



## Environmental Toxicology Newsletter

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## **DRINKING WATER EXPOSURE RISKS BOOST RISK FOR FOUR OP's**

EPA has found elevated risks from drinking water exposures to four organophosphate pesticides: fenamiphos, ethoprop, terbufos, and phorate, but not high enough to recommend the most protected 10-fold safety factors under the Food Quality Protection Act. At a technical briefing on its newly refined risk assessment, EPA staff said the risk of drinking water exposure from all four OPs ranges from equivocally significant to "high," and these risks are responsible for bumping up their aggregate risk. Nevertheless, the FQPA uncertainty factors EPA is recommending for them remain below the maximum of 10-fold level (at least for aggregate risk). For all four of these OP pesticides, the dietary risks are termed "low" or "not of concern." However, as stated in the risk assessment summaries which were issued in late August, the four OPs pose, or may pose, risks in the aggregate.

Aggregate risk is a combination of dietary, drinking water, and non-occupational exposures. In a July 7, 1998 report, EPA's Hazard Identification Assessment Review Committee (HIARC), it was recommended that the 10-fold uncertainty factor should be removed for fenamiphos - of which 78% is applied to tobacco, grapes, oranges, and peanuts. In the latest risk assessment, the agency is recommending no additional safety factor for the Chronic Population Adjusted Dose (cPAD) but for now, also recommending a 3-fold safety factor for the Acute Population Adjusted Dose (aPAD). A cPAD is the dose at which an individual could be exposed over a 70-year lifetime and not expect any adverse health effects. An aPAD is the dose at which an individual could be exposed on any given day and no adverse health effects would be expected.

Although both the cPAD and aPAD are below 100% of the doses which would be of concern to EPA, the 3X has been proposed "for lack of a No Observable Adverse Effects Level, or NOAEL," said Steve Knizer, a chemist in EPA's Health Effects Division. (From *Pesticide & Toxic Chemical News*, 27{46}).

REF: *Kansas Pesticide Newsletter*, 22(10), October 14, 1999.



## FLUORIDATION OF DRINKING WATER TO PREVENT DENTAL CARIES: 1900-1999

Fluoridation of community drinking water is a major factor responsible for the decline in dental caries (tooth decay) during the second half of the 20th century. The history of water fluoridation is a classic example of clinical observation leading to epidemiologic investigation and community-based public health intervention. Although other fluoride-containing products are available, water fluoridation remains the most equitable and cost-effective method of delivering fluoride to all members of most communities, regardless of age, educational attainment, or income level.

Dental caries is an infectious, communicable, multifactorial disease in which bacteria dissolve the enamel surface of a tooth. Dental caries can result in loss of tooth structure and discomfort. Untreated caries can lead to incapacitating pain, a bacterial infection that leads to pulpal necrosis, tooth extraction and loss of dental function, and may progress to an acute systemic infection. The major etiologic factors for this disease are specific bacteria in dental plaque (particularly *Streptococcus mutans* and *lactobacilli*) on susceptible tooth surfaces and the availability of fermentable carbohydrates.

At the beginning of the 20th century, extensive dental caries was common in the United States and in most developed countries. No effective measures existed for preventing this disease, and the most frequent treatment was tooth extraction. **Failure to meet the minimum standard of having six opposing teeth was a leading cause of rejection from military service in both world wars.** Early studies reported that caries reduction attributable to fluoridation ranged from 50% to 70%, but by the mid-1980s the mean DMFS (decayed, missing, or filled tooth surfaces) scores in the permanent dentition of children who lived in communities with fluoridated water were only 18% lower than among those living in communities without fluoridated water. A review of studies on the effectiveness of water fluoridation conducted in the United States during 1979-1989 found that caries reduction was 8%-37% among adolescents (mean: 26.5%).

Since the early days of community water fluoridation, the prevalence of dental caries has declined in both communities with and communities without fluoridated water in the United States. This trend has been attributed largely to the diffusion of fluoridated water to areas without fluoridated water through bottling and processing of foods and beverages in areas with fluoridated water and widespread use of fluoride toothpaste. Fluoride toothpaste is efficacious in preventing dental caries, but its effectiveness depends on frequency of use by persons or their caregivers. In contrast, water fluoridation reaches all residents of communities and generally is not dependent on individual behavior.

Although early studies focused mostly on children, water fluoridation also is effective in preventing dental caries among adults. Fluoridation reduces enamel caries in adults by 20%-40% and prevents caries on the exposed root surfaces of teeth, a condition that particularly affects older adults.

**Water fluoridation is especially beneficial for communities of low socioeconomic status.** These communities have a disproportionate burden of dental caries and have less access than higher income communities to dental-care services and other sources of fluoride. Water fluoridation may help reduce such dental health disparities.

Early investigations into the physiologic effects of fluoride in drinking water predated the first community field trials. Since 1950, opponents of water fluoridation have claimed it increased the risk for cancer, Down's syndrome, heart disease, osteoporosis and bone fracture, acquired immunodeficiency syndrome, low intelligence, Alzheimer disease, allergic reactions, and other health conditions. The safety and effectiveness of water fluoridation have been re-evaluated frequently, and no credible evidence supports an association between fluoridation and any of these conditions.

Despite the substantial decline in the prevalence and severity of dental caries in the United States during the 20th century, this largely preventable disease is still common. National data indicate that 67% of persons aged 12-17 years and 94% of persons aged greater than or equal to 18 years have experienced caries in their permanent teeth.

Among the most striking results of water fluoridation is the change in public attitudes and expectations regarding dental health. Tooth loss is no longer considered inevitable, and increasingly adults in the United States are retaining most of their teeth for a lifetime. For example, the percentage of persons aged 45-54 years who had lost all their permanent teeth decreased from 20.0% in 1960-1962 to 9.1% in 1988-1994. The oldest post-World War II "baby boomers" will reach age 60 years in the first decade of the 21st century, and more of that birth cohort will have a relatively intact dentition at that age than any generation in history. Thus, more teeth than ever will be at risk for caries among persons aged greater than or equal to 60 years. In the next century, water fluoridation will continue to help prevent caries among these older persons in the United States.

REF: *Morbidity and Mortality Weekly Report*, 48(41):933-940, October 22, 1999.




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## **SAFER AND HEALTHIER FOODS: 1900-1999**

During the early 20th century, contaminated food, milk, and water caused many foodborne infections, including typhoid fever, tuberculosis, botulism, and scarlet fever. In 1906, Upton Sinclair described in his novel The Jungle the unwholesome working environment in the Chicago meat-packing industry and the unsanitary conditions under which food was produced. Public awareness dramatically increased and led to the passage of the Pure Food and Drug Act. Once the sources and characteristics of foodborne diseases were identified--long before vaccines or antibiotics--they could be controlled by handwashing, sanitation, refrigeration, pasteurization, and pesticide application. Healthier animal care, feeding, and processing also improved food supply safety. In 1900, the incidence of typhoid fever was approximately 100 per 100,000 population; by 1920, it had decreased to 33.8, and by 1950, to 1.7. During the 1940s, studies of autopsied muscle samples showed that 16% of persons in the United States had trichinellosis; 300-400 cases were diagnosed every year, and 10-20 deaths occurred. Since then, the rate of infection has declined markedly; from 1991 through 1996, three deaths and an average of 38 cases per year were reported.

Nutritional sciences also were in their infancy at the start of the century. Unknown was the concept that minerals and vitamins were necessary to prevent diseases caused by dietary deficiencies. Recurring nutritional deficiency diseases, including rickets, scurvy, beri-beri, and pellagra were thought to be infectious diseases. By 1900, biochemists and physiologists had identified protein, fat, and carbohydrates as the basic nutrients in food. By 1916, new data had led to the discovery that food contained vitamins, and the lack of "vital amines" could cause disease. These scientific discoveries and the resulting public health policies, such as food fortification programs, led to substantial reductions in nutritional deficiency diseases during the first half of the century. The focus of nutrition programs shifted in the second half of the century from disease prevention to control of chronic conditions, such as cardiovascular disease and obesity.

Perishable foods contain nutrients that pathogenic microorganisms require to reproduce. Bacteria such as *Salmonella* sp., *Clostridium* sp., and *Staphylococcus* sp. can multiply quickly to sufficient numbers to cause illness. Prompt refrigeration slows bacterial growth and keeps food fresh and edible.

Another process that reduced the incidence of disease was invented by Louis Pasteur--pasteurization. Although the process was applied first in wine preservation, when milk producers adopted the process, pasteurization eliminated a substantial vector of foodborne disease. In 1924, the Public Health Service created a document to assist Alabama in developing a statewide milk sanitation program. This document evolved into the Grade A Pasteurized Milk Ordinance, a voluntary agreement that established uniform sanitation standards for the interstate shipment of Grade A milk and now serves as the basis of milk safety laws in the 50 states and Puerto Rico.

Along with improved crop varieties, insecticides and herbicides have increased crop yields, decreased food costs, and

enhanced the appearance of food. Without proper controls, however, the residues of some pesticides that remain on foods can create potential health risks. Before 1910, no legislation existed to ensure the safety of food and feed crops that were sprayed and dusted with pesticides. In 1910, the first pesticide legislation was designed to protect consumers from impure or improperly labeled products. During the 1950s and 1960s, pesticide regulation evolved to require maximum allowable residue levels of pesticides on foods and to deny registrations for unsafe or ineffective products. During the 1970s, acting under these strengthened laws, the newly formed Environmental Protection Agency (EPA) removed DDT and several other highly persistent pesticides from the marketplace. In 1996, the Food Quality Protection Act set a stricter safety standard and required the review of older allowable residue levels to determine whether they were safe. In 1999, federal and state laws required that pesticides meet specific safety standards; the EPA reviews and registers each product before it can be used and sets levels and restrictions on each product intended for food or feed crops.

Newly recognized foodborne pathogens have emerged in the United States since the late 1970s; contributing factors include changes in agricultural practices and food processing operations, and the globalization of the food supply. Seemingly healthy food animals can be reservoirs of human pathogens. During the 1980s, for example, an epidemic of egg-associated *Salmonella* serotype Enteritidis infection spread to an estimated 45% of the nation's egg-laying flocks, which resulted in a large increase in egg-associated foodborne illness within the United States. *Escherichia coli* O157:H7, which can cause severe infections and death in humans, produces no signs of illness in its nonhuman hosts. In 1993, a severe outbreak of *E. coli* O157:H7 infections attributed to consumption of undercooked ground beef resulted in 501 cases of illness, 151 hospitalizations, and three deaths, and led to a restructuring of the meat inspection process. The most common foodborne infectious agent may be the calicivirus (a Norwalk-like virus), which can pass from the unwashed hands of an infected foodhandler to the meal of a consumer. Animal husbandry and meat production improvements that have contributed to reducing pathogens in the food supply include pathogen eradication campaigns, the Hazard Analysis and Critical Control Point (HACCP) programs, better animal feeding regulations, the use of uncontaminated water in food processing, more effective food preservatives, improved antimicrobial products for sanitizing food processing equipment and facilities, and adequate surveillance of foodhandling and preparation methods. HACCP programs also are mandatory for the seafood industry.

The most urgent challenge to nutritional health during the 21st century will be obesity. In the United States, with an abundant, inexpensive food supply and a largely sedentary population, overnutrition has become an important contributor to morbidity and mortality in adults. As early as 1902, USDA's W.O. Atwater linked dietary intake to health, noting that "the evils of overeating may not be felt at once, but sooner or later they are sure to appear--perhaps in an excessive amount of fatty tissue, perhaps in general debility, perhaps in actual disease". In U.S. adults, overweight (body mass index [BMI] of greater than or equal to 25 kg/m<sup>2</sup>) and obesity (BMI greater than or equal to 30 kg/m<sup>2</sup>) have increased markedly, especially since the 1970s. In the third National Health and Nutrition Examination Survey (NHANES III, 1988-1994), the crude prevalence of overweight for adults aged greater than or equal to 20 years was 54.9%. From 1976-1980 (NHANES II) to 1988-1994 (NHANES III), the prevalence of obesity increased from 14.5% to 22.5%.

Overweight and obesity increase risk for and complications of hypertension, hyperlipidemia, diabetes, coronary heart disease, osteoarthritis, and other chronic disorders; total costs attributable to obesity are an estimated \$100 billion annually. Obesity also is a growing problem in developing countries where it is associated with substantial morbidity and where malnutrition, particularly deficiencies of iron, iodine, and vitamin A, affects approximately 2 billion people. Increasing physical activity in the U.S. population is an important step, but effective prevention and control of overweight and obesity will require concerted public health action.

As the U.S. population ages, attention to both nutrition and food safety will become increasingly important. Challenges will include maintaining and improving nutritional status, because nutrient needs change with aging, and assuring food quality and safety, which is important to an older, more vulnerable population. Continuing challenges for public health action include reducing iron deficiency, especially in infants, young children, and women of childbearing age; improving initiation and duration of breastfeeding; improving folate status for women of childbearing age; and applying emerging knowledge about nutrition on dietary patterns and behavior that promote health and reduce risk for chronic disease. Behavioral research indicates that successful nutrition promotion activities focus on specific behaviors,

have a strong consumer orientation, segment and target consumers, use multiple reinforcing channels, and continually refine the messages. These techniques form a paradigm to achieve public health goals and to communicate and motivate consumers to change their behavior.

REF: *Morbidity and Mortality Weekly Report*, 48(40):905-913, October 15, 1999.



## WORRYING ABOUT PESTICIDES IN FOOD

According to a study conducted by the American Institute for Cancer Research (AICR), "77 percent of people believe that eating foods treated with pesticides increases cancer risk." However, the Institute also reviewed more than 4,500 published peer-reviewed studies and "found no convincing evidence that eating foods containing trace amounts of chemicals including pesticides and fertilizers changes cancer risk." In contrast, the Institute said that "eating five or more servings of fruits and vegetables was found to significantly lower the risk for many cancers."

The Institute was not able to find any evidence to support a link between pesticide residues on produce and cancer. The authors of the report said that "maybe 1 percent of cancers are derived from . . . ingesting the wrong substances, whereas 30 to 40 percent of cancers can be avoided or the risk of them can be reduced by eating the right foods." The right foods included at least five servings daily of a plant-based diet (lots of salad, vegetables and fruit), to reduce the risk of cancer.

The Institute also released a fact sheet entitled "Facts on Preventing Cancer: Pesticides," which addresses concern about the effect of pesticides on food and lists guidelines to help prevent cancer. The Institute stated that "we now know that the recommendations given by the Heart Association, given by the Diabetes Association, given by people concerned with strokes, and by those of us who are concerned with avoiding cancer, are all pretty much the same: **eat more fruits and vegetables, eat a little less food with saturated fat, and exercise.** So if you follow the guidelines for a healthy diet, you are also following the guidelines for avoiding other chronic diseases."

Typically, a 1-5 percent figure is cited among scientists to account for the effect of all manufactured chemicals in air, water, soil and food on cancer risk. This figure represents a recognition that occupational exposure and contamination through misuse, spillage or accidents can cause enormous dosages, which have been linked to cancer.

The Institute contends that cancer is preventable, and it does not seem to be a matter of avoiding this or that potential carcinogen. Preventing cancer has much more to do with making small, positive changes in lifestyles like eating plenty of fruits and vegetables and getting regular exercise. It was estimated that if the only change people made to their diets were to **eat five to six servings of fruits and vegetables each day, worldwide cancer rates would drop by 20 percent.** AICR further estimates that a larger drop, an **estimated 30-40 percent decline in worldwide cancer cases,** could result if people made the following simple lifestyle changes: **consuming a predominantly plant-based diet, staying physically active, and maintaining a healthy weight.**

More information about the links between diet and cancer can be obtained from the Institute's Website (<http://www.aicr.org>). American Institute for Cancer Research Press Release; September 21, 1999

REF: *Chemically Speaking*, October 1999.



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## WHAT CAUSES BIRTH DEFECTS?

Birth defects may arise with no apparent cause, may be inherited from parents, or may be caused by some influence in the environment such as infection, exposure to chemicals, drugs or radiation. Only 35 percent of birth defects can be explained by chromosome defects, hereditary patterns, biochemical abnormalities, infectious disease, or environmental agents. The other 65 percent of birth defects are completely unexplained. Birth defects produced in laboratory animals by various chemicals are of scientific interest, but human data and animal data often disagree.

### So What are the Known Causes of Birth Defects?

**Radiation** - Every woman and man planning to have children should protect themselves from unnecessary radiation. The most common source of radiation is diagnostic medical and dental x-rays. Monitoring is important where workers may be exposed to radiation on the job.

**Cats** - Yes, cats. Cats carry a parasite called *Toxoplasma*, which can be transmitted through their feces to pregnant women. The parasite enters through contaminated food or close contact (ex. litter boxes). In a small percent of pregnancies, *Toxoplasma* can infect the mother's placenta and the baby, resulting in birth defects including mental retardation and blindness.

**Viruses** - German measles is one of the very few viruses that can cause serious birth defects. Prevention is through increasing use of the rubella vaccine.

**Tobacco and Alcohol** - Use during pregnancy may produce premature birth, low birth weight and poor mental development. Avoiding the use of tobacco and alcohol is very important and sometimes taken too much for granted.

**Genetics** - Each person's bloodline contains good and bad genes; first cousin marriages run a risk of a double-dose of lethal or bad genes in the offspring. Down Syndrome is one of the most common chromosome defects. It occurs more often in pregnancies among older women but can occur in any pregnancy for no apparent reason.

### Can Chemicals Cause Birth Defects in Humans?

The major chemicals known to cause birth defects are prescription medications that your doctor should know about. These include thalidomide, isotretinoin, valproic acid, cancer therapy and a few others. Of major concern to birth defects are lead and mercury. For the most part, these have been controlled, but still can occur in contaminated well water or buildings with old peeling paint.

### What About Pesticides?

There has been much speculation in the media concerning the possible association between pesticides and birth defects in humans. Unfortunately this speculation has not been backed up by solid scientific evidence. One exception is DBCP (dibromochloropropane), a fumigant that has not been available since the late-1970's, which caused reproductive problems at high exposure levels, particularly among males who worked in the DBCP manufacturing plants. With time and avoidance, DBCP effects disappeared. Meanwhile, more case/control studies are needed to detect any evidence of reproductive damage by commonly used pesticides.

### Can Birth Defects be Prevented?

Exposure to known causes of birth defects obviously should be avoided. The most common factors to be avoided are unnecessary medications, smoking, and excessive amounts of alcohol. Risks for one group of serious birth defects (neural tube abnormalities - spina bifida, anencephaly) can be significantly decreased by taking folic acid before conception and throughout the pregnancy (at least 0.4 mg/day).

Prenatal detection of birth defects is available in cases of Down Syndrome, spina bifida, anencephaly, and others. Your risk of having a child with certain kinds of birth defects is higher if there are prior birth defects in your family or marriage between blood relatives; this risk can be estimated by your physician with help from a genetics specialist.

### **Are Birth Defects Increasing?**

There is good evidence that birth defects, as measured in this country over the past 16 years, are decreasing or remaining the same. Some categories such as heart defects are showing a numeric increase; however, experts explain the increase is a result of better diagnostic procedures for defects. Neural tube defects, the most sensitive indicator of environmental fetal damage, have decreased over the past 15 years here and in Europe. Another good sign is the decrease in the number of stillbirths.

### **Getting More Information -**

The best source of birth defect information is your personal physician. Be sure to write down your questions before each visit during pregnancy, so that you will not forget to ask. Scientists have learned more about birth defects, but as noted earlier, 65 percent of these events remain unexplained. Reproduction is not free from biologic error. (Agromedicine Program, Medical University of South Carolina)

REF: *Chemically Speaking*, October 1999.



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## ♣ Toxicology Tidbits ♣

### **Healthier Mothers and Babies**

#### **Achievements in Public Health, 1900-1999**

At the beginning of the 20th century, for every 1000 live births, six to nine women in the United States died of pregnancy-related complications, and approximately 100 infants died before age 1 year. From 1915 through 1997, the infant mortality rate declined greater than 90% to 7.2 per 1000 live births, and from 1900 through 1997, the maternal mortality rate declined almost 99% to less than 0.1 reported death per 1000 live births (7.7 deaths per 100,000 live births in 1997). Environmental interventions, improvements in nutrition, advances in clinical medicine, improvements in access to health care, improvements in surveillance and monitoring of disease, increases in education levels, and improvements in standards of living contributed to this remarkable decline. Despite these improvements in maternal and infant mortality rates, significant disparities by race and ethnicity persist. This report summarizes trends in reducing infant and maternal mortality in the United States, factors contributing to these trends, challenges in reducing infant and maternal mortality, and provides suggestions for public health action for the 21st century.

REF: [Morbidity and Mortality Weekly Report, 48\(38\), October 1, 1999.](#)





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## **EPA lowers threshold reporting requirements for toxics; extends lead proposal comment period**

Persistent bioaccumulative toxics that do not easily degrade will be further regulated under a new EPA rule highlighted by President Clinton in his weekly radio address on Saturday, Oct. 30. Under the new regulations, the agency will require detailed reporting on 27 of the toxicants, including PCBs, mercury, and dioxin. Previously, there were no reporting requirements for dioxin. Generation of a tenth of a gram of dioxin must be reported under the new regulation.

For most of the toxicants, however, the threshold for reporting will be 100 pounds of emissions per year for all but a few more threatening ones. For those, the threshold level will be 10 pounds of emissions per year. The agency says it is developing the reporting guidance for dioxin and dioxin-like compounds and other chemicals. Beginning in January 2000 a portion of the guidance will be posted on the Internet at [www.epa.gov/tri](http://www.epa.gov/tri). The final rule is now accessible at that site.

EPA is extending the public comment period for its proposed rule on the Toxics Release Inventory (TRI) lead and lead compounds reporting to Dec. 16, 1999. This is the second time the agency has extended the comment period. The lead rule proposal was published on Aug. 3, 1999. As with persistent bioaccumulative toxicants, this rule will lower the thresholds for use and emissions reporting of the substance.

REF: Food Chemical News Daily, 2(93), November 2, 1999.



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## **EPA releases progress report on implementing Food Quality Protection Act**

Washington (10/18/99) -- A new report has been published on U.S. EPA's progress in carrying out the Food Quality Protection Act over the past three years. Highlights in the "Implementing the Food Quality Protection Act: Progress Report" include how EPA has taken several actions to eliminate or reduce the use of pesticides on foods commonly eaten by children, and registered several new, safer pesticides that pose less risk to the public and environment, and that can be used as alternatives to older, more toxic conventional chemicals.

Other accomplishments detailed in the report, include external outreach efforts that have resulted in greater public participation in many of EPA's pesticide programs, the establishment of sound, new science policies, and the creation of programs that support integrated pest management practices, among others.

Copies of the progress report are available at: [www.epa.gov/oppfead1/fqpa/index.html](http://www.epa.gov/oppfead1/fqpa/index.html)



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## **USDA Launches New Biotechnology Website**

The USDA unveiled a new Internet Website, which provides easy public access to the Department's information on agricultural biotechnology issues. Several USDA agencies have a role in biotechnology issues such as the Animal and Plant Health Inspection Service, the Food Safety Inspection Service and the Agricultural Marketing Service, which have regulatory functions. The Agricultural Research Service, the Economic Research Service, and the Cooperative State Research, Education and Extension Service conduct or fund agricultural biotechnology research. The Foreign Agricultural Service addresses trade issues related to biotechnology. The new biotechnology Web site can be accessed at [www.aphis.usda.gov/biotechnology](http://www.aphis.usda.gov/biotechnology).

REF: Food Chemical News Daily, 2(92), November 1, 1999.



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## **Progress in Reducing Risky Infant Sleeping Positions -- 13 States, 1996-1997**

Sudden infant death syndrome (SIDS) is one of the leading causes of postneonatal mortality in the United States. To reduce the risk for SIDS, the American Academy of Pediatrics (AAP) recommends that all healthy babies be placed to sleep on their backs. In 1994, a national "Back-to-Sleep" education campaign was begun to encourage health-care providers and the public to adopt a back or side sleeping position for all infants. To assess the response to these recommendations, CDC analyzed population-based data on infant sleeping positions during 1996 and 1997 from 13 states participating in the Pregnancy Risk Assessment Monitoring System (PRAMS). This report summarizes the results of that analysis and indicates that from 1996 to 1997 placement of infants in the stomach sleeping position declined significantly in four states and placement of infants in the back sleeping position increased significantly in nine states. However, the percentage of infants placed on their stomachs continued to differ by state, maternal demographics, and type of insurance coverage.

The findings in this report provide states with the information necessary to monitor their progress toward achieving the 2000 goal and to identify populations that back-to-sleep campaigns should target. In several states, mothers who smoke, who have publicly funded health insurance, who breast-fed for less than 1 week, who already have one or more children, or who are black are more likely to place their infants to sleep on their stomach than mothers without these characteristics. These findings underscore the need to develop state-specific prevention programs and back-to-sleep messages targeting subgroups of mothers at high risk for placing their babies on their stomach.

REF: [Morbidity and Mortality Weekly Report, 48\(39\);878-882, October 08, 1999.](#)



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## **Cigars have their own danger**

Regular cigar smokers, independent of other risk factors, are at a higher risk for coronary heart disease, chronic obstructive pulmonary disease, and cancers of the mouth, throat or lung, says a study supported by the National Cancer Institute. Researchers at Kaiser Permanente analyzed the medical histories of more than 17,000 men who reported never having smoked cigarettes, and who were not currently pipe smokers. Those who smoked cigars and those who did not were followed from 1971 through the end of 1995 for a first hospitalization or death from a major cardiovascular disease or COPD, and through the end of 1996 for a diagnosis of cancer. The study is the most definitive research yet to

link cigar smoking with increased risk of serious illness. (*New England Journal of Medicine*, June 1999)

REF: [FDA Consumer magazine, September-October 1999.](#)




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## **The fall of Reye's Syndrome**

The number of Reye's Syndrome cases, a serious disorder that can lead to long-term brain disorders or death, has fallen from 555 in 1980 to fewer than 37 cases each year since 1987, according to a recent report from the national Centers for Disease Control and Prevention. Researchers credit a word-of-mouth campaign spread to parents and doctors, cautioning them not to give aspirin to children who have chickenpox or influenza-like illnesses. In 1982, the U.S. surgeon general warned that using aspirin to treat viral infections could lead to Reye's Syndrome, and in 1986, FDA required warning labels on all aspirin products. Since then, acetaminophen has replaced aspirin in most medications for fever and aches in children. (*New England Journal of Medicine*, May 1999)

REF: [FDA Consumer magazine, September-October 1999.](#)




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## **Chocolate craving is real**

There's something about chocolate that makes it an object of the palate's desire more than any other food. What that something is remains unknown, but researchers believe it is probably a combination of chocolate's nutrients, chemical composition and, of course, its fat and sugar. Whatever the delicious truth, chocolate craving exists, according to a report in the *Journal of the American Dietetic Association*.

"Clearly, controversy surrounds the question of whether motivations for chocolate are physiological, psychological or pharmacologic," write Dr. Douglas Taren and Kristen Bruinsma of the University of Arizona in Tucson. Despite the downside of fat and sugar consumption, the researchers add, the body's craving for chocolate should be acknowledged and may be fit into a healthful diet. The investigators came to this conclusion after reviewing studies of the physical, psychological, chemical and otherwise "drug-like" effects of chocolate indulgence. For some people chocolate represents "self-medication." For instance, certain compounds found naturally in chocolate, called biogenic amines, are also produced in the brain; some studies have shown that these compounds are important regulators of mood and may play a role in depression.

From a nutrition standpoint, the researchers report, chocolate's high concentration of magnesium may ease the effects of magnesium deficiency, a condition that research suggests may contribute to premenstrual syndrome. Along those lines, chocolate's storied association with some women's monthly cravings may well have a hormonal basis, according to the report. "Chocolate cravings," Taren and Bruinsma note, "appear to exist in 40% of females and 15% of males." Studies have shown that women's episodic chocolate cravings tend to be strongest just before menstruation, when levels of the hormone estrogen are moderate and progesterone levels are high. Because progesterone promotes fat storage, keeping it from being used as fuel, high levels of the hormone may trigger fatty-food cravings.

It is chocolate's fat, sugar and overall taste, smell and texture that are "at the heart of the most widely accepted explanation for chocolate cravings," the authors write. Yet fat and sugar do not entirely explain chocolate's unparalleled appeal, since other sinful foods usually cannot satiate the chocolate craver's appetite. So it seems that chocolate's sensory rewards, chemical properties and nutrients conspire together to create "chocoholics."

The authors note that "chocolate cravings affect a large percentage of Americans," and conclude by recommending that doctors and dietitians remember to ask patients about chocolate cravings and chocolate eating patterns. (SOURCE: *Journal of the American Dietetic Association*, 99:1249-1256, 1999.)

REF: [www.ReutersHealth.com](http://www.ReutersHealth.com), October 7, 1999.



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## **Chemicals in diapers cited as possible asthma trigger**

Childhood respiratory problems, including asthma, may be linked to inhaling the mixture of chemicals emitted from disposable diapers, researchers write in the September/October issue of *Archives of Environmental Health*. Lead author Dr. Rosalind C. Anderson, of Anderson Laboratories in West Hartford, Vermont, told Reuters Health that "chemical emissions of some disposable diapers have immediate health effects in animals breathing the diluted chemical mixtures." Upon analysis, the diaper emissions were found to include "several chemicals with documented respiratory toxicity," according to the paper. In contrast to the results obtained with disposables, "new cloth diapers produced very little respiratory effects and appeared to be the least toxic choice for a consumer," the researchers write.

Though the disposable effect was noted "even when the emissions of a single diaper are diluted in the air of a small room," Anderson said, she cautions that it is too early to indict diaper chemicals. "Whether the diaper chemicals initiate clinical disease, simply trigger an asthma-like response or are not implicated (at all) in human disease will not be known until after a vast amount of human data has been accumulated," she commented. She and her co-author, Dr. Julius Anderson, "have (previously) published similar findings associated with other products used in ... infants' environments. A number of these manufactured materials -- air fresheners, mattress covers... fabric softeners -- have many rapid-onset toxic effects in common," she pointed out. In Anderson's view, the current epidemic in childhood asthma cannot be explained solely on the basis of what she termed, "the usual suspects: dust mites, cockroaches, maternal smoking. Maybe child-care products (such as) plastic diapers... plastic baby bottles, and plastic toys are important factors (through the release of) chemicals with toxic effects."

REF: [www.ReutersHealth.com](http://www.ReutersHealth.com), October 7, 1999.



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## **What saves the most lives?**

The most cost-effective way to save lives, generally, is to increase medical treatment, and to a somewhat lesser degree, to curb fatal injuries. Trying to save lives by regulating pesticides or other toxins, on the other hand, generally uses up far more resources and saves fewer lives, meaning that shifting resources from toxicant regulation to medical testing typically would save lives. While it is true that some toxicant-type regulations do save lives (for example, restrictions on the release of nuclear wastes), most do not fit into this category. A seminal study that surveyed 587 risk-reducing methods, programs and rules revealed that the median cost per life-year saved, or extending a single life by one year, for toxicant control measures is \$2,800,000. In contrast, the median cost per life-year saved is \$19,000 for

medical treatments, and \$48,000 for fatal injury reductions. The director of Harvard University's Center for Risk Analysis notes that "the median toxicant control program costs 58 times more per year of life saved than the median injury prevention program, and 146 times more than the median medical program. We go after minuscule risks, such as pesticide residues in food, and simultaneously we are tolerant and neglectful of major problems in our daily life." (*Risk Analysis*, Vol. 15, No. 3 (1995), p. 369-390 via the Heritage Foundation.)

REF: *Chemically Speaking*, October 1999.



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## Nightshade

Did you know that nightshade (*Atropa belladonna*), a plant that can be poisonous and even deadly because of its high nitrate accumulations, used to be a favorite cosmetic among women in medieval Italy, as it dilated the pupils of their eyes making them "sparkly and dreamy." Atropine is an alkaloid from nightshade that is used in ophthalmology, and carried by soldiers as an antidote to nerve gas attack. (*London Guardian*; September 30, 1999 via Agnet.)

REF: *Chemically Speaking*, October 1999.



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## Catnip Effective as Cockroach Repellent

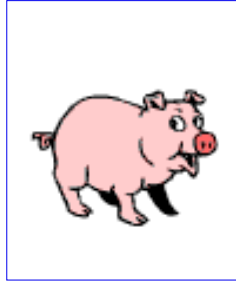
Entomology researchers from Iowa State University have confirmed that catnip, as folklore has long suggested, is an **extremely effective cockroach repellent**.

Chris Peterson and Joel Coats announced their findings at the national meeting of the American Chemical Society. Peterson said that Osage orange, an inedible fruit also known as hedgeapple, is similarly effective at repelling "cockroaches, spiders, mice, flies, crickets, or just about anything people care to repel." Currently, there are no commercially available catnip cockroach repellents, but one of the two forms of nepetalactone in catnip plants served to repel roaches at just 1% of the DEET dose required to repel them.

Peterson noted that "most insecticides are designed to kill roaches. People don't seem to just want them to go away; they want them dead." He and Coats originally were interested in testing the efficacy of the more potent form of nepetalactone against flies-which died when exposed to the compound. But they expanded their research when an intern mentioned that some people put catnip in planters to keep insects away.

The tests were performed on German cockroaches, which scuttled away from nepetalactone as well as compounds distilled from Osage orange. Studies on mosquitoes are under way. (From: *Access-Pesticides*, U.AZ)

REF: *Kansas Pesticide Newsletter*, 22(10), October 14, 1999.



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