

The Weston A. Price Foundation

Violent Behavior: A Solution in Plain Sight

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We live in violent times. Americans are seven times more likely to die of homicide and twenty times more likely to die from shooting than people in other developed countries.¹ Between 1984 and 1994, the number of young murderers under age eighteen in the U.S. increased threefold.²⁻⁴

In the 1990s, a new form of deadly violence raised its head in America. The first mass school slaying occurred in 1992 when Wayne Lo killed a student and a professor at a remote school in Massachusetts. This act set the stage for an escalating pattern of chilling destruction aimed at students and carried out by students, violence that increases every year. From the 1999 Columbine shootings in Colorado to the recent shootings in Newtown, Connecticut, Americans are desperately searching for answers.

In his book *Confronting Violence: Answers to Questions About the Epidemic Destroying America's Homes and Communities*, George Gellert, MD, discusses “tested strategies to prevent violent crime” without providing any evidence that any of these strategies—electronic tracking, hotlines, education and training—have actually worked. In fact, it is obvious that they have not.⁵

The disturbing tendencies we see today contrast strongly with Dr. Weston Price's descriptions of harmonious, well-nourished indigenous cultures—from smiling, joyful South Sea Islanders to highly spiritual Gaelic fisherfolk to Swiss villagers celebrating “one for all and all for one” during their summer festivals.⁶ Likewise, Dr. Francis Pottenger described peaceful, harmonious behavior among well-nourished cats. Both cats and humans degenerated into disharmonious behavior patterns with the change to foods devitalized by heat and processing.⁷

Modern commentators are blind to the solution, a solution that is in plain sight: clearly defining good nutrition and putting it back into the mouths of our children, starting before they are even conceived. . . because food is information and that information directly affects the emotions, the nervous system, the brain and behavior.

FAT-SOLUBLE VITAMINS

The brain and nervous system require specific nutrients to function properly, and the evidence is overwhelming that nutrient deficiencies can lead to aggression and violent behavior. Let's start with the fat-soluble vitamins, vitamins A, D₃ and K₂, so important in the diets of indigenous peoples.

Preformed vitamin A, called retinoic acid, is critical to brain development. Receptors in the amygdala, hippocampus and other paralimbic brain regions suggest that vitamin A signaling plays a vital role in cognitive function.⁸ When vitamin A is lacking during gestation, as it is for most mothers in our fat-phobic society, children may be set up for abnormal behavior patterns later in life.

In animals, vitamin A deficiency results in problems with spatial learning and memory. Vitamin A deficiency may lead to dopamine receptor hypo-activity and the typical symptoms of schizophrenia, such as flat affect, apathy and lack of insight, as well as

hallucinations and delusions.⁹ Schizophrenia is a chronic, severe and serious brain disorder. People with schizophrenia hear voices and believe people are controlling them.¹⁰

Recent studies from the U.K. show that low levels of vitamin D₃ (cholecalciferol) are associated with increased risk of depression and panic. Researchers from the Children's Hospital and Research Center in Oakland, California, defined the role of vitamin D in neurological health, pointing out the wide distribution of vitamin D throughout the brain. The vitamin affects portions of the brain involved in learning and memory, as well as motor control.¹¹

Vitamin D is very much involved in production of serotonin, the molecule of will power, and delayed gratification. Decreased serotonin activity can lead to an inability to create and act on well-formed plans.¹²

There are many vitamin D receptors in the brain. Bright light going through the eyes increases serotonin production—sunglasses block this effect—and sunscreen blocks the vitamin D formation in the skin.¹³

Studies with rats show that the production of serotonin is directly related to duration of bright sunlight. Sunbathing and exposure to bright light during the day can have a similar effect to antidepressants and of course are far safer. Other ways to boost serotonin in the dark of winter are exercise, massage and happy memories,¹⁴ and, of course, vitamin D-rich food.

Calcitriol, the hormonally active form of vitamin D, accumulates in the adrenals, and this stimulates the production of the gene for tyrosine hydroxylase, which is involved in serotonin production. Serotonin synthesis is thought to be dependent on the duration of light exposure the previous summer.¹⁵

Less is known about the correlation between vitamin K₂ status and behavior. However, research has shown that vitamin K₂ is involved in the biochemistry of nervous tissue and is needed for the formation of myelin.^{16,17} Vitamin K₂ contributes to the biological activation of proteins Gas6, which are involved in many cellular functions such as cell growth, survival and apoptosis. In the brain, vitamin K₂ also participates in the synthesis of sphingolipids, an important lipid present in high concentrations in brain cell membranes. Vitamin K₂ can affect psychomotor behavior and cognition.¹⁸ Weston Price cured a child of seizures with high-vitamin butter oil, rich in vitamin K₂.¹⁹

All these vitamins were consumed in very high levels in primitive diets.¹⁹ Today, due to disastrous dietary advice, most people avoid the dietary sources of these critical nutrients—egg yolks, butter, organ meats, meat fats, goose and chicken liver, cod liver oil, fish eggs and oily fish, and some fermented foods like sauerkraut.²⁰

WATER-SOLUBLE VITAMINS

Water-soluble vitamins also play critical roles in brain health. A deficiency of thiamine, vitamin B₁, causes beriberi, a serious disease with neurological consequences, directly affecting the hypothalamus of the brain. The hypothalamus is the seat of impulse control. Symptoms of deficiency include depression, irritability, confusion and loss of memory. Chronic deficiency results in paralysis and insanity. Subjects with marginal deficiencies are impulsive, highly irritable, aggressive and sensitive to criticism.²¹ People who eat foods with mostly empty calories such as sodas, fast foods, snack foods and alcohol are at risk for B₁ deficiency. Thiamine is found in animal foods and selected seeds. Pork is exceptionally rich in thiamine.²²

Pellagra, a scourge of the early twentieth century, is a serious disease caused by a deficiency in niacin, vitamin B₃. The three main symptoms are diarrhea, dermatitis and dementia—the three Ds. The psychotic symptoms can be very severe and vary greatly from individual to individual; in some individuals they precede dermatitis and diarrhea, making diagnosis of pellagra difficult. Pellagra continued to be fatal up to

the 1940s and was successfully treated with niacin and niacin-containing foods. Widely found in food, it is especially rich in fish, liver, meats and bacon. Vitamin B₃ is also added to processed grain products, a practice that has helped reduce overt symptoms of pellagra.²³⁻²⁵

However, subclinical symptoms of pellagra are widespread. They include anxiety, hyperactivity, depression, fatigue, headaches, insomnia and hallucination—symptoms all very similar to those of schizophrenia. Abram Hoffer, MD, an orthomolecular psychiatrist, treated many cases of schizophrenia and pellagra with niacin.²⁶ Likewise, Natasha Campbell-McBride, MD, treats many cases of schizophrenia, which she believes is actually pellagra.²⁷

Niacin is unique among vitamins in that our bodies can manufacture it. Niacin is synthesized from tryptophan, an essential amino acid, via the tryptophan hydroxylase pathway. Tryptophan is an essential amino acid and must be obtained from the diet.²⁹ Good sources include cheese, chicken, turkey, beef, fish, shellfish, peanuts and eggs.²⁸ The whey component of raw milk is an excellent source of tryptophan because the protein is not denatured by heat.²⁹

Under chronic stress, cognitive performance declines, possibly due to serotonin exhaustion. The uptake of the precursor tryptophan into the brain depends on nutrients that influence the availability of tryptophan. A significantly greater increase in the plasma ratio of tryptophan after ingestion of α -lactalbumin from whey compared with casein, has been shown in several studies. After ingesting whey, memory scanning improved significantly in high stress individuals. α -lactalbumin from whey has the highest tryptophan content of all food sources.³⁰⁻³¹ This explains why raw milk can have such a calming effect on a child's disposition.

Supplements such as L-tryptophan are available, which must be taken with vitamin C and B complex vitamins to support the transformation of tryptophan into serotonin. A form of tryptophan called 5-HTP crosses the blood-brain barrier and is transformed into serotonin (5-HT).³²

Supplementing a high sucrose diet with what are called branched-chain amino acids, such as leucine, isoleucine and valine, lowers brain levels of tryptophan.³³ Supplements to enhance physical workouts at the gym are laced with branched-chain amino acids, and these are widely available for sale in many health food shops. Worse, many infant formulas are fortified with branched-chain amino acids, thus reducing the amount of tryptophan reaching the brain. The result may be reduced sleep in infants and aggressive behaviors in childhood. It is hypothesized that amino acid imbalances in infant formula may result in permanent changes in mental capacity and social adaptability later in life.³⁴

Water-soluble vitamin B₆ is a precursor for fifty enzymes necessary for the metabolism of amino acids and for maintenance of the immune system; it is also necessary for the process of methylation, which is critical for mental health.³⁵

Because of its relationship to the production of the neurotransmitter gamma aminobutyrate, B₆ deficiency is directly related to the occurrence of a kind of convulsion that commonly occurs in youngsters.³⁶

B₆ is needed for modulating homocysteine levels—high levels are implicated in mental illness. Vitamin B₆ deficiency has been reported in some cases of infant formulas. Certain drugs will deplete vitamin B₆.³⁷

In 1989, elevated homocysteine was found to be an independent risk factor for vascular disease. Homocysteine is a sulfurated amino acid derived from methionine. Methionine is found in animal products like cheese, eggs, fish, meat and poultry and produced in a pathway that produces methyl groups required for the synthesis of catecholamines and DNA. High homocysteine levels are a sensitive indicator of B vitamin deficiency. Elevated homocysteine, called homocysteinuria, has a high prevalence in psychiatric disorders leading to violence, and elevated levels are found in Alzheimer's disease.³⁸

Vitamin B₁₂ deficiency has a well-known correlation with mental disorders, including irrational anger. A higher incidence of low B₁₂ is found in mental patients than in the general population. Deficiencies cause mental symptoms ranging from poor concentration, depression and severe agitation to hallucinations.³⁹ Deficiencies are caused by pernicious anemia, an autoimmune condition; they are also found in vegetarians and vegans, those with low animal protein intake, and individuals with leaky gut.⁴⁰ Drugs including anesthetics can deplete vitamin B₁₂.⁴¹

Volunteers on a diet deficient in pantothenic acid (vitamin B₅) experience hypoglycemia, numbness in hands and feet, headache and insomnia; they are easily upset, irritable, quarrelsome, sullen and depressed. Good dietary sources include meats, organ meats, potatoes, tomatoes and royal bee jelly.⁴²

Low levels of folate show up in 40-80 percent of elderly psychiatric patients. Folate is required for remethylation of homocysteine and hence plays a role in mental health. Good sources include liver, leafy green vegetables and orange juice. Folate is also found in enriched cereal products. Chronic alcohol consumption impairs folate absorption as do a large number of drugs.⁴³

Finally, regarding vitamin C, research indicates that almost any physical or mental stress significantly lowers vitamin C levels in plasma. The nerve endings in the brain contain the highest concentrations of vitamin C in the body after the adrenal glands.⁴⁴ It makes good sense to conclude that good vitamin C status supports mental health.

MINERALS

Studies also show that deficiencies in iodine, potassium, iron, magnesium, zinc, chromium, manganese and other minerals can result in mental symptoms.

Magnesium is used in hundreds of brain enzymes. Low levels of magnesium are related to many neurological conditions, such as aggressive behavior, dementia and schizophrenia. Magnesium is found mainly in seeds, nuts, legumes, dark leafy

vegetables and whole grains if it is not lost during processing.⁴⁵

Iron is necessary for the synthesis of neurotransmitters and myelin that covers the nerves, and is critical during pregnancy in relationship to the IQ of the child.⁴⁶

Iodine is required for the development of a healthy brain. Iodine deficiency affects all individuals but especially pregnant women, lactating women, women of reproductive age, and children younger than three years of age. During fetal and neonatal growth and development, iodine deficiency leads to irreversible damage to the brain and central nervous system. Iodine deficiency in the fetus results in severe mental retardation called cretinism.⁴⁷

Zinc deficiency is common in the American diet because zinc is removed in processing of foods. It is abundant in red meat and oysters, foods not well liked or available to many children and teens. Many brain enzymatic reactions depend on zinc. It is involved in insulin metabolism as well. Zinc deficiency has been linked with hypoglycemia and suicide, and with angry, aggressive, hostile behaviors that result in violence.⁴⁸

CHOLINE, ARA AND DHA

Choline is a key nutrient for the brain. Phosphatidylcholine is produced from choline and is the main storage form of arachidonic acid (ARA) and docosohexanoic acid (DHA), two fatty acids that are vital to neurological function. There are many studies suggesting that DHA contributes to brain development and is essential for myelination of nervous tissue.⁴⁹

Choline is a precursor for the neurotransmitter acetylcholine, which is especially important in memory and mood, and it is also the transmitter most often used by neurons that communicate between the brain and the nerves controlling skeletal muscles, heart rate, breathing, sweating and salivation. The best dietary sources of choline are egg yolks, organ meats, legumes and breast milk.⁵⁰

As for ARA and DHA, multiple aspects of brain metabolism, function and structure are thought to depend on having adequate brain concentrations of these fatty acids. Sources of ARA include butter, egg yolks and animal fats.⁵¹

Deficiency in DHA strongly correlates with violent behavior. Subjects with low DHA tend more towards violence and alcohol dependence.⁵² DHA is found in breast milk but baby formulas were not supplemented with DHA until the late 1980s in Europe, and 2002 in the U.S. DHA can be found in brains, cod liver oil and finfish. Brains from animals were a traditional weaning food.⁵³ DHA and ARA formulation in formula, however, are not identical to those found in breast milk but are made from algae and extracted with hexane.⁵⁴

COPPER EXCESS

Sometimes an excess of a mineral can lead to mental imbalance. An excess of copper, for example, has been implicated in Wilson's disease, a condition with psychiatric consequences. High levels of copper can cause extreme fear, paranoia and hallucinations. Elevated levels of copper are found in many studies with schizophrenics, manic depressives and epileptics. Drs. Venter and Findlay found that pellagrins were also high in copper. Research has established that excess levels of copper can cause violent behavior in children and youth.⁵⁵

Vitamin C deficiency results in copper increase. Birth control pills increase copper, as do some drinking water, copper pots and utensils, as well as copper in the birth control IUDs. Soy products are extremely high in copper. Other sources include tea, shellfish, liver, miso, cereals, cocoa and chocolate.⁵⁶

FOOD SENSITIVITIES

Allergies and sensitivities to specific foods, chemicals, or inhalants may be responsible for emotional reactions classified as "neurotic" or "psychotic." "Confusion, mental blocking, dullness, lethargy, tenseness, irritability, dissociation and perceptual

distortions are some of the more common CNS [central nervous system] allergic responses."⁵⁷

William Philpott, MD, an orthomolecular psychiatrist, believed that allergic reactions could result in schizophrenic behaviors: "My own practice as a psychiatrist has shown that for two hundred fifty consecutive patients, there is convincing evidence that the majority of them developed major symptoms on exposure to foods and chemicals; 92 percent of those schizophrenics developed symptoms such as maladaptive reactions to food and chemicals; 64 percent on exposure to wheat; 51 percent on exposure to corn; 51 percent on exposure to pasteurized cow's milk; 30 percent of schizophrenics develop symptoms on exposure to petrochemical products, some so severe as to precipitate suicide."⁵⁸

For many people gluten causes an immune reaction. This condition is most often related to celiac disease (CD); symptoms include indigestion, bloating, villous atrophy, leaky gut and malabsorption of nutrients. Diagnosis is confirmed by testing for antibodies.

Gluten sensitivity (GS) has emerged as an illness distinct from celiac disease with an estimated prevalence six times that of CD. Glutensensitive people do not have villous atrophy or the antibodies that are present in celiac disease, but rather they can test positive for antibodies to gliadin, part of the protein.⁵⁹

Both CD and GS result in a variety of neurologic and psychiatric symptoms: changes in the cerebellum, visual disturbances, blurred vision, seeing colored dots, headache and encephalopathy. Anxiety disorder, panic disorder and social phobia are common.⁶⁰

Recent research found that schizophrenics are twice as likely to have gluten antibodies as controls. Some schizophrenics have antibodies to gluten that differ from those of CD patients, and these people may be missed when tested for CD. The

condition is treated with antipsychotic medication, but some of these patients improve with a gluten-free diet.⁶¹

Schizophrenia is the mental disease with the strongest relationship to gluten intolerance. It was known as far back as 1953 that patients with celiac disease had hallucinations. A high prevalence of depressive symptoms, hypothetically related to serotonin dysfunction, has been reported among adults with celiac disease. Several studies have shown that the majority of adolescents with CD displayed depressive behavioral symptoms and disruptive behavioral disorders before the diagnosis of CD. They also had low free tryptophan levels.⁶²

EXCITOTOXINS: MSG AND ASPARTAME

Excitotoxins are substances in foods that overstimulate neuron receptors in the brain and damage brain cells. These neurons then become exhausted and die. Scientists have especially noted this effect in the hypothalamus, the part of the brain that modulates behavior, impulse control, the onset of puberty, sleep and immunity. Headaches are the most common side effect. The main two excitotoxins are monosodium glutamate (MSG) and aspartame, an artificial sweetener, also called Equal or NutraSweet.⁶³

Symptoms of MSG ingestion can mimic allergic reactions, such as rashes, wheals on the skin, swollen face, hives, asthma, runny nose, flushing, rapid heartbeat, diarrhea, stomach cramps and arthritis. Neurological symptoms include depression, insomnia, anxiety, confusion and paranoia. MSG has also been linked in scientific studies with death of brain tissue in lab animals, obesity, reproductive disorders, behavioral disorders, hyperglycemia, learning and memory disorders, stroke, epilepsy, brain trauma and schizophrenia.⁶⁴

The general rule is that the more processed a food is, the more MSG it contains. Canned soups, soup mixes, potato chips, crackers, soy sauce, infant formula, vaccines, some wines, protein bars, dietary supplements, and especially soy products

contain MSG. When a food contains less than 99 percent MSG, the ingredient does not require a label. However, hydrolyzed vegetable protein must be on the label and that always contains MSG. "Flavors" and "natural flavoring" are probable sources of MSG.⁶⁵

Believe it or not, conventional fruits and vegetables can be sources of MSG! A product called Auxi-Gro, which contains MSG, is sprayed on crops such as wine grapes as a growth enhancer, and MSG can end up in supposedly healthy fruits and vegetables. Organic fruits and vegetables are less likely to be sprayed with Auxi-Gro.⁶⁶

Fast foods and processed foods are loaded with excitotoxins and should not be consumed, especially by growing children. Cooking homemade meals from simple basic ingredients is the solution to avoiding most excitotoxins at home. MSG and its evil twin aspartame are the darlings of the food industry because they enhance the flavor of foods, thus making relatively tasteless processed foods more flavorful.

The artificial sweetener aspartame is found in many products, from soda to candy to flavored yogurt to beer. Parents, unaware of aspartame's damaging effects on the growing brain, may buy food products containing aspartame if weight control is an issue in the household.

The FDA lists more than ninety symptoms of aspartame toxicity, even rashes, cramps and pain in the tendons and ligaments. Documented neurological events include vertigo, ringing in the ears, headaches and depression. Aspartame releases methanol upon heating and digestion, and methanol poisoning causes headaches, behavioral disturbances and inflammation of the nerves. Another breakdown product of aspartame is poisonous formaldehyde, the same substance used by undertakers to preserve corpses.⁶⁷

Aspartame is composed of two amino acids, aspartic acid and phenylalanine. Seizures and other mental symptoms associated with aspartame consumption are related to low serotonin resulting from the phenylalanine component. Aspartic acid is

synthesized from glutamate, a major excitatory transmitter in the brain. A lack of the calming neurotransmitter serotonin and increased levels of an excitatory transmitter further stimulate the brain.⁶⁸

Thousands of adverse reactions to aspartame have been reported to the FDA, mostly concerned with abnormal brain function, brain tumors, epilepsy and Parkinson's disease. Children's brains are four times more susceptible to damage from excitotoxins than the brains of adults, and they react with ADD-ADHD-type symptoms, impaired learning, depression and nausea.⁶⁹

The USDA recently condemned sugary soda drinks for school lunch programs but considers artificially sweetened beverages a "healthier" choice.⁷⁰

Neurological damage from excitotoxins also depends on the quality of the diet. Those who eat antioxidant-rich foods such as organic colorful fruits and vegetables, high quality protein and good fats such as butter, lard, coconut oil and others, are protected from the occasional food containing MSG. Cod liver oil and turmeric can reduce the likelihood of damage.

OTHER FOOD ADDITIVES

Over three thousand chemicals, classified as food additives, are added to our food. Many of these can affect mood and behavior. For example, sodium lactate, which is added to luncheon meats, can bring on panic attacks in some individuals. It seems to increase adrenal hormone levels, generating the fight-or-flight response.⁷¹

Another common additive is annatto, a yellow extract from seeds of a tree, which is added to foods that need a yellow coloring, such as snack foods and cheese. It often produces rashes, increases in blood sugar and even changes in blood pressure. Another additive, tartrazine, causes behavioral disturbances in children.⁷²

Back in the 1960s, Dr. Ben F. Feingold proposed the theory that certain substances added to foods cause adverse reactions in children. These include artificial colorings, flavorings, preservatives and aspartame. Not all mood-affecting chemicals are created in factories. Salicylates, a natural compound found in apples, oranges and other fruits, can cause seizures, night terrors and speech problems in some children. These are eliminated in Stage 1 of the Feingold Diet. The diet has been successful in eliminating behavior problems in some children.⁷³

Synthetic food colorings are permitted to have 10 parts per million (ppm) of lead in the substance but colors used in medications are allowed double that amount. The natural red dye, carmine, used in yogurts and candies, is made from beetles, and is very high in aluminum. Both synthetic and natural dyes put in food often provoke allergic reactions and psychiatric symptoms among vulnerable individuals.⁷⁴

CAFFEINE

The average American drinks over twenty-six gallons of coffee a year. Coffee contains caffeine and over three hundred other chemicals. Cola drinks also contain caffeine along with a large dose of sugar or aspartame. Caffeine is addictive, increasing homocysteine, dopamine, cortisol, energy metabolism and norepinephrine, while reducing the blood flow in the brain and decreasing serotonin levels.⁷⁵

Caffeine causes insulin spikes and increased blood sugar in diabetics or prediabetics. Caffeine will cause a small rise in blood sugar after meals. It causes urinary excretion of calcium, magnesium and potassium and thus affects brain metabolism. Caffeine is a stimulant and a diuretic. At high doses it can worsen anxiety and trigger mania or psychosis, confusion, headache, seeing flashes, psychomotor agitation and depression.⁷⁴

SOY IN THE DIET OF INFANTS AND CHILDREN

Soy-based formula has been in use for more than thirty years. The average baby on soy-based formula receives the equivalent of five birth control pills a day.⁷⁷

Excessive estrogens fed to rats during the fetal period leads to aggressiveness, problem behaviors and hyperactivity, all precursors to violent behavior. Excessive estrogens in baby boys may lead to problem behaviors later in life.

Babies on soy formula develop a zinc imbalance. Zinc has a role in metabolism of fatty acids in the brain and in the myelination of neurons. Low levels can cause a deficiency in essential fatty acids. When zinc and EFAs are deficient, there may be more chance for brain injury.

There is also no cholesterol in soy-based formula. Cholesterol is needed for the architecture of the brain.⁷⁸ Soy-based formula is also extremely high in manganese, a mineral that can cause aggression and violent behavior in later years.⁷⁹

Soy, like sugar, is a major ingredient in the food supply. In 1971 soy became a fixture in school lunches when the USDA authorized the use of texturized vegetable protein (TVP) made from soy to meet the requirement for two ounces of cooked meat for the Type A school lunch. This allows up to 30 percent soy in finished meat products prepared for young children. (These percentages are 40 percent and even higher in prisons.) Under the theme, "Soy Goes to School," the soy industry commissioned a number of articles that appeared in the School Lunch Journal and other publications to convince the audience that soy was a good idea, because it was "high in protein and low in fat." The effort goes on to this day in an attempt to convince the general public that children like soy foods.⁸¹ The low cost factor was emphasized as a "cost breakthrough." But you get what you pay for. Adaptations for using soy in favorite school recipes were provided: chili, spaghetti, lasagna, meat loaf, pizza, Spanish rice and chicken pie.⁸¹

Soy burgers are loaded with MSG, along with artificial flavorings, to give them some semblance of taste. During processing, soy is washed in aluminum tanks, which leaches aluminum into the product. It is well known that aluminum can have adverse effects on brain development and cause antisocial behavior and learning disabilities. Some processes also use hexane, which is a toxic carcinogen.⁸²

Soy is considered one of the top five allergenic foods, not a good choice for a child who already has food sensitivities. Babies who are fed soy-based formula are already at risk for behavioral problems, food allergies, early puberty, asthma, gynecomastia (male breast development) and thyroid disease.⁸³

ALCOHOL AND VIOLENT BEHAVIOR

The consumption of alcohol increases the likelihood of violent behavior and is involved in half of all murders, assaults and rapes. Binge drinking—consuming four or more drinks in one sitting for females and five or more drinks for males—causes thinning of the pre-frontal cortex, the section of the brain related to functions such as paying attention, planning and making decisions, processing emotions and controlling impulses leading to irrational behavior. Binge drinking causes insulin resistance and has specific effects on the brain.⁸⁴

When serotonin, the brain's "orchestra maestro," is low, aggression, impulsivity and violence increase, while cognitive function declines.⁸⁵ Alcohol consumption is much more likely to lead to violent behavior in individuals with low cholesterol.⁸⁶

Substantial research has implicated decreased serotonin (5-HT) neurotransmission in human aggressive behavior. This can be directly related to diet. Alcohol, in combination with Ltryptophan depletion, has an additive effect on aggression, leading to violence. Male subjects with high trait hostility are particularly prone to increased aggression following plasma tryptophan depletion.⁸⁷

SUGAR

Sugars, in the forms of cane sugar, beet sugar, high fructose corn syrup and other forms of these refined sweeteners, are all fairly new to the human genome. Hunter-gatherers ate very small amounts of sugars in the form of fruits, honey and tree and grass syrups. In 1800 the sugar intake was less than ten pounds per person per capita, whereas today the average sugar intake is estimated at around one hundred fifty pounds per person per year.⁸⁸

Much of the sugar ingested today comes in the form of fast food. Sodas are the most convenient and accessible way to down “elephant doses” of sugars. The average soda in the 1950s was eight ounces. Today’s Big Gulp is twenty ounces.

Early infant feeding practices advocated the use of apple juice but studies show that children who are fed high amounts of apple juice are at risk for failure to thrive. And how many generations of infants were raised on the advice of Dr. Benjamin Spock, considered the ultimate authority, who advised the use of orange juice and sugar water in baby’s bottle?⁸⁹

Sugar consumption puts the body on a roller coaster of high and then low blood sugar. Recent findings show blood glucose levels at the high end of normal resulted in significant brain shrinkage, particularly in the regions of the hippocampus and amygdala involved in memory and other critical functions.⁹⁰

By enlisting academics like Fred Stare, Edwine Bierman, and Ancel Keys to its payroll, Big Sugar succeeded in convincing the public that sugar was not to blame for the obesity epidemic or heart disease.⁹¹ By the 1990s the public was largely convinced that sugar had no role to play in hyperactivity, juvenile delinquency or hypoglycemia. Yet these connections were conclusively demonstrated by British researcher John Yudkin. He noted that hypoglycemia, a consequence of sugar binging, occurs in 30-70 percent of psychiatric patients, and in 90 percent of alcoholics.⁹² The orthomolecular psychiatrists and researchers of the twentieth century, Hoffer, Osmond, Philpot, Pauling, Rimland, Webach and others, all recognized hypoglycemia as a major factor in aberrant behavior.⁹³

STUDIES ON NUTRITION, VIOLENCE AND CRIME

As early as 1971 the U.S. population was already consuming more than 50 percent of its diet in the form of junk foods. More than four thousand additives were readily available in the food system. In the 1970s several researchers tried to reduce crime through changing diet. They identified several areas where intervention could be made: brain allergies, hypoglycemia, nutrient deficiencies, brain dysfunction, environmental contaminants and neurotransmitter imbalance.⁹⁴

Research by Hippchen, Schoenthaler, Schauss and others concluded that hypoglycemia, caused by a diet high in sugar and refined carbohydrates, could account for most of antisocial behavior. They found that hypoglycemia causes the brain to secrete glutamate, a neurotoxin, which leads to agitation, depression, anger, anxiety, panic attacks and violent behavior.⁹⁵⁻⁹⁷

Stephen J. Schoenthaler, PhD, a professor of criminal justice at California State University, has focused his research efforts on the effect of nutrition on cognition and behavior in school children, prisoners and institutionalized juveniles. He reported a significantly lower level of antisocial behavior after dietary modifications which involved decreasing sugar consumption during a three-month and nine-month period respectively. In fact, as of 1983, at least nine separate institutions in three states had found that the behavior of their juveniles improved significantly after the elimination of high-sugar junk foods.⁹⁶

Schoenthaler concluded that the primary cause of hypoglycemia is poor nutritional habits. Because the brain uses mainly glucose for fuel, when glucose levels fall or fluctuate widely, neurons will not be supplied a constant source of energy and may "misfire," affecting thinking and reasoning patterns. High sugar and starchy carbohydrate intake can lead to excessive insulin release, resulting in falling blood sugar and hypoglycemia.⁹⁶

Alexander Schauss, author of the book *Diet, Crime and Delinquency* (1980), described as “the first clear guide to correcting behavior through diet,” used case studies to show that high intake of sugar, processed foods, junk foods, food additives along with insufficient nutrients, food allergies and lack of exercise, can all contribute to criminal behavior.⁹⁷

The Finnish researcher Matti Virkkunen did a series of studies with violent male prisoners. He found abnormal glucose tolerance in subjects with antisocial personality and increased insulin secretion with excessive sugary foods, especially with alcoholics.⁹⁸ He confirmed the fact that violent male homicidal offenders had much lower cholesterol levels than other offenders; and that impulsive violent offenders and fire setters have low serotonin levels in the brain. He hypothesized that the lower cholesterol levels in the violent offenders could be “a consequence of enhanced insulin secretion and that high insulin levels are responsible for violent behavior.”⁹⁹⁻¹⁰⁰ Finland suffers from one of the highest suicide rates in the world, along with an explosive rate of alcoholism.

A number of studies have suggested a relationship between low cholesterol levels and deaths due to accidents or violence. In Sweden, Beatrice A. Golomb¹⁰¹ found that low cholesterol is associated with increased criminal violence in randomized trials. Studies in Turkey showed that “violent suicide attempters” had significantly lower total cholesterol and leptin levels compared to those with non-violent suicide attempts.¹⁰²

Low cholesterol was also a major factor in a French study of patients suffering from major depression, which found that “clinical recovery may be associated with a significant increase of total cholesterol.” Colin wrote that “these findings have challenged the vast public health programs aimed at promoting the decrease of cholesterol,” and even suggested suspending the administration of lipid-lowering drugs.¹⁰³

Katherine DesMaisons, a counselor in drug and alcohol programs, ran a nutrition-based program for alcoholics in San Mateo County, California, called the “Biochemical Restoration Program.” By focusing on diet and nutrition, DesMaisons successfully reduced the sugar cravings that led people with flawed carbohydrate metabolism to crave the sugar in alcohol. She went on to earn a PhD with the dissertation, “Biochemical restoration as an intervention for multiple offense drunk driving” in 1966. She is the author of *Potatoes not Prozac* and *The Sugar Addict’s Total Recovery Program*.¹⁰⁴

Barbara Stitt was chief probation officer in Ohio for twenty years. During these years she closely observed her clients and recognized that diet and behavior were strongly related. When diet improved, behavior improved. Dr. Stitt earned a PhD focusing on “The Biochemistry of Crime” and “Healing the Delinquent Mind.” In her book, *Food and Behavior: A Natural Connection*, she discusses reactive hypoglycemia, a defect that occurs when blood sugar levels are inadequate to meet the brain’s requirements. She also fingers sub-clinical pellagra; B vitamin deficiencies; allergic reactions; alcohol consumption; heavy metals toxicity; MSG; and aspartame as partners in crime. Her main advice is to eat protein for breakfast instead of sugary cereals, bagels, toast and other quick carbs, which set the stage for insulin swings and blood sugar reactions throughout the day. Her documentation links hypoglycemia to aggressive and violent behavior.¹⁰⁵

DEPRESSION AND OMEGA-3 FATTY ACIDS

The well-known French researcher, Jean- Marie Bourré, found a significant decrease of the polyunsaturated omega-3 fatty acids and/or an increase of the omega-6/omega-3 ratio in the plasma of those with psychiatric diagnoses. He presents the hypothesis that omega-3 deficiency “alters the structure and function of membranes and induces minor cerebral dysfunctions. Studies of omega-3 fatty acids provide the first coherent experimental demonstration of the effect of diet (nutrients) on the

structure and function of the brain. Deficiency alters the course of brain development, disturbs the composition of the brain cells, and results in “neurosensory and behavioral upset.”¹⁰⁶

Lack of omega-3 fatty acids is involved in dementia, especially Alzheimer’s disease. Deficiencies cause more abnormalities in the frontal cortex and pituitary gland, which are accompanied by behavioral disorders. These disorders are “partially reversed by eating omega-3-rich egg yolks or pig brain.” Animal sources of omega-3 fatty acids are more effective than plant sources because of their long-chain structure.¹⁰⁷

FAST FOOD, DIET SODAS, DEPRESSION AND VIOLENCE

According to researchers, much evidence points to an association of fast food with aberrant behavior, and fast food increases the risk of depression. The intake of *trans* fatty acids or the consumption of foods rich in this kind of fat, such as fast food or commercial bakery products, have recently emerged as contributors to higher depression risk.¹⁰⁸

A new Boston study suggests that sodas are linked with violence. Those drinking soda, even one can per day, were likely to be more violent; the more a child drank, the more violent he became. The study points to adrenal exhaustion and low blood sugar as a cause. Drinking soda puts kids on an emotional rollercoaster with strong ebbs and flows in blood sugar.¹⁰⁹

THE SCHOOL SLAYINGS AND PSYCHOTIC DRUGS

Jon Rappoport worked for thirty years as an investigative reporter and was nominated for a Pulitzer Prize. In his book *School Shootings, Why did they do it? An inquiry into the school shootings in America* and in his blog post, “The secret at the bottom of psychiatry’s rabbit hole,” he describes several acknowledged explanations for the

school shootings, including access to guns, violence on TV, breakup of families, absence of a good education, growing poverty, and lunatic ideologies such as Nazism and Satanism. However, he asks, why have the media not named psychiatric drugs as one of the causes?¹¹⁰

In a comparison of the time periods 1993- 1998 and 2005-2009, prescriptions of antipsychotic drugs per one hundred children (0-13 years old) rose from 0.24 to 1.83. That's more than a sevenfold increase, and the rate is substantially higher among preteens and thirteen-year-olds. For adolescents (14-20 years old) the increase was nearly fivefold.¹¹¹

In fact, between 2004-2011 there were almost thirteen thousand reports to the FDA's Med Watch system of psychiatric drugs causing violent side effects, suggesting that the side effects from these drugs are nine or ten times higher than admitted in official data.¹¹²

In an analysis of mass shootings during the past fifteen years, every shooter had been taking or withdrawing from a psychiatric drug. In these thirty-one school shootings or school-related acts of violence, one hundred sixty-two were wounded and seventy-two were killed.¹¹²

Peter Breggin, MD, psychiatrist, notes that, "One of the things in the past that we've known about depression is that it very, very rarely leads to violence. It's only been since the advent of these new SSRI drugs that we've had murderers, even mass murders, taking these antidepressant drugs." According to Breggin, "psychiatric drugs can cause or worsen violence" in those who take them and cites a 2010 study of reports to the FDA on drug-induced violence which has demonstrated that antidepressants have resulted in an 840 percent increase in the rate of violence among those taking the drugs.¹¹³⁻¹¹⁴

SUICIDE AND PSYCHIATRIC DRUGS

A review of studies on Pubmed.org reveals many studies in medical journals in 1989 and continuing through the 1990s reporting on suicides and other neurological events in individual patients taking Prozac. Teicher reported on three subjects who developed “intense, violent, suicidal preoccupations” after two to seven weeks on the drug; these lasted from three days to three months after stopping the drug. He concluded that “3.5 percent of Prozac users were at risk.”¹¹⁵

A 1992 study proposed that enhanced serotonin inhibited dopamine pathways, as a possible cause of suicide ideation related to antidepressants.¹¹⁶ Another 1991 study examined three patients who attempted suicide while taking Prozac, and again re-exposed to it, developed severe restless leg syndrome, which made them again feel suicidal. The restless legs went away after the Prozac was stopped. Other typical Prozac-induced symptoms were restlessness, constant pacing, purposeless movements of the feet and legs and “jitteriness.” The authors suggest that restless legs may be caused by serotonin inhibiting dopamine transmissions in the brain and that the “restless legs” and “jitteriness” may be identical. The risk of suicidal behavior is increased in the first month after starting antidepressants, especially during days one through nine.¹¹⁷

VACCINATIONS AND BRAIN INFLAMMATION

Some scientists and physicians have related mental disabilities leading to violence to early encephalitis or brain inflammation. As Harris Coulter explains in his book, *Vaccination, Social Violence, and Criminality. The Medical Assault on the American Brain*, these brain inflammations are connected to developmental disabilities, allergies, autoimmune diseases and violent behavior. Coulter believes that brain inflammation is brought on by adjuvants or other antigenic substances in vaccines.

Vaccination programs in the U.S. came into full force after World War II. Congress agreed that vaccinations were dangerous when they passed the National Childhood Vaccination Compensation Law in 1986, which approved payments to parents of

children damaged by vaccines.¹¹⁸

According to the National Institute of Medicine, “encephalitis is irritation and swelling (inflammation) of the brain, most often due to infections. . . which may destroy nerve cells, cause bleeding in the brain, and brain damage,” and may be caused by “an allergic reaction to vaccinations.”¹¹⁹

Do live vaccines cause encephalitis? Five vaccines (measles, mumps, rubella, polio, and varicella) given to children contain live viruses which can infect both the vaccination recipients, as well as those in close contact with them. The MMR vaccine is a “three-in-one” vaccine with live virus. According to the CDC website, “risks from the MMR vaccine” are “fever, rash, swollen glands, seizures, pain, low platelet count, serious allergic reaction and permanent brain damage.”¹²⁰

Eurosurveillance reveals that except for the former communist countries in Europe, few European countries have mandatory vaccination programs.¹²¹ American children, on the other hand, receive over thirty-five shots before grade school, following the CDC vaccination schedule. That includes as many as twelve shots in the first six months of life.¹²²

Six vaccines (polio, hepatitis B, hepatitis A, pertussis, diphtheria and tetanus) contain formaldehyde, which is a toxic and carcinogenic preservative; five vaccines (hepatitis B, pertussis, diphtheria, tetanus, and haemophilus influenza) contain thimerosal, a mercury derivative preservative banned by the Food and Drug Administration (FDA) in over-the-counter (OTC) drug preparations because of questions over safety; and five vaccines (hepatitis B, hepatitis A, pertussis, diphtheria, and tetanus) contain aluminum as an adjuvant. Aluminum accumulates in brain, muscle and bone tissue and can be linked to fibrosarcomas (cancerous tumors) at the injection site.¹¹⁸

THE TOXIC ENVIRONMENTAL BURDEN

According to a study by the Environmental Working Groups, blood samples from newborns show exposure to over two hundred eighty-seven toxins, including mercury, fire retardants, pesticides and Teflon—exposure that occurs even before they are born. Of these, one hundred eighty cause cancer in humans or animals; two hundred seventeen are toxic to the brain and nervous system; and two hundred eight cause birth defects or abnormal development in animal tests.¹²³

Common exposures have been documented for mercury from vaccines, amalgam fillings, and fish; for lead from paint, soil and water fixtures; for arsenic from treated wood, pesticides and shellfish; for aluminum from processed food, cookware and deodorants; for cadmium from shellfish, paint, pesticides and piping; for antimony from Scotchgard; for manganese from soy milk, welding and metal works; and for fluoride from water, tea, medications and soy. All of these metals are documented to be extremely neurotoxic.

Heavy metal exposure compromises normal brain development and neurotransmitter function, leading to long-term deficits in learning and social behavior. Studies show that hyperactive children and criminal offenders have significantly elevated levels of lead, manganese or cadmium compared to controls; high blood lead at age seven predicts juvenile delinquency and adult crime.¹²⁴

Prenatal and neonatal toxic metal exposure to mercury, lead, arsenic, cadmium, nickel and aluminum have been documented in medical publications and medical texts to cause common and widespread neurological and psychological effects including depression, anxiety, obsessive compulsive disorders, social deficits, mood disorders, schizophrenia, anorexia, cognitive impairments, ADHD, autism and seizures.¹²⁵

High lead, copper, manganese, or mercury levels are associated with attention deficit hyperactivity disorder (ADHD), impulsivity, anger, aggression, inability to inhibit inappropriate responding, juvenile delinquency and criminality.¹²⁶ Occupational

mercury exposure has been found to cause depression, anxiety, anger, antisocial behavior and aggressiveness.¹²⁷

Manganese toxicity has a known association with impulsive and violent behavior. A poor diet increases the susceptibility to lead and manganese toxicity. The most significant dietary source is soy infant formulas, which typically have very high levels of manganese.¹²⁸

Lead has been the subject of extensive research documenting its relationship to all of these conditions and to juvenile delinquency. Based on a national sample of children, there is a significant association of lead body burden with aggressive behavior, crime, juvenile delinquency and behavioral problems. After adjustment for covariates and interactions and removal of non-influential covariates, adjudicated delinquents were four times more likely to have bone lead concentrations greater than 25 parts per million (ppm) than controls. Communities with a higher percentage of children having blood lead over 10 mg/dL are significantly more likely to have higher rates of violent crime and higher rates of educational failure.¹²⁹

Communities using silicofluorides in the water supply also report higher rates of learning disabilities, ADHD, violent crime and criminals using cocaine at the time of arrest. The use of fluorosilicic acid (H_2SiF_6) to fluoridate public water supplies significantly increases the amounts of lead in the water. Data from analysis of a national sample of over four thousand children show that water fluoridation is associated with a significant increase in children's blood lead, with especially strong effects among minority children.¹²⁹

Studies have found that heavy metals such as mercury, cadmium, lead, aluminum, nickel, and tin affect chemical synaptic transmission in the brain and the peripheral and central nervous system.^{130,131} They also disrupt brain and cellular calcium levels, significantly affecting many body functions. Inadequate calcium levels in the brain can

adversely affect cognitive development and contribute to degenerative CNS diseases. Calcium-dependent neurotransmitter release results in depressed levels of serotonin, norepinephrine, and acetylcholine, all conditions related to mood and motivation.¹³¹

IN PLAIN SIGHT

Many factors in the environment are new to the genome since World War II and have been implicated in violent behavior. These include changes and additions to the food we eat leading to severe nutrient deficiencies, changes in American agriculture and fertility of the soils, more chemicals in the environment, cheaper goods and services, heavy use of personal care and building materials that contain lethal toxins, changes in the American family, vaccination programs and others. Above all the most influential factor in the course of increasing violence has been changes in the American food system and loss of nutrients for children and growing teens.

These changes, coupled with an increase in medicalization of the mind with psychotic drugs, have provoked a crisis in mental health with appalling consequence: mass killings by our youth. It appears that our government officials do not have the political will to deal with or even recognize the factors that have led to this violence.

The Farm Bill and other government actions contributed greatly to the crisis. It will take a grass-roots effort to return the balance in our food system. Recently efforts have sprung up which are slowly turning the tide. These include farmers markets, buying local, farm shares, home gardens, and a return to natural products such as raw milk, pastured eggs and meat. Cooking and eating real food at home for our families cannot be emphasized enough in resolving these major issues.

Meanwhile, none of us is safe. Society as a whole must pay the price for the wholesale poison of our land, our air and our food supply.

Heartfelt thanks for a generous contribution that enabled us to do this research. A long time WAPF member, who prefers to remain anonymous, was compelled to take action after the most recent school shootings. Her thoughts immediately went to WAPF, as she believes we must look to our food and drugs as a source for that senseless violence.

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SIDEBARS

ASPARTAME IN SCHOOL LUNCHES

Aspartame is making huge inroads into the school lunch program. USDA and FDA plans will change school lunches from bad to worse. School lunches have had a bad reputation for many years due to the quality of the “food” given to growing children. Many school cafeterias have abandoned their kitchen and heat up premade pizzas, and open cans and packages. Many have their foods shipped in already prepared from large producers who supply prisons, universities, and other institutions. Schools that do prepare their foods can use up to 30 percent texturized soy protein in protein entrées.

The USDA has recently announced their plans to improve the quality of nutrition in school lunches by promoting diet sodas. They say they will outlaw sugary drinks. And of course whole milk is on the outlaw list as well. But skim milk, chocolate-flavored milk, soy milk, water, and diet sodas containing aspartame are all “a healthier choice” according to the USDA.¹

In a move to sell more milk, the dairy industry is petitioning the FDA to allow aspartame and other artificial sweeteners to be added to milk and other dairy products without the labeling “artificially sweetened” because “they would promote healthy eating and are good for school children.” “Kids don’t like the term low-calorie,” says Greg Miller of the National Dairy Council. He also says that the industry is “not trying to be sneaky” and does not petition the FDA to remove aspartame from the list of ingredients on the product.²⁻³ It is only fair, they say, because sugar is added to milk without labeling.⁴

A petition from a consumer group, SumOfUs, gathered 93,142 signers to oppose this move. To sign this petition, go to sumofus.org. To submit a formal comment or send data to the FDA, go to: www.regulations.gov/#!submitComment;D=FDA-2009-P-0147-0012. May 31, 2013 is the deadline for FDA comments.³

Faced with the child obesity epidemic, the goal of nutrition experts is to cut calories from sugar, no matter what the cost. Barry Popkin of the University of North Carolina says that: "If the option is flavored (milk) with diet (sweetener) vs. regular sugar, then diet (sweetener) is favored."² The goal of reducing the amount of calories kids get from sugar has turned into a campaign for introducing even more toxins into the child's diet. Artificial sweeteners may have no calories, but they increase the appetite and are linked to obesity in scientific studies.

Because many children and adults are allergic to aspartame, this move may further cut sales of processed milk. For sure, it will cause behavioral problems in schools which already are overburdened with "special needs" kids. Instead of providing a nurturing environment for learning based on sound nutritional principles, schools must follow government regulations that are not in the best interest of children's health. It is becoming more and more difficult for children to make healthy choices because they are just not available in the form of nutrient-dense, natural and whole foods.

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LEAD AND THE BRAIN

Until 1995, lead was not only used in insecticides, but also in gasoline.¹ Lead was only outlawed in paints in 1978. Lead dust released by smelters and mines can

contaminate nearby soil. The metal can also be found in everyday items like pottery glazes, lead shot, water piping and fishing weights; it can leach from improperly glazed ceramic ware and even leaded crystal.

Lead adversely affects the brain and nervous system. Toxic levels cause neurological problems, especially in children.² Exposure to high levels of lead can lead to premature births, decreased mental capacity, learning difficulties and reduced growth in young children. Unborn babies can also be exposed to lead through their mothers.³ Lead poisoning during childhood can have long-term detrimental effects on behavior.⁴

“Lead poisoning produces hyperactivity and aggression, and studies of low-dose exposure show an increased incidence of those behaviors subsumed under the attention deficit syndrome. More than half of children who display symptoms of ADD hyperactivity will go on to become delinquent and commit violent crime. The attributable risk for hyperactivity in children with elevated lead levels is .55 which means that more than half of the risk of developing hyperactivity or ADD-ADHD can be attributed to lead exposure.”⁴

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ARSENIC AND THE BRAIN

As early as 1930, studies published in the *Archives of Pediatrics* found high levels of arsenic in babies and their mothers' breast milk. High levels of arsenic were a factor in about 30 percent of diagnosed eczema cases. The authors state that the chief source of the arsenic was the food industry. Any food product made from the hydrolysis of starch with commercial sulphuric acids contains arsenic, especially the glucose used in the manufacture of cheap candies. The potassium carbonate used in the preparation of cocoa is another source. Fruits and vegetables are contaminated by insecticides such as lead arsenate. Arsenic has been found not only on the skin of certain fruits, but even in the fruit itself.¹

Arsenic was a common pesticide in the 1800s and 1900s. Lead arsenate was used first used in the 1890s extensively in fruit orchards until the late 1950s when the pests became immune. Then the growers switched to DDT.² Pesticide residues bind tightly in the surface soil layer, where they remain for decades. Contamination of thousands of acres across the United States has occurred. Because arsenic and lead are quite stable and do not break down in the environment, they accumulate with each use in orchard soils.

Common washing practices did not adequately remove arsenic residues. Residues became a tough problem and apples were put into heated hydrochloric acids baths which removed about 80 percent of lead and 85 percent of arsenic. Arsenic is extremely toxic: a minimal lethal dose for humans is 50 – 300 milligrams (mg)/kg of body weight.³

Although phased out as a pesticide, arsenic is still with us. Arsenical pesticides were used heavily with cotton crops in the South. Recently *Consumer Reports*³ reported on the high levels of arsenic in rice grown in the southern United States. "The rice grown in Arkansas, Louisiana, Missouri, and Texas, about 76 percent of domestic rice, generally had higher levels of total arsenic and inorganic arsenic in our tests than rice samples from elsewhere." But rice grown in California at Lundberg Family farms is also contaminated, and they are growing organic rice. *The New York Time's* story

about Lundberg did not mention the cause of the contamination.⁴ Rice flour is used almost exclusively in gluten free foods. Rice cereal is one of the first foods given to an infant. Rice noodles are used in Asian cuisine. Rice syrup is used as a sweetener. Any product made of rice grown in the Southern States and California has the potential for arsenic contamination. Consumers are turning to rice from Italy and Asia. High levels of arsenic have been reported in drinking water in areas around Tuscany.⁵

Consumer Reports also found that about 10 percent of apple and grape juice, also a popular drink for babies and children, that they tested, from five brands, had inorganic arsenic, a carcinogen. They concluded that apple and grape juice “constitute a significant source of dietary exposure to arsenic.”⁶

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