

**DETRIMENTAL IMPACTS OF TOXIC INGREDIENTS FOUND IN COLAS**Raaz K Maheshwari^{*1}, Lalit Mohan², Bina Rani³, Satyanand Tyagi⁴, Kusum Chauhan⁵, Itishri Bhati⁶, Rajnee⁷, Surabhi Sharma⁸¹Department of Chemistry, Sh Baldev Ram Mirdha Govt PG College, Nagaur, Rajasthan²Department of Zoology, Dayalbagh Educational Institute (Deemed University) Dayalbagh, Agra, UP³Department of Engineering Chemistry & Environmental Engineering, Poornima College of Engineering, Sitapura, Jaipur, Rajasthan⁴President & Founder, Tyagi Pharmacy Association (TPA) & Scientific Writer (Pharmacy), New Delhi, India.⁵Department of Mass Communication, Govt PG College, Hisar, Haryana⁶Department of Environmental Science, St Wilfred's PG College, Jaipur, Rajasthan⁷Department of Physiology, Sardar Patel Medical College, Jodhpur, Rajasthan⁸Department of Botany, University of Rajasthan, Jaipur, Rajasthan**Received 05 June 2013; Revised 25 June 2013; Accepted 15 July 2013****ABSTRACT**

The pesticides-in-cola saga continues. The health ministry's expert committee states Coke and Pepsi are safe, and has trashed the testing methodology of Centre for Science and Environment (CSE), the NGO that claimed to have found pesticide in colas up to 50x the proposed health limits. CSE in turn has trashed the expert committee. Despite the health ministry's clean chit, several states continue to ban or restrict Coke and Pepsi. It's to be viewed the controversy as time wasted on a low-priority issue. Yes, we need better health standards but why focus on colas. The pesticides in colas come from groundwater: better water purification by the cola companies can reduce the pesticide content from minuscule to microscopic. But an indefinitely greater hazard comes from pesticides ingested by millions who drink untreated water from wells and tubewells. We need better agricultural practices to curb pesticide use, and promote pesticide that degrade quickly. Cola companies cite government surveys revealing pesticides levels 3,080x higher in milk, 69,000x higher in vegetables and 111,6000x higher in fruit than in the proposed cola standards. Nutritionists treat these items as dietary essentials, which are permitted high levels, unlike colas, which are inessential and merit microscopic pesticide levels. But if you ban colas, what will people switch to? Milk, tea, cane juice and fruit juice, all of them have more pesticides than colas. Rather focus on colas, we should highlight the dangers in traditional foods like milk, fruit and veggies. In this manuscript, adverse impacts of pesticides and other toxic ingredients found in dietary stuff are delineated precisely.

KEYWORDS: HFCS; BMI; Obesity; Phosphoric acid; Caffeine; Pesticides; Fructokinase; Diabetes-2; Fizzy drinks;**INTRODUCTION:**

Companies have purposely placed energy drinks in proximity to sports drinks to confuse the consumer. This ploy needs to be stopped as we have young children buying them. Sports drinks like Powerade and Gatorade are meant to replace the electrolyte and carbohydrate lost during exercise. But energy drinks increase the carbohydrate level in the blood beyond the recommended limit and affect renal function. The sugar rush from energy drinks comes from 13 teaspoonfuls of sugar in a 500 ml can¹⁻³. Such a high dose of sugar impairs absorption of fluid in the body, resulting in dehydration and cramps. We need to determine whether the long-term use of energy drinks will translate into deleterious effects later. Artificial caramel colouring used in Coca-Cola, Pepsi and other soft drinks contains two cancer-causing chemicals. Researchers at the

National Toxicology Program (NTP), a wing of the US Department of Health and Human Services (DHHS), have found "clear evidence" that both 2-methylimidazole (2-MI) and 4-methylimidazole (4-MI) are animal carcinogens and likely to pose a risk to humans. The colouring is produced by exposing sugars to industrial chemicals, ammonia and sulphites. The reaction results in formation of 2-MI and 4-MI. In EU countries, artificial colours have largely been phased out and replaced with plant based dyes. Researchers at the University of California, Davis, found 4-MI about 12 times more than the permissible limit in five brands of cola, including Diet Coke and Coke Zero. However, according to JHNFA (Japan's Health and Food Nutrition Association), this FOSHU (Foods for Specified Health Users) labelled cola has zero amount of sugar and contains an indigestible form of Dextrin – a compound

used as fibre supplement, which restricts the body's ability to absorb fat while eating. When consumed with a high fat diet like hamburger, the drink slows down the body's ability to absorb fat thereby saving us from putting on weight. It also helps in digesting the food easily. Experts state the cola's target demographic is youngsters who are fond of cola but are worried about their weight, as well as those who have stopped buying soft drinks for health reasons. In 1987 Japan's ministry of health and family welfare introduced functional foods. The FOSHU system was introduced in 1991 and the first FOSHU approval was given in 1993. It is an individually evaluated approval system that takes into account scientific evidence on effectiveness, safety and quality. As of December 19, 2011, 983 products have been certified as Foods for Specified Health Users. Of these, 24% are soft drinks like tea based beverages, mineral water, jelly or fruit beverages and powdered soft drinks, 55% are dairy products like lactic acid bacteria beverages and cultured milk, 12% are processed foods like processed meat and fish, cooking oil, vinegar and sweeteners like candies, cookies, chewing gum and dehydrated soups⁴.

Data from clinical trials on 10 to 100 subjects have to clearly indicate the health benefit of the product if it contains a new ingredient, testing and approving for FOSHU can take 203 years time. Some of the nutrient function claims that have cleared the FOSHU test includes Vitamin A which help maintain good vision at night, iron which is necessary for red blood corpuscles formation, calcium which is necessary for bone and teeth, folic acid which contributes to a normal development of a foetus and vitamin E which helps protect fat in the body from being oxidized and helps maintain healthy cells. A recent study stated aerated drinks increases the chances of heart disease by 20% among those gulping them daily. Also, people who drink diet sodas every day have a 61% higher risk of bursting a blood vessel. Even children, who consume 40-70ml of soft drinks a day, may put on 305 kilos every year as one cola is equivalent to having 7 to 8 spoons of sugar at a time⁵.

The Indian Council of Medical Research (ICMR) along with 9 institutes have been conducting a study that covers 10,000 households and involves interviews of nearly 70,000 people of all ages and social status to gauge how much aerated drinks Indians consume daily, monthly and annually, and what is the country's annual production of such drinks. The study will also look at which states consume the most and least amount of cola, which are the months for highest consumption, which age group drinks the most and what are the health hazards they face due to their consumption. Several studies conducted by some of the world's top researchers have stated colas are bad for

health. The studies claim these cause brittle bones, contain fructose in concentrated amounts that triggers weight gain in the body and leads to cell damage, switching off vital parts of DNA, eventually leading to the liver and degenerative diseases such as Parkinson's. Let's start with milk. Indians have an ancient attachment to it, arising from the story of Krishna, the cow herd. So no NGO, politician or nutritionist dares call milk dangerous. The way pesticide norms are drawn up, the tradition food basket (including milk) is regarded as essential food whose pesticide levels are regrettable but given, and the aim is to reduce pesticides in other items labelled inessential (like colas)⁶. To everyone, this seems crazy. Young children, who drink milk but not cola, ingest enormous doses of pesticide, thousands of times than in cola. Yet, no NGO or ministry dares call this a problem. Is milk an essential food? Not at all. Humans evolved for hundreds of thousands of years before herding cattle, and flourished despite drinking no milk. Even today, large parts of Africa and China drink no milk. It is essential. Indeed milk is a health hazard. For millions of lactose-intolerant people, milk is a poison. Many city-folks know about lactose intolerance, but hundreds of millions of villagers do not, and kill or maim their children by dosing them with milk. Humans are the only species to drink milk after being weaned from the breast. How do they achieve this feat? By drinking the milk of other creatures, something no other species does. Not surprisingly, drinking alien milk produces allergies and a host of other health problems. Evolution has not yet made humans proof against alien milk.

Hence, a growing number of people have become vegetarian – they eat neither meat nor dairy products. They know milk is not essential, it is a hazard. The guru of baby and child care, Dr Benjamin Spock, opposed giving cow's milk to children, saying it can cause anaemia, allergies, diabetes and (in the long term) heart disease. Another US author, Dr Fuhrman states in his book *Disease – Proof Ones Child*, that cow's milk is linked to anal fissures, childhood-onset (Type I) diabetes, chronic constipation, Crohn's disease, ear infections, heart attacks, multiple sclerosis and prostate cancer. Fifty years of heavy advertising by the milk industry have created an illusion of a health food, but the reality is different. Dairy products should be consumed in limited quantity or not at all. Dr John McDougall, another American doctor, explains that high fat is a major dietary culprit in milk. Cow milk is labelled as having 3.5% of fat, but this fat contributes 50% of the calories in milk. The percentage of fat is as high as 7% in buffalo milk, which is prized in India for its butter content, but is the unhealthiest of all. Finally, milk (like all animal products) is a concentrator of pollutants (pesticides, heavy metals). That makes it a hazard. The US authorities

classify milk as an allergen, and routinely force US food companies fail to mention that milk is an ingredient. So, well any Indian NGO take up the challenge of denouncing milk as a health hazards? If doubt it. Bashing MNCs is much easier than bashing a sacred cow. Politicians and NGOs will point to the big employment yielded by milk production, For the sake of transparency; they should specify how many people they are prepared to see killed per thousand jobs created. Pretending that milk is essential and harmless is both false and non-transparent^{7,8}.

It's being called the world's first "healthy cola". Japan, that boasts of the world's most stringent food regulatory laws, has approved the world's first cola for being "beneficial to health". The country's food regulatory authority has cleared 'Kirin Mets Cola' for the most sought after FOSHU label. JHNFA states getting a highly sought after FOSHU certification – that can sometimes take over six months and cost as much as a million yen – greatly boosts the credibility of approved products. Colas aren't really known for their health benefits. They are usually packed with sugar and have been fuelling the global epidemic of childhood obesity.

In January, about 300 people in the US suffered health problems from excessive consumption of energy drinks like Red Bull and Monster, as per the American Association of Poison Control Centers (AAPCC). The association has recently started tracking the toxicity of energy drinks that constitute the fastest growing market in the US. Canada, Australia and several European and Latin American countries have also acted against the caffeinated drinks following reports of deaths and seizures. Is India paying attention? The entered drinks market in the country is worth Rs 200crore and is growing unregulated. Red bull leads the market, followed by Coca Cola's Burn and Goldwin Healthcare's Cloud 9. In June last year, the Food Safety and Standards Authority of India (FSSAI) prepared draft standards for energy drinks and invited public suggestions. But its efforts have not moved beyond the invites. As of now, energy drinks are labelled as proprietary food that has no prescribed standards. Unlike carbonated drinks in which caffeine is capped at 145 mg/litre, a can of energy drink has 320 mg/litre caffeine or more. "Caffeine acts as a stimulant," stated Anoop Misra, chairperson of the National Diabetes, Obesity and Cholesterol Foundation (NDOCF). "But excess of it may induce agitation, anxiety, irritability, insomnia and cause irregular heart function." Several recent studies corroborate Misra's concern.

High levels of caffeine in energy drinks sometimes have life threatening effects on blood pressure, heart, and brain functions, stated health researchers at University of Texas, USA, and University of Queensland, Australia. Writing in the *Mayo Clinic Proceedings* in November

(2010), they warned patients with hypertension should not consume these drinks. In another study published in Paediatrics on February 15, 2011, researchers said energy drinks may be unsafe for children especially those with diabetes, seizures, heart abnormalities and behaviour disorders. Until we know more about the effects of energy drinks, children and teenagers should be encouraged from drinking them on a routine basis, stated Steven Lipshultz of the Miller school of Medicine in USA and senior author of the paper. Such beverages also contain Vitamin B and stimulant like taurine, glucronalactone and guarana to create the energy blend. There is not enough study to show the impact of caffeine on them, he stated, calling for more research. Amelia Arria, professor at School of Public Health (SPH) at the Maryland University in the US cautions against mixing energy drinks with alcohol⁹⁻¹¹.



It can have harmful effects especially on expecting mothers, stated Arria. Her study on the risks of energy drinks was published online in the *Journal of the American Medical Association* in January, 2011. In November last year, the US Food and Drug Administration (FDA) announced that caffeine is an unsafe additive to alcoholic beverages, prohibiting the sale of pre-mixed alcoholic energy drinks¹².

ARE COLAS SAFE?

[More Reasons to Rethink Fizzy Drinks]:

The consumption of sugar-sweetened soft drinks is associated with obesity, type 2 diabetes, dental caries, and low nutrient levels. Experimental studies tend to support a causal role for sugar-sweetened soft drinks in these ailments, though this is challenged by other researchers. "Sugar-sweetened" includes drinks that use high-fructose corn syrup (HFCS), as well as those using sucrose. Many soft drinks contain ingredients that are themselves sources of concern: caffeine is linked to anxiety and sleep disruption when consumed in excess, and some

critics question the health effects of added sugars and artificial sweeteners. Sodium benzoate has been investigated by researchers at University of Sheffield as a possible cause of DNA damage and hyperactivity. Other substances have negative health effects, but are present in such small quantities that they are unlikely to pose any substantial health risk provided that the beverages are consumed only in moderation. In 1998, the Center for Science in the Public Interest (CSPI) published a report titled *Liquid Candy: How Soft Drinks are Harming Americans' Health*. The report examined statistics relating to the increase in soft drink consumption and claimed that consumption is "likely contributing to health problems." It also criticized marketing efforts by soft drink companies¹³. From 1977 to 2002, Americans doubled their consumption of sweetened beverages—a trend that was paralleled by doubling the prevalence of obesity. The consumption of sugar-sweetened beverages is associated with weight and obesity, and changes in consumption can help predict changes in weight. One study followed 548 schoolchildren over 19 months and found that changes in soft drink consumption were associated with changes in body mass index (BMI). Each soft drink that a child added to his or her daily consumption was accompanied by an increase in BMI of 0.24 kg/m². Similarly, an 8-year study of 50,000 female nurses compared women who went from drinking almost no soft drinks to drinking more than one a day to women who went from drinking more than one soft drink a day to drinking almost no soft drinks. The women who increased their consumption of soft drinks gained 8.0 kg over the course of the study while the women who decreased their consumption gained only 2.8 kg. In each of these studies, the absolute number of soft drinks consumed per day was also positively associated with weight gain. It remains possible that the correlation is due to a third factor: people who lead unhealthy lifestyles might consume more soft drinks. If so, then the association between soft drink consumption and weight gain could reflect the consequences of an unhealthy lifestyle rather than the consequences of consuming soft drinks. Experimental evidence is needed to definitively establish the causal role of soft drink consumption. Reviews of the experimental evidence suggest that soft drink consumption does cause weight gain, but the effect is often small except for overweight individuals¹⁴⁻¹⁷.

Many of these experiments examined the influence of sugar-sweetened soft drinks on weight gain in children and adolescents. In one experiment, adolescents replaced sugar-sweetened soft drinks in their diet with artificially sweetened soft drinks that were sent to their homes over 25 weeks. Compared with children in a control group, children who received the artificially sweetened drinks saw

a smaller increase in their BMI (by -0.14 kg/m²), but this effect was only statistically significant among the heaviest children (who saw a benefit of -0.75 kg/m²). In another study, an educational program encouraged schoolchildren to consume fewer soft drinks. During the school year, the prevalence of obesity decreased among children in the program by 0.2%, compared to a 7.5% increase among children in the control group. Sugar-sweetened drinks have also been speculated to cause weight gain in adults. In one study, overweight individuals consumed a daily supplement of sucrose-sweetened or artificially sweetened drinks or foods for a 10 week period. Most of the supplement was in the form of soft drinks. Individuals in the sucrose group gained 1.6 kg, and individuals in the artificial-sweetener group lost 1.0 kg. A two week study had participants supplement their diet with sugar-sweetened soft drinks, artificially sweetened soft drinks, or neither. Although the participants gained the most weight when consuming the sugar-sweetened drinks, some of the differences were unreliable: the differences between men who consumed sugar-sweetened drinks or no drinks was not statistically significant¹⁸⁻²¹.

Other research suggests that soft drinks could play a special role in weight gain. One 4-week experiment compared a 450 calorie/day supplement of sugar-sweetened soft drinks to a 450 calorie/day supplement of jelly beans. The jelly bean supplement did not lead to weight gain, but the soft drink supplement did. The likely reason for the difference in weight gain is that people who consumed the jelly beans lowered their caloric intake at subsequent meals, while people who consumed soft drinks did not. Thus, the low levels of satiety provided by sugar-sweetened soft drinks may explain their association with obesity. That is, people who consume calories in sugar-sweetened beverages may fail to adequately reduce their intake of calories from other sources. Indeed, people consume more total calories in meals and on days when they are given sugar-sweetened beverages than when they are given artificially sweetened beverages or water. However, these results are contradicted by a study by Adam Drewnowski published in 2004, in which "32 subjects consumed a 300-calorie snack of fat-free raspberry cookies or regular cola on two occasions each – either two hours ("early") or 20 minutes ("late") before lunch." It found that "...the calories eaten at lunch were not affected by whether the snack was cookies or cola." A study by Purdue University reported that no-calorie sweeteners were linked to an increase in body weight. The experiment compared rats who were fed saccharin-sweetened yogurt and glucose-sweetened yogurt. The saccharin group eventually consumed more calories,

gained more weight and more body fat, and did not compensate later by cutting back²²⁻²⁴.

The consumption of sugar-sweetened soft drinks can also be associated with many weight-related diseases, including diabetes, metabolic syndrome and cardiovascular risk factors, and elevated blood pressure. Most soft drinks contain high concentration of simple carbohydrates: glucose, fructose, sucrose and other simple sugars. Oral bacteria ferment carbohydrates and produce acid, which dissolves tooth enamel during the dental decay process; thus, sweetened drinks are likely to increase risk of dental caries. The risk is greater if the frequency of consumption is high. This has led to dentists referring to soft drinks as "liquid chainsaws".

A large number of soft drinks are acidic, and some may have a pH of 3.0 or even lower. Drinking acidic drinks over a long period of time and continuous sipping can therefore erode the tooth enamel. However, under normal conditions, scientific evidence indicates Coca-Cola's acidity causes no immediate harm. Using a drinking straw is often advised by dentists as the drink does not come into as much contact with the teeth. It has also been suggested that brushing teeth right after drinking soft drinks should be avoided as this can result in additional erosion to the teeth due to the presence of acid. There have been a handful of published reports describing individuals with severe hypokalemia (low potassium levels) related to chronic extreme consumption (4-10 L/day) of colas. In a meta-analysis of 88 studies, drinking soda correlates with a decrease in milk consumption along with the vitamin D, vitamin B6, vitamin B12, calcium (Ca), protein and other micronutrients. Phosphorus (P), a micronutrient, can be found in cola-type beverages, but there may be a risk in consuming too much. P and Ca are used in the body to create calcium-phosphate, $[Ca_3(PO_4)_2]$ which is the main component of bone. However, the combination of too much phosphorus with too little calcium in the body can lead to a degeneration of bone mass. Research suggests a statistically significant inverse relationship between consumption of carbonated beverages and bone mineral density (BMD) in young girls, which places them at increased risk of suffering fractures in the future²⁵⁻²⁹.

One hypothesis to explain this relationship is that the phosphoric acid contained in some soft drinks (colas) displaces calcium from the bones, lowering bone density of the skeleton and leading to weakened bones, or osteoporosis. However, calcium metabolism studies suggested that the net effect of carbonated soft drinks, (including colas, which use phosphoric acid as the acidulant) on calcium excretion in urine was negligible. It was concluded that carbonated soft drinks, which do not contain the nutrients needed for bone health, may displace

other foods which do, and that the real issue is that people who drink a lot of soft drinks also tend to have an overall diet that is low in calcium. In the 1950s and 1960s there were attempts in France and Japan to ban the sale of Coca-Cola as dangerous since phosphates can block calcium absorption. However, these were unsuccessful as the amounts of phosphate were shown to be too small to have a significant effect. The USDA's recommended daily intake (RDI) of added sugars is less than 10 teaspoons per day for a 2,000-calorie diet. High caloric intake contributes to obesity if not balanced with exercise, with a large amount of exercise being required to offset even small but calorie-rich food and drinks³⁰⁻³⁴.

Until 1985, most of the calories in soft drinks came from sugar or corn syrup. As of 2010, in the United States HFCS is used nearly exclusively as a sweetener because of its lower cost, while in Europe, sucrose dominates, because EU agricultural policies favor production of sugar beets in Europe proper and sugarcane in the former colonies over the production of corn. HFCS has been criticized as having a number of detrimental effects on human health, such as promoting diabetes, hyperactivity, hypertension, and a host of other problems. Although anecdotal evidence has been presented to support such claims, it is well known that the human body breaks sucrose down into glucose and fructose before it is absorbed by the intestines. Simple sugars such as fructose are converted into the same intermediates as in glucose metabolism. However, metabolism of fructose is extremely rapid and is initiated by fructokinase. Fructokinase activity is not regulated by metabolism or hormones and proceeds rapidly after intake of fructose. While the intermediates of fructose metabolism are similar to those of glucose, the rates of formation are excessive. This fact promotes fatty acid and triglyceride synthesis in the liver, leading to accumulation of fat throughout the body and possibly non-alcoholic fatty liver disease. Increased blood lipid levels also seem to follow fructose ingestion over time. A sugar drink or high-sugar drink may refer to any beverage consisting primarily of water and sugar (often cane sugar or HFCS), including some soft drinks, some fruit juices, and energy drinks³⁵⁻³⁷.

In 2006, the United Kingdom Food Standards Agency (USFSA) published the results of its survey of benzene levels in soft drinks,^[51] which tested 150 products and found that four contained benzene levels above the World Health Organization (WHO) guidelines for drinking water. The United States Food and Drug Administration (US-FDA) released its own test results of several soft drinks containing benzoates and ascorbic or erythorbic acid. Five tested drinks contained benzene

levels above the Environmental Protection Agency's recommended standard of 5 ppb.

The Environmental Working Group has uncovered additional FDA test results that showed the following results: Of 24 samples of diet soda tested between 1995 and 2001 for the presence of benzene, 19 (79%) had amounts of benzene in excess of the federal tap water standard of 5 ppb. Average benzene levels were 19 ppb, about four times tap water standard. One sample contained 55 ppb of benzene, 11 fold tap water standards. Despite these findings, as of 2006, the FDA stated its belief that "the levels of benzene found in soft drinks and other beverages to date do not pose a safety concern for consumers"³⁸⁻⁴².

PESTICIDES IN INDIA

In 2003, the Delhi non-profit Centre for Science and Environment (CSE) published a disputed report finding pesticide levels in Coke and Pepsi soft drinks sold in India at levels 30x that considered safe by the European Economic Commission (EEC). This was found in primarily 12 cold drink brands sold in and around New Delhi. The Indian Health Minister said the CSE tests were inaccurate, and said that the government's tests found pesticide levels within India's standards but above EU standards. A similar CSE report in August 2006 prompted many state governments to have issued a ban of the sale of soft drinks in schools. Kerala issued a complete ban on the sale or manufacture of soft drinks altogether. (These were later struck down in court.) In return, the soft drink companies like Coca-Cola and Pepsi have issued ads in the media regarding the safety of consumption of the drinks. The UK-based Central Science Laboratory (CSL), commissioned by Coke, found its products met EU standards in 2006. Coke and the University of Michigan (UM) commissioned an independent study of its bottling plants by The Energy and Resources Institute (TERI), which reported in 2008 no unsafe chemicals in the water supply used^{31,32}.

GOVERNMENT REGULATION, TAXATION & BANS:

In recent years, debate on whether high-calorie soft drink vending machines should be allowed in schools has been on the rise. Opponents of the (soft drink) vending machines believe that soft drinks are a significant contributor to childhood obesity and tooth decay, and that allowing soft drink sales in schools encourages children to believe they are safe to consume in moderate to large quantities. Opponents argue that schools have a responsibility to look after the health of the children in their care, and that allowing children easy access to soft drinks violates that responsibility. Vending machine proponents believe that obesity is a complex issue and soft

drinks are not the only cause. They also note the immense amount of funding that soft drink sales bring to schools. Some people take a more moderate stance, saying that soft drink machines should be allowed in schools, but that they should not be the only option available. They propose that when soft drink vending machines are made available on school grounds, the schools should be required to provide children with a choice of alternative drinks (such as fruit juice, flavored water and milk) at a comparable price. Some lawmakers debating the issue in different states have argued that parents—not the government—should be responsible for children's beverage choices⁴³.

On May 3, 2006, the Alliance for a Healthier Generation, Cadbury Schweppes, Coca-Cola, PepsiCo, and the American Beverage Association announced new School Beverage Guidelines that will voluntarily remove high-calorie soft drinks from all US schools. On 19 May 2006, the British Education Secretary, Alan Johnson, announced new minimum nutrition standards for school food. Amongst a wide range of measures, from September 2006, school lunches will be free from carbonated drinks. Schools will also end the sale of junk food (including carbonated drinks) in vending machines and tuck shops. In the United States and elsewhere, legislators, health experts and consumer advocates are considering levying higher taxes on the sale of soft drinks and other sweetened beverages to help curb the epidemic of obesity among Americans, and its harmful impact on overall health. Some speculate that higher taxes could help reduce soda consumption. Others say that taxes could help fund education to increase consumer awareness of the unhealthy effects of excessive soft drink consumption, and also help cover costs of caring for conditions resulting from overconsumption. The food and beverage industry holds considerable clout in Washington, DC, as it has contributed more than \$50 million to legislators since 2000. In January 2013, a British lobby group called for the price of sugary fizzy drinks to be increased, with the money raised (an estimated £1 billion at 20p/L) to be put towards a "Children's Future Fund", overseen by an independent body, which would encourage children to eat healthily in school. In March 2013, New York City's mayor Michael Bloomberg proposed to ban the sale of non-diet soft drinks larger than 16 ounces, except in convenience stores and supermarkets. A lawsuit against the ban was upheld by a state judge, who voiced concerns that the ban was "fraught with arbitrary and capricious consequences". Bloomberg announced that he would be appealing the verdict⁴⁴.

CONCLUSION:

Yes, as long as you have them in moderate amounts. The fizz in itself is not harmful but soft drinks

often have other ingredients that you have to be careful about. So many deleterious impacts (dental caries, loss of appetite, lethargy, are observed in students consuming colas. For instance: Most soft drinks such as colas contain caffeine. Caffeine is known to cross the placenta barrier and reach the growing baby. In small doses caffeine doesn't harm ones baby, but excess caffeine could decrease blood flow to the placenta and affect ones growing baby. In large doses (3 cups of coffee and more), it also increases the risk of miscarriage. The RDL of caffeine during pregnancy should not exceed 200mg/ day. Check the amount of caffeine in the drinks that you are consuming (tea/coffee/colas) and add it up to any other sources of caffeine (chocolates and chocolate drinks) that you consume during the course of the day. Caffeine is also a diuretic and causes ones body to lose water and other fluids along with essential vitamins such as calcium. So if you'd like to include a soft drink or 2 make sure you're also drinking nutritious and healthy drinks. Too much caffeine could also hinder the quality of sleep that you require while pregnant. Most soft drinks contain artificial flavoring and preservatives. Diet sodas may also contain artificial sweeteners. Large amounts of any of these viz. sugar substitutes, preservatives, artificial flavor and colors, is not suitable for pregnant women. Soft drinks also add empty calories to ones body without any nutrients. And you'll want to make every calorie count when you're pregnant. Obese and diabetic persons were observed who kept in their lifestyle consuming dark colored colas. Instead choose to drink a refreshing glass of: fresh fruit juice, aam panna, nimbu pani, lassi, herbal squashes, and even safe drinking water.

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