Jean Carper, page 355

Catherine had suffered from asthma since childhood—she could not remember a time when these attacks of breathlessness and wheezing did not set in once or twice a week. Skin testing had always been negative and she had simply learned to live with the problem, controlling her symptoms with drugs. Then, in her forties, Catherine began to suffer from frequent headaches and felt very tired. Her doctor could find nothing wrong and suggested that she might like to try an elimination diet to see if this was of any help. Catherine cut out milk, eggs, wheat, and citrus fruits, and found that she felt a great deal better. When she retested milk, this brought on a headache within an hour, followed by a severe attack of asthma. On a diet with no milk or milk products, her headaches are few and far between. To her great surprise, she is also free of asthma attacks for the first time in her adult life.

Food allergies and Food Intolerance by Jonathan Brostoff MD and Linda Gamlin, page 68

David's stomachaches went away. Within one month the asthma was gone. David was happier and more emotionally stable. David's digestive problem was causing his asthma. Avoiding milk and wheat products and taking digestive supplements allowed David to live a normal life without dependency on steroids. Wouldn't you want to know if your child could
get rid of or improve asthma (and other problems) through diet and digestive enzymes rather than through medication? Doesn't it make sense to try natural methods first? Healthy Digestion the Natural Way by Dr Lindsey Berkson, page 15

If [asthma] runs in your family, a vegan diet can mean the difference between developing the condition and having a lifetime of easy breathing, according to Dr. Klaper. "There's a genetic component, but the other crucial thing we 'inherit' from our parents is our eating habits. If we grow up on a diet that's high in dairy products and eat that way all our lives, and asthma develops due to a dairy sensitivity, you can say it's partially genetic, but it's also a function of eating at the same table." In the Garden of Better Health
The Complete Book Of Alternative Nutrition by Selene Y Craig, page 12

We don't need cow's milk in our diets

Suzanne Havala, a registered dietitian from North Carolina, who was a co-author of the American Dietetic Association's 1992 edition of its position paper on vegetarian diets stated at the Washington press conference that, after weaning, there is no need for milk of any sort. "Vegetarians and their children," she said, "get all the calcium they need from leafy vegetables, broccoli, tahini and tofu made with calcium sulfate." Dr. Russell J. Bunai, a pediatrician associated with the PCRM, who later took a two-year sabbatical from his practice to review the world literature on the subject, said, "...of all mammals, only humans drink the milk of another species." In Ghana, where he served as a medical missionary, he noted that the traditional diet contains no dairy products and that asthma and other allergic problems were uncommon. He saw these problems only in people who had adopted more westernized diets that included cow's milk.
A Vegetarian Doctor Speaks Out by Charles R Attwood MD FAAP, page 15
Sulfite Allergy

Sulfites are commonly found in wine, dried fruits, and other processed foods. They're mostly of interest to people with allergies because they're associated with food-triggered asthma attacks, although in rare cases sulfites have been associated with other common food allergy symptoms. The FDA estimates that 1% of the general population and 5% of asthmatics are sensitive to sulfites.

What Sulfites Are:

Sulfites are a group of chemical compounds including sulfur and oxygen, such as sodium sulfite, sulfur dioxide, sodium and potassium bisulfite, and sodium and potassium metabisulfite. They are sometimes naturally occurring, but they may also be added to food during the manufacturing process to prevent browning or serve as a preservative.

Symptoms of Sulfite Allergies:

Sulfites are most strongly associated with asthma attacks. Different people have different thresholds of the amount of sulfites needed to trigger an asthma attack, however, which makes this allergy different than many food allergies. Rarely, sulfite allergies can cause symptoms such as hives, angioedema (redness and swelling), or anaphylaxis.
Students Face Health Risks from Air Contamination

Healthy indoor air is essential for any classroom. Yet a U.S. Department of Education survey revealed that 1 in 5 public schools in the U.S. have unsatisfactory indoor air quality, and 1 in 4 have inadequate ventilation (NCES 2007). A 2004 California Air Resources Board report on portable and traditional classrooms throughout the state found substandard levels of fresh air in classrooms during 40 percent of class hours, with seriously deficient ventilation 10 percent of the time (CARB 2004). As a result, nearly all classrooms tested contained hazardous contaminants like formaldehyde at levels above government guidelines designed to protect against cancer and other long-term health effects.

Children subjected to poor quality air at school are less healthy (Myhrvold 1996), less able to concentrate (Myhrvold 1996; Smedje 1996), and do worse on tests (Shaughnessy 2006). They also miss more days of school (Shendell 2004). A child's overall academic performance suffers with such illness or absence (Weitzman 1982; O'Neil 1985; Silverstein 2001). EPA advises schools to improve indoor air quality to increase both health and scholastic achievement (EPA 2003).

School staff should take a careful look at the cleaning supplies they use as one means of maintaining healthy air in the classroom. Some cleaners can be a significant source of indoor air pollution that harms air quality, causing asthma and other health problems in students, teachers, custodians, and staff. Chemicals in many conventional cleaning supplies used in schools in California have been linked to asthma, cancer, reproductive toxicity, hormone disruption, and neurotoxicity. After cleaning, chemical residues have been measured in air, on surfaces, in dust - and some of these chemicals have been detected in people's blood and urine, a clear indication of exposure.

Children's Asthma and Cleaning Supplies

CDC surveys have detected a dramatic increase in childhood asthma across the country in the span of just a few decades. At present, nearly 1 in 10 children (9.3 percent) has asthma in the U.S. (CDC 2008), up from 7.5 percent in 1996, and just 3.6 percent in 1980 (CDC 2006). In California, one in six children will develop asthma at some point during childhood or adolescence (Babey 2006). Childhood asthma is more common among African-American, Latino, and low income communities (CDC 2006; Babey 2007; Meng 2007). Hospitalization rates for asthma are at historically high levels, mirroring the documented trends in asthma prevalence (CDC 2006).

Childhood asthma affects education as well as health. Nationally, asthma is the leading cause of missed school days due to a chronic illness, accounting for one-third of these absences (EPA 1991). Asthma was responsible for an estimated 1.9 million missed school days in California in 2005 (Meng 2008), and approximately 14.7 million missed school days each year nationally (EPA 2005). Every school absence represents lost opportunities
for learning and lost school revenue from the state. Is it possible that schools themselves may unintentionally contribute to growing rates of asthma through use of cleaning products containing ingredients known to cause asthma?

Many ingredients in conventional cleaning supplies cause asthma in previously healthy people, according to the Association of Occupational and Environmental Clinics (AOEC), the leading international body concerned with the link between chemical exposures and asthma. Examples of recognized asthmagens used in cleaning products include a class of surfactants called ethanolamines (like monoethanolamine, diethanolamine, and triethanolamine) and a class of antibacterial agents known as quaternary ammonium compounds (like benzalkonium chloride, or alkyl dimethyl benzyl ammonium chloride). More asthma-causing air contaminants specifically measured in EWG tests of cleaning supplies include formaldehyde, methyl methacrylate, and styrene. In addition, fragrances, which are common components of cleaners, are among the top five allergens in the world (de Groot 1997; Jansson 2001), and are known to trigger asthma attacks (Norback 1995; Millqvist 1996).

Several studies also conclude that both occupational and non-occupational use of cleaning products are linked to increased risk of asthma (Medina-Ramon 2005, 2006; Arif 2009; Bernstein 2009). Teachers have high levels of asthma when compared to the general workforce (NIOSH 2004; Mazurek 2008), and a recent study of California and three other states noted that many teachers specifically report exposures to cleaning supplies in association with development of work-related asthma (Mazurek 2008).

Like teachers, school children spend a large part of their day inside classrooms cleaned with chemicals that can cause or exacerbate asthma, and breathe in a complex set of indoor air contaminants with lungs that are still developing. While many children outgrow their asthma diagnosis, childhood is a time of elevated sensitivity to irritating chemicals. According to the National Academy of Sciences, one factor in children's exceptional sensitivity to the harmful effects of chemicals is that their developing organ systems are more vulnerable to damage from chemical exposures (NAS 1993). The Academy also concluded that children are less able than adults to detoxify and excrete chemicals.

In addition, a child's chemical exposures are greater pound-for-pound than those of an adult (NAS 1993). On a body weight basis, for example, a resting child breathes up to twice as much air as adults (EPA 2008) - an important factor when considering the effects of air pollution in the classroom. Finally, the National Academy of Sciences notes that children have more years of future life in which to develop disease triggered by early exposure (NAS 1993).

Green Seal, an independent group that certifies green cleaners, has taken into account children's special susceptibility to toxic air contaminants in designing its cleaning product standards (Green Seal 2008). According to the latest version of Green Seal's certification standard, certified green products are prohibited from containing ingredients classified by AOEC as both asthmagens and sensitizers.
EcoLogo, another independent green certification company, specifically prohibits a number of typical cleaning product ingredients found on the AOEC list (EcoLogo 2008). While green cleaning products generally contain far fewer asthmagens than conventional products, air contaminant tests did detect one such chemical, methyl methacrylate, in the EcoLogo-certified Waxie Green Floor Finish. This chemical is not specifically prohibited by EcoLogo criteria, suggesting that a more comprehensive prohibition of AOEC asthmagens might strengthen the EcoLogo standard and better protect public health.

Cleaning products also contribute to asthma indirectly, by releasing a host of volatile organic compounds (VOCs) that form ozone when in the presence of other widely distributed air contaminants composed of nitrogen and oxygen. Ozone is the primary component of smog that can trigger asthma. Ozone was not detected in this study because the VOCs emitted by cleaning products were exposed to purified air free of nitrogen-oxygen air contaminants. These common contaminants undoubtedly affect the air in classrooms across the U.S., providing an opportunity for ozone formation during and after use of cleaning supplies that release VOCs.

Use of cleaning products can release volatile organic compounds at levels up to 100 times higher than found outdoors; these levels can even exceed safety limits established for industrial settings (Nazaroff 2006). So many of these volatile organic compounds are capable of producing ozone that estimates of smog-forming VOCs can be made by measuring the total level of all VOCs emitted, then subtracting methane, a single nonreactive volatile compound, from this measurement.

Recent research indicates exposure to ozone can be especially harmful for children. A six-month study of fourth graders in 12 southern California communities documented an 83 percent increase in respiratory-related absences when daytime ozone levels increase by 20 parts per billion (Gilliland 2001). Children who grow up in smoggy regions have permanently scarred lungs, and feel lifelong effects of diminished lung capacity (Kunzli 1997). For this reason, certification organizations place strict limits on the levels of volatile organic compounds emitted by green cleaning products.

Volatile chemicals known as terpenes, derived from pine and citrus oil cleaners, produce another asthma risk. Terpenes can react with trace levels of ozone to form formaldehyde, an asthmagen and known human carcinogen. The California Air Resources Board recommends avoiding use of citrus and pine oil cleaners, especially on smoggy days (CARB 2008).

The annual direct medical cost of asthma in both children and adults is estimated at $37 billion nationwide (Kamble 2009). The indirect costs for an individual child are difficult to quantify, but encompass impacts on a child's education and well-being from asthma caused or triggered by cleaning products. And asthma is just one of many long-term health consequences associated with cleaning product chemicals.

**Chemicals in Cleaning Supplies Raise Other Health Concerns**
Individual chemicals found in cleaning products are tied to a number of other serious human health threats, according to numerous laboratory studies and, in some cases, research on exposure and disease in people.

**Cancer**

Increasing incidence of many childhood cancers, including leukemia, non-Hodgkins lymphoma, and specific brain and nervous system cancers (Woodruff 2004; Ries 2007), are a clear cause for concern regarding children’s exposures to chemicals linked to cancer. Air pollution tests of cleaning products used in schools, along with limited ingredient disclosure, revealed a total of 11 cleaner chemicals classified as known, probable, or possible human carcinogens.

For example, Comet Disinfectant Powder Cleanser released benzene, formaldehyde, chloroform, and three more cancer-causing chemicals. An additional carcinogen, quartz, was not detected by testing, but is disclosed as an ingredient by the manufacturer. Quartz is an inhalation carcinogen. School children are unlikely to inhale quartz powder present in cleaning products, but custodians may experience more substantial exposures. The widely used graffiti remover Goof Off emitted ethylbenzene and 2-butoxyethanol, both linked to cancer.

Green Seal-certified cleaning supplies cannot contain ingredients classified as carcinogenic by the Environmental Protection Agency (EPA), the National Toxicology Program (NTP), the Occupational Safety and Health Administration (OSHA), or the International Agency for Research on Cancer (IARC). These products also cannot contain ingredients known to produce or release these carcinogenic compounds (Green Seal 2008). EcoLogo prohibits formulation or manufacture of certified green cleaning products with any carcinogens listed by IARC (EcoLogo 2008).

While 10 of 16 conventional products emitted carcinogens, just one of six certified green cleaning products, Waxie Green Floor Finish, emitted any of these cancer-causing chemicals. The chemicals emitted by this green product are specifically prohibited by the green standard it is certified to meet (EcoLogo 2007), implying an inconsistency between the manufacturer's disclosures concerning formulation and the actual chemicals released by the product. If green certifying groups required air testing results for certification, such inconsistencies could be detected and resolved immediately. That would ensure that certified green products did not emit substances prohibited by their certification standards, resulting in safer, healthier, and more trustworthy green cleaning supplies.

**Carcinogenic chemicals prohibited in certified green products are released by 10 conventional cleaners, and by one green cleaner.**

<table>
<thead>
<tr>
<th>Carcinogen</th>
<th>Cleaning Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaldehyde (1,2,3)</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Carcinogen</td>
<td>Cleaning Product</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Benzene (3,4,5)</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td></td>
<td>Glance HC Glass and Multi-Surface Cleaner</td>
</tr>
<tr>
<td></td>
<td>Goof Off Cleaner (CA VOC Compliant)</td>
</tr>
<tr>
<td></td>
<td>Pioneer Super Cleaner</td>
</tr>
<tr>
<td>2-Butoxyethanol (6)</td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
<tr>
<td></td>
<td>Simple Green Concentrated Cleaner/Degreaser/Deodorizer</td>
</tr>
<tr>
<td></td>
<td>Waxie 21 Glass Cleaner</td>
</tr>
<tr>
<td>1-Chloro-2,3-epoxypropane (1,3,7)</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Chloroform (1,2,8)</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Ethylbenzene (2)</td>
<td>Waxie 21 Glass Cleaner</td>
</tr>
<tr>
<td>N-Ethyl-N-nitroso-ethanamine (1,3,7)</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td></td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td></td>
<td>Pine-Sol Brand Cleaner (Original)</td>
</tr>
<tr>
<td>Formaldehyde (1,4,9)</td>
<td>Pioneer Super Cleaner</td>
</tr>
<tr>
<td></td>
<td>Simple Green Concentrated Cleaner/Degreaser/Deodorizer</td>
</tr>
<tr>
<td>Quartz* (4)</td>
<td>Waxie Green Floor Finish</td>
</tr>
<tr>
<td>Styrene (2)</td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
<tr>
<td>Trichloroethylene (1,7)</td>
<td>Citrus-Scrub 90</td>
</tr>
</tbody>
</table>

*Ingredient disclosed by manufacturer but not detected in air contaminant tests
<table>
<thead>
<tr>
<th>Carcinogen</th>
<th>Cleaning Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) NTP reasonably anticipated to be a human carcinogen</td>
<td></td>
</tr>
<tr>
<td>(2) IARC possible human carcinogen (Group 2B)</td>
<td></td>
</tr>
<tr>
<td>(3) EPA IRIS probable human carcinogen (Group B2)</td>
<td></td>
</tr>
<tr>
<td>(4) IARC known human carcinogen (Group 1)</td>
<td></td>
</tr>
<tr>
<td>(5) EPA IRIS known human carcinogen (Group A)</td>
<td></td>
</tr>
<tr>
<td>(6) EPA IRIS possible human carcinogen (Group C)</td>
<td></td>
</tr>
<tr>
<td>(7) IARC probable human carcinogen (Group 2A)</td>
<td></td>
</tr>
<tr>
<td>(8) EPA IRIS likely to be carcinogenic to humans (high-exposure conditions only)</td>
<td></td>
</tr>
<tr>
<td>(9) EPA IRIS probable human carcinogen (Group B1)</td>
<td></td>
</tr>
</tbody>
</table>

Allylanisole, a carcinogen identified in California's Proposition 65 list but not on any of the agency lists specified in existing certification standards, was detected in the conventional cleaner Simple Green. This chemical is typically extracted from plant sources and can be used as a component of fragrances at low levels, among other uses. If certification groups included Proposition 65 chemicals in their list of prohibited carcinogens, their standards could be even more health protective.

Cleaning product ingredients can also be indirect sources of carcinogenic contamination. As described above, the known human carcinogen formaldehyde can form by mixing trace amounts of ozone in the air with terpenes, natural components of pine and citrus oil cleaners like Pine-Sol. Formaldehyde formation from terpenes is higher on smoggy days when ozone levels are high.

**Reproductive Toxicity**

Each year, about 7.3 million American couples have trouble becoming pregnant or carrying to full term, an increase of 20 percent over the last 10 years (Barrett 2006). Alarmingly, infertility is rising most rapidly for women under age 25. Increasing evidence indicates everyday exposures to reproductive toxins may play a role in escalating levels of infertility in the U.S.

Conventional cleaning supplies can contain a number of reproductive toxins. Phthalates, common ingredients in cleaner fragrances and in some floor finishes and window cleaners (WVE 2007), are reproductive toxins according to a number of animal studies (CERHR 2000; OEHHA 2007). In addition, epidemiological studies link a number of reproductive effects to phthalate exposure, including male reproductive system abnormalities (Swan 2005), altered sex hormone levels in baby boys and men (Main 2006; Duty 2005), and sperm damage in men (Duty 2003, 2004; Hauser 2007). Dibutyl phthalate is an ingredient in Shineline Seal Floor Sealer/Finish, one of the products examined in this study.
While phthalates may be present in other cleaning products tested, especially as components of fragrance, these chemicals are not sufficiently volatile to be measured as air contaminants. Instead, phthalates released by cleaners are likely to contaminate dust (Rudel 2003; CDC 2005). Exposures to toxins in dust are significant especially for younger children who are more likely to spend time sitting or playing on the floor (Butte 2002). According to the manufacturer, Shineline Seal Floor Seal/Finish contains up to five percent dibutyl phthalate, an alarmingly high level considering the potential this creates for children’s exposure to a known reproductive toxin.

Dibutyl phthalate is a known reproductive toxin as defined by the state of California’s Proposition 65 process. Other Proposition 65 reproductive toxins detected in these tests of cleaning supplies include solvents like toluene, benzene, and ethoxyethanol. These chemicals were detected in a total of four products, including one Green Seal-certified cleaner, Alpha HP. Green Seal-certified products must not contain Proposition 65 reproductive toxins as ingredients, nor can they contain ingredients known to produce or release these compounds (Green Seal 2008). In this case, testing data indicate a certified green product released trace levels of a prohibited compound, perhaps due to contamination of a product ingredient.

Other cleaner chemicals not yet listed as reproductive toxins in California are linked to reproductive harm. Glycol ethers, including the widely used 2-butoxyethanol, are common cleaning solvents that impair fertility and harm development in animal studies (EPA 2000; NTP 2000). Other studies find that men exposed to glycol ethers on the job are more likely to have reduced sperm counts, while pregnant women exposed on the job are more likely to give birth to children with birth defects (Cordier 1997; CDHS 2007). 2-Butoxyethanol was detected in six conventional cleaning products (Simple Green Concentrated Cleaner/Degreaser/Deodorizer, Glance HC Glass and Multi-Surface Cleaner, Shineline Seal Floor Sealer/Finish, Goof Off Cleaner (CA VOC Compliant), Pioneer Super Cleaner, and Waxie 21 Glass Cleaner), and one certified green product (Waxie Green Floor Finish). Only five cleaning products (Citrus-Scrub 90, Comet Disinfectant Powder Cleanser, Glance NA Glass & Multi-Purpose Cleaner, Marauder Environmental Cleaner, and NABC Non-Acid Disinfectant Bathroom Cleaner) were free of all glycol ethers examined by laboratory tests.

Quaternary ammonium compounds (quats) are antibacterial pesticides commonly used in disinfectants. A quat-based disinfectant called Virex, similar to one used in multiple school districts in California, was recently identified by noted scientist Dr. Patricia Hunt as the cause of a severe decline in the fertility of a laboratory mouse population -- preliminary evidence that quats may be reproductive toxins (Hunt 2008). Two disinfectants in this study, NABC Non-Acid Disinfectant Bathroom Cleaner and Virex II 256, both list quats as ingredients. Quats may be present in other products as well, as they are also used for their detergent properties. These chemicals are non-volatile and are expected to contaminate dust (Ferrer 2002). EcoLogo certified products are prohibited from containing quats.

EcoLogo certified products are prohibited from containing phthalates, quats, and some glycol ethers and their acetates (2-butoxyethanol, along with ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, and ethylene glycol monopropyl ether) (EcoLogo
For some certified green cleaning supplies, state-of-the-art air quality tests again highlight a discrepancy between ingredients disclosed to green certifiers and air contaminants emitted by these products. By requiring independent air contaminant testing as part of certification, Green Seal and EcoLogo would be able to verify that certified green products are free of many prohibited reproductive toxins, guaranteeing safer products.

Hormone Disruption

Signs of hormone disruption are evident in girls growing up all over America. Over the last four decades, the age at which girls begin to develop breasts has declined by one-to-two years (Steingraber 2007), with African-American girls typically developing at an earlier age than Caucasian girls. Over the same 40-year period, the age at which girls in the U.S. begin menstruating has declined by a few months, with substantial variation by ethnicity (Steingraber 2007). Early breast development, as well as the appearance of pubic hair at a young age, has become so common that in 1999 the clinical definition of early-onset or precocious puberty in the U.S. was reduced from age 8 to age 7 for Caucasian girls, and from age 7 to age 6 for African-American girls (Kaplowitz 1999).

A girl who begins puberty at an early age is at greater risk for several adult illnesses, including breast cancer (Wang 2005; Steingraber 2007; Golub 2008) and polycystic ovary syndrome (Ibáñez 1997; Kousta 2006; Steingraber 2007; Golub 2008), a leading cause of pelvic pain and infertility. Polycystic ovary syndrome is linked to increased risk of obesity, diabetes and impaired glucose tolerance (Auchus 2004; Kousta 2006), and increased prevalence of risk factors associated with cardiovascular disease (Kousta 2006).

Early-maturing girls are also more prone to a variety of psychiatric or behavioral problems, from depression to drug abuse and teen pregnancy (Graber 1997, 2004; Kaltiala-Heino 2001, 2003a, 2003b; Flanigan 2003; Deardorff 2005). Women experiencing early puberty tend to have less education (Johansson 2005), while late-maturing girls tend to perform better in school and are more likely to finish college (Graber 1997, 2004).

Scientists and medical professionals increasingly identify exposures to hormone-disrupting chemicals as a significant factor in unnaturally accelerating this critical period of development. Preliminary research on people suggests that exposures to one particular class of hormone-disrupting chemicals, phthalates, may be linked to early puberty in girls (Colon 2000).

Eight of the hormone-disrupting chemicals identified by a key European Commission report (European Commission DG ENV 2000, 2007) were detected as air contaminants or disclosed as ingredients of nine cleaners tested. Shineline Seal Floor Sealer/Finish contained three different suspected hormone disruptors (styrene, ethylene glycol, dibutyl phthalate), and two such chemicals were found in Comet Disinfectant Powder Cleanser (1-chloro-2,3-epoxypropane, benzophenone), Simple Green Concentrated...
Cleaner/Degreaser/Deodorizer (phenol, ethylene glycol), and Goof Off Cleaner (CA VOC Compliant) (benzophenone, N-N-dimethylformamide).

Dibutyl phthalate and other phthalates are common ingredients in cleaning products and have well-documented hormone disrupting properties, according to laboratory tests and epidemiological studies (ATSDR 1995, 1997; CERHR 2000; Main 2006; Duty 2005; Huang 2007; Meeker 2007). Alkylphenols, breakdown products of widely used alkylphenol ethoxylate cleaner ingredients like nonyl phenol ethoxylate, are widely-acknowledged hormone disruptors implicated in the feminization of fish living in waterways receiving treated wastewater (Balch 2006; Zoller 2006; Barber 2007). Fragrances used in many cleaners can contain known or suspected hormone disruptors as well (EWG 2008).

Groups certifying green cleaning products have different ways of addressing hormone-disrupting chemicals. EcoLogo-certified products may not include chemicals listed in 2000 by the European Commission as candidates for evaluation of hormone-disrupting properties (European Commission DG ENV 2000), a list drawn from the rapidly emerging science on this critical health and environmental concern. However, phenol and ethylene glycol, two chemicals detected in these tests of cleaning product pollution, have been added to an updated version of this European list that is not included in the EcoLogo standard (European Commission DG ENV 2007). The Green Seal certification standard prohibits a few specific chemical classes, including phthalates and alkylphenol ethoxylates, due to hormone disruption concerns. By prohibiting a more up-to-date list of hormone-disrupting chemicals, EcoLogo and Green Seal could further improve product safety.

Hormone disruptors, some specifically prohibited in certified green products, are released by many cleaners.

<table>
<thead>
<tr>
<th>Hormone Disruptor:</th>
<th>Cleaning Product:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzophenone</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>1-Chloro-2,3-Epoxypropane</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Dibutyl phthalate*</td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
<tr>
<td></td>
<td>3M Brand Glass Cleaner (Product No. 1, Twist 'n Fill System)</td>
</tr>
<tr>
<td></td>
<td>Glance HC Glass and Multi-Surface Cleaner</td>
</tr>
<tr>
<td>Ethylene glycol**</td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
<tr>
<td></td>
<td>Simple Green Concentrated Cleaner/Degreaser/Deodorizer</td>
</tr>
<tr>
<td></td>
<td>Waxie 21 Glass Cleaner</td>
</tr>
</tbody>
</table>
Neurotoxicity and Developmental Disabilities

In light of recent warnings suggesting that developmental disabilities stemming from exposures to neurotoxic chemicals may be a "silent pandemic in modern society" (Grandjean 2006), children require special protection from neurotoxins. Growth and development of the brain continues for many years after birth, leaving children uniquely sensitive to the effects of neurotoxic agents; in particular, dramatic changes to brain structure and function occur during adolescence (Golub 2000).

Examples of neurotoxins commonly used in cleaning products are benzyl and isopropyl alcohol, detected in NABC Non-Acid Disinfectant Bathroom Cleaner, Waxie 21 Glass Cleaner, and Ripsaw; isopropyl alcohol is also a known ingredient of Pine-Sol Original Cleaner. Although limits have been set for these chemicals in food, no limits are in place for cleaners.

A number of chemicals that incorporate chlorine are toxic to the brain and nervous system. Xylene is a neurotoxic component of certain heavy duty cleaning supplies, like Goof Off Cleaner (CA VOC Compliant) and Shineline Seal Floor Sealer/Finish, which are in use in California schools. Toluene and chloroform, both emitted by Comet Disinfectant Powder Cleanser, are also neurotoxic chemicals. Fragrances used in many cleaning products can contain ingredients suspected of neurotoxicity as well (USHR 1986).

Health-based limits exist regarding exposure to many neurotoxins in the workplace. These exposure limits, however, were designed only to protect against acute effects such as headache, and have not been tightened in decades despite recent scientific evidence of potential health effects of chronic, low-dose occupational exposures.

Neurotoxins are released by cleaning products, according to air contaminant tests and ingredient disclosures.
<table>
<thead>
<tr>
<th>Neurotoxin:</th>
<th>Cleaning Product:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone*</td>
<td>Goof Off Cleaner (CA VOC Compliant)</td>
</tr>
<tr>
<td>Benzene</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Benzonitrile</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Benzyl Alcohol</td>
<td>Ripsaw</td>
</tr>
<tr>
<td>Chloroform</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Cyclohexanone</td>
<td>3M Brand Bathroom Cleaner (Product No. 44, Twist 'n Fill System)</td>
</tr>
<tr>
<td>Dibutyl phthalate*</td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
<tr>
<td>N,N-Dimethylformamide</td>
<td>Clorox Regular Bleach</td>
</tr>
<tr>
<td>Ethyl acetate</td>
<td>Febreze Air Effects</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>NABC Non-Acid Disinfectant Bathroom Cleaner</td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>Pine-Sol Brand Cleaner (Original)*</td>
</tr>
<tr>
<td>Methyl methacrylate</td>
<td>Ripsaw</td>
</tr>
<tr>
<td>Phenol</td>
<td>Waxie 21 Glass Cleaner</td>
</tr>
<tr>
<td>Styrene</td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td>Toluene</td>
<td>Waxie Green Floor Finish</td>
</tr>
<tr>
<td>Trichloroethylene</td>
<td>Simple Green Concentrated Cleaner/Degreaser/Deodorizer</td>
</tr>
<tr>
<td>Xylene</td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
<tr>
<td></td>
<td>Alpha HP Multi-Surface Cleaner</td>
</tr>
<tr>
<td></td>
<td>Comet Disinfectant Powder Cleanser</td>
</tr>
<tr>
<td></td>
<td>Goof Off Cleaner (CA VOC Compliant)</td>
</tr>
<tr>
<td></td>
<td>Citrus-Scrub 90</td>
</tr>
<tr>
<td></td>
<td>Goof Off Cleaner (CA VOC Compliant)</td>
</tr>
<tr>
<td></td>
<td>Shineline Seal Floor Sealer/Finish</td>
</tr>
</tbody>
</table>
Neurotoxin: Cleaning Product:
Source: Chemicals known to be neurotoxic according to Grandjean 2006.

* Chemicals disclosed as ingredients by manufacturers but not detected in air contaminant tests

Cleaning Products Pose Risks to School Custodians, Too
The custodial and operations staff working each day to provide California's children with a sanitary school environment receive the brunt of exposures to harmful chemicals in cleaning products. Cleaning professionals suffer a number of serious chemical injuries on the job. For example, 6 out of 100 janitors in Santa Clara County, California experience chemical-related injuries annually; 20 percent of these injuries are serious burns to the eyes or skin (Barron 1999).

Custodial staff experience increased incidence of asthma compared to those in other occupations (Zock 2001; NIOSH 2004; Medina-Ramon 2005; Jaakkola 2006). A recent study of work-related asthma in four states indicates that 12 percent of cases are associated with exposure to cleaning products (Rosenman 2003). Twenty two percent of those afflicted worked as janitors, and 13 percent worked in schools. Use of cleaning products can also exacerbate existing asthma; a recent study of asthmatic women who clean their own homes indicated increased asthma symptoms after housecleaning (Bernstein 2009). Across the state of California, asthma is responsible for an estimated 2 million days of missed work (Meng 2008), an indication of the severity of this public health crisis.
Deficiency of This Vitamin May Be Behind Childhood Asthma and Allergies

Research has suggested a link between vitamin D deficiency and development of asthma and allergic diseases. A recent study sought to determine both the association between vitamin D and asthma among children, and the differences in vitamin D level between asthmatic and non-asthmatic children.

The study examined close to 500 asthmatic children and an equal number of non-asthmatic kids. Their health status was assessed through their medical history, their family history, a physical examination, their BMI, and their serum 25(OH) vitamin D, calcium, and phosphorus levels.

According to the study, as reported by Green Med Info:

“Serum vitamin D levels were lower in asthmatic than control. Vitamin D deficiency was higher among children with asthma, allergic rhinitis, atopic dermatitis, acute urticaria, and food allergy.”

Sources:

» European Annals of Allergy and Clinical Immunology June 2011; 43(3): 81-88
» Green Med Info
Childhood Asthma Rise Remains a Puzzle

CDC Report Shows Racial Disparities in Asthma Rate
By Todd Zwillich
WebMD Health News
Reviewed by Louise Chang, MD

Dec. 12, 2006 -- Nearly one in 10 American children now has asthma, a sharp rise that still has scientists searching for a cause, a CDC report concluded Tuesday.

An estimated 6.5 million children under age 18 (8.9%) are now diagnosed with the disease. The rate has more than doubled since 1980, according to the report.

At the same time, racial disparities show evidence of worsening. While 8% of white children are estimated to have asthma, 19% of Puerto Rican children and 13% of black children have the disease.

Asthma is marked by shortness of breath, cough, chest tightness, and wheezing. Its severity can range from mild to severe disease, and asthma attacks can be fatal.

Why Asthma Rates Are Rising

Researchers are unsure whether the increased rate reflects a true rise in asthma prevalence or whether it is the product of more widespread diagnosis.

"It's probably truly increasing, but we don't know how to tease out why," Lara Akinbami, MD, a CDC epidemiologist who authored the report, tells WebMD. "Really no one knows the answer."

One theory speculates that widespread use of cleaning products, antibiotic cleansers, and immunizations have helped spur a rise in asthma. While a steady -- but moderate -- dose of germs can stimulate infants' immune systems early in life, that robustness may be lost when young children don't confront immune challenges, the theory says.

Scientists are far more certain about the causes of racial differences. Poorer children have increased exposure to indoor cigarette smoke, mold, insects, as well as outdoor diesel soot and air pollution known to irritate the lungs and make them more susceptible to asthma, Akinbami says.

Asthma's Death Rate

Asthma's overall death rate has fallen to 2.5 deaths per million children under 17; there were 3.2 deaths per million in 1999. Meanwhile, accidental injuries kill 111 children per million, according to the CDC. But black children remain nearly three times more likely than whites to be hospitalized with asthma and five times more likely to die from asthma.
"This is a dramatic health disparity," Norman H. Edelman, MD, chief medical officer of the American Lung Association, tells WebMD.

The organization has lobbied for efforts to clean urban living spaces of mold and other allergens that stoke asthma. Doctors have also been encouraged to aggressively treat the disease with steroid medications.

Edelman attributed the racial difference in deaths to chronic lack of health care for black children.

In terms of mortality, it can be reduced if people get better health care, he says.
A new ailment can be added to the long list already potentially associated with exposure to the chemical bisphenol-A (BPA) -- childhood asthma. In a new study, researchers found that pregnant women exposed to BPA had children with a higher risk of developing the problem.

The study looked at more than 350 pairs of mothers and infants. Researchers measured levels of BPA in the urine of pregnant women, and then the new mothers were asked every six months for three years whether their child was showing symptoms of asthma.

Time Magazine reports:

“At 6 months of age, infants whose mothers had high levels of BPA were twice as likely to show wheezing as babies whose mothers who had low levels ... This isn't the first study to make the connection between asthma and BPA -- another piece of research, published last year ... found evidence that mice exposed to BPA were more likely to give birth to pups that developed breathing problems.”

Sources:

Time Magazine May 2, 2011
Breastfeeding Reduces the Risk of Allergies, Study Suggests

ScienceDaily (Oct. 14, 2011) — Today, about one in four European children suffer from allergy, which makes this disease the non-infectious epidemic of the 21st century. Evidence suggests that lifestyle factors and nutritional patterns, such as breastfeeding, help to reduce the early symptoms of allergy.

The detection and reduction of the early causes of childhood allergy is the major topic at the 2nd EAACI Pediatric Allergy and Asthma Meeting (PAAM 2011) that opens October 14 in Barcelona. There is no doubt that the exposure to allergens, both in food and the environment, play a role though the exact significance of dose and timing is not yet fully defined. According to Prof. Halken, PAAM 2011 Chair “there are some hypotheses suggesting that specific lifestyle and nutritional patterns may lead to early symptoms of allergy. For example, breastfeeding for the first 4-6 months has been showed to reduce the risk for atopic eczema and cow's milk protein allergy.”

The development of allergy is a result of a complex interaction between genetic and many environmental factors that may protect against or promote its development. Factors such as pollution have also been linked to the increased prevalence of allergic diseases during childhood in developed countries.

"Exposure to many environmental factors have changed during the last decades, including exposure to tobacco smoke, which appears to increase the risk for airway infections and asthma. Besides, exposure to allergy developing agents such as food, house dust mites, pets and pollens is a prerequisite for development of allergic diseases, but also many other unknown factors may play a role," explains Prof. Halken.

"Genetic factors may also influence the susceptibility to different environmental factors and also influences the pattern of symptoms of the individual child," says Prof. Halken. "Some studies report that a child with atopic dermatitis and a family background show higher risk to develop asthma later in life. When one of the parents is allergic, the child is predisposed to be allergic, and the risk is even higher when both parents suffer this disease."

The expression of allergic disease may vary with age, and some symptoms may disappear being replaced by other symptoms. As Prof. Halken says, "infants typically experience atopic dermatitis, gastrointestinal symptoms and recurrent wheezing, whereas bronchial asthma and allergic rhinoconjunctivitis are the main allergic symptoms in childhood." In that sense, allergic reactions to foods, mainly cow's milk protein, are the commonest
manifestation in the first years of life, whereas allergy to inhalant agents mostly occurs later in childhood.

Physicians agree that one of the key elements in achieving better management of childhood allergy is to improve diagnostic techniques and to develop treatments that do not only reduce symptoms, but can induce a permanent cure. "Early diagnosis can lead to effective treatment to reduce symptoms and improve quality of life. Knowledge about allergies can help patients to avoid contact with offending agents, and thereby to reduce symptoms and avoid risky situations, which may even be life threatening," points out Prof. Halken.
Breastfeeding Protects Against Asthma and Atopy

NEW YORK (Reuters Health) Sept 14 - Children who are not exclusively breastfed have a higher risk of asthma and atopy, according to a report in the September issue of the American Journal of Public Health.

Dr. Wendy H. Oddy, of the University of Western Australia, West Perth, and colleagues examined the association between breastfeeding, asthma and atopy, and body mass index (BMI) in 2195 children prospectively followed from birth to 6 years.

The team defined asthma as doctor-diagnosed asthma and wheeze in the last year and skin prick tests were used to determine atopy for 1596 children.

A logistic regression model before adjustment revealed a significant association between a shorter duration of any breastfeeding and increased BMI at 6 years. The effect of longer breastfeeding did not significantly decrease a child's risk of being overweight after adjustment for gender, birthweight, and maternal smoking during pregnancy.

The researchers also observed an association between less exclusive breastfeeding and increased asthma and atopy after adjustment for BMI. With each additional month of breastfeeding, there was a 4% reduction in the risk of asthma. No significant effects of breastfeeding on atopy were observed.

After adjusting for known risk factors, increased BMI was significantly associated with asthma risk. "Reasons for an association between increased body weight and asthma are not clear, but an immunological mechanism has been suggested," Dr. Oddy and colleagues write. "In obese individuals, the biological activity of adipose tissue may increase the risk of developing asthma."

The investigators call for additional studies to confirm these findings and to understand the mechanism of the protective effect of breastmilk. In the meantime, they note that "public health interventions to promote exclusive breastfeeding for at least 6 months may reduce the prevalence and subsequent morbidity of asthma and atopy in early childhood."

Asthma Symptoms Reduced by Exclusive Breastfeeding
By FYI Health Writer on Sep 06, 2011

Summary
A recent study conducted in The Netherlands examined the association between breastfeeding a baby in infancy and the development of asthma-related symptoms, such as wheezing, coughing and shortness of breath, in childhood. They assessed the duration, as well as exclusiveness of breastfeeding and its effect on the incidence of asthma. The study found that children who were not breastfed for at least six months were at a higher risk for developing asthma-related symptoms like wheezing, coughing, shortness of breath and persistent phlegm during their first four years. These symptoms were not frequently observed in those who were breastfed for more than six months.

Introduction
Children with asthma often have symptoms such as wheezing, breathlessness and coughing. Asthma is a major cause of distress in children. Several factors, such as day care attendance, low birth weight, existence of siblings and family history of asthma, are found to be associated with asthma-related symptoms. There have been many studies conducted to explore the role of breastfeeding in relation to incidence of asthma. However, these studies have shown inconsistent results. Moreover, most of these studies were done on schoolchildren and the data on breastfeeding was obtained through recall, which is subject to bias. In the present study, children were followed, from fetus to four years of age, to assess the duration of breastfeeding and the occurrence of asthma-related symptoms in them.

Methodology
* In this study, 7,295 children were included, out of which data on only 5,368 children was available for analysis.
* Information on the beginning and continuation of breastfeeding was collected using questionnaires. These questionnaires were mailed to the parents when their children became 2, 6 and 12 months of age. Data regarding the exclusiveness of breastfeeding and the use of milk solids and other alternatives was also collected in the same questionnaire.
* Information on asthma-related symptoms was collected every year until the children turned four years old. Information on respiratory infections, if any, skin rashes and itching (a sign of allergies), was gathered to determine the possible reasons for the development of asthma.

Results
* About 92 percent of the children were breastfed; and the average period of breastfeeding was 3.5 months. Only 21 percent of these were exclusively breastfed until 4 months of age.
* The risk of developing symptoms of asthma, such as wheezing, dry cough, excessive phlegm and shortness of breath was high in those who were never breastfed, compared to
those who were breastfed for more than six months.
* Those children who were non-exclusively breastfed (they were fed with milk solids and other alternatives) had more chances of developing asthma-related symptoms until four years of age, compared to those who were breastfed exclusively.
* Among the various symptoms of asthma, wheezing and persistent phlegm were found to be the most prevalent.

**Shortcomings/Next steps**
In the present study, only those symptoms that were related to asthma were evaluated. These symptoms may have been due to other respiratory disorders. Moreover, the study was exclusively based on questionnaires. Future studies must collect data that are more objective by performing tests such as lung function tests and bronchial responsiveness tests. Future studies must try to identify the cause for increased occurrence of asthma in non-breastfed children.

**Conclusion**
Prior studies have shown the effect of the duration and exclusiveness of breastfeeding on the risk of asthma. These studies have indicated that the risk of developing asthma from the age of 2 to 6 years is 2.22 times higher in those who are not breastfed until the age of 4 months. The present study has not only reiterated the findings of these studies, but has also shown the relationship between the duration of breastfeeding and the number of wheezing episodes. The strength of the present study is that a large number of participants were involved. According to researchers, there is a growth of various resident microbes in the gut of children who are fed a formula diet, which makes them prone to frequent infections and asthma. The authors conclude saying, “Our results suggest that a short duration of breastfeeding and non-exclusivity are associated with increased risk of the asthma-related symptoms during the first four years of life.”

**For More Information:**
Duration and Exclusiveness of Breastfeeding and Childhood Asthma-Related Symptoms
Publication Journal: European Respiratory Journal, July 2011
By Agnes M. M. Sonnenschein-van der Voort; Vincent V. W. Jaddoe, MD, PhD; Erasmus Medical Center, Rotterdam, The Netherlands
Your child will have fewer Allergies

Exclusively breastfed babies are less likely to have food allergies and related problems such as diarrhea, vomiting, eczema, gastrointestinal infections and respiratory infections. Here we'll give a quick overview, and then give references to some of the numerous studies on the subject.

Breastfeeding and Allergies: an Overview

Food allergies are thought to begin when foreign proteins enter the bloodstream through the walls of the baby's intestines, causing sometimes mild, and sometimes life-threatening reactions. Breastmilk has several different immunoglobulins that help to protect against allergies. The most abundant immunoglobulin, IgA, binds to the foreign proteins, preventing them from passing through the intestinal wall into the bloodstream and causing allergic reactions. By the time the baby is 6 to 9 months old, s/he has begun to produce IgA on her own, but until this time breastmilk is her only source of this wondrous substance.

In addition, during the entire time the child is breastfed she is being passed antibodies to pathogens in her mother's milk. These are only a few of the many processes that help protect a breastfed baby from allergies. Thorough information can be found in many excellent books on the topic. In addition, the following references will show the actual benefits of breastmilk in fighting allergies.

References

1) Breastfeeding, even for short periods was clearly associated with lower incidence of wheezing, prolonged colds, diarrhea, and vomiting.

2) Eczema was less common and milder in babies who were breast fed (22%) and whose Mothers were on a restricted diet (48%). In infants fed casein hydrolysate, soymilk or cows milk, 21%, 63%, and 70% respectively, developed atopic eczema.
3) "We conclude that breastfeeding is prophylactic against atopic disease, the effect extending into early adulthood. Breastfeeding for longer than 1 month without other milk supplements offers significant prophylaxis against food allergy at 3 years of age, and also against respiratory allergy at 17 years of age. Six months of breastfeeding is required to prevent eczema during the first 3 years, and possibly also to prevent substantial atopy in adolescence." The article also states that the differences by infant feeding method were so pronounced that it "suggested an influence of early milk feeding that may exceed the heredity burden."
Saarinen UM, Kajosaari M.
"Breastfeeding as prophylaxis against atopic disease: prospective follow-up study until 17 years old."
Lancet 1995; 346:1065-69. []

4) Formula given to newborns in the hospital nursery contributed to the development of subsequent cow milk allergy among infants who were exclusively breastfed thereafter.

5) PAC is associated with formula-feeding and supplementation.
Israel D, et al.,
"Protein induced allergic (PAC) colitis in infants."